GIANT MINE HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

Final Report

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EXECUTIVE SUMMARY

The Giant Mine is located in Yellowknife, Northwest Territories (NWT), about five kilometers (5 km) north of the city center. Giant Mine produced gold from 1948 until 1999, and gold ore for offsite processing from 2000 until 2004. The processing of ore produced dust containing high levels of soluble arsenic, which was pumped into sealed underground storage areas. Approximately 13.5 million tonnes of tailings were also generated that are stored in four impoundments, which cover 95 hectares of the site, in total. It is estimated that more than 20,000 tonnes of arsenic were released to the atmosphere during the operation of the mine. Other areas have been contaminated with arsenic by releases from activities at the Giant Mine. Baker Creek flows through the site in a channel that has been heavily altered to accommodate mining, ore processing, and highway construction. Both the water and sediments of Baker Creek contain high levels of arsenic, as well as other contaminants.

In 2010, the Developer's Assessment Report (DAR) for the Giant Mine Remediation Project (INAC/GNWT 2010) was submitted to the Mackenzie Valley Environmental Impact Review Board (MVEIRB) for approval to proceed with the remedial activities at the site. As part of the findings (Measure 10), MVEIRB indicated that a comprehensive quantitative Human Health Risk Assessment (HHRA) was needed before regulatory approvals would be provided. This risk assessment report has been prepared in response to Measure 10. In addition to the conduct of a HHRA, an Ecological Risk Assessment (ERA) was carried out to evaluate potential risks to wildlife and plants at the Giant Mine.

A Human Health and Ecological Risk Assessment (HHERA) is a scientific process used to describe and estimate the likelihood of potential risks (i.e., adverse health effects) to humans and wildlife and plants resulting from exposure to environmental contaminants (i.e., chemicals). The risk assessment is used to determine what the chemicals of importance are, who is being exposed, and how they are being exposed. All three of these components are considered in the assessment of risk. It should be noted that the HHRA does not provide a direct assessment of cause and effect concerning current health problems or effects. Any link between exposure and actual health effects comes from epidemiological studies, which include surveys of health problems in a community, and compares them to health problems in other cities and populations where the same type of exposure does not occur. The on-going separate Health Effects Monitoring Program is a component of these epidemiological studies.

The objective of this HHERA is to quantify the likely change in exposure and risk for people in the area, as well as for wildlife at the Giant Mine site, from exposure to arsenic and other contaminants of potential concern associated with the Giant Mine Remediation Project (GMRP). Therefore, current conditions as well as a predictive assessment of future conditions after remediation were evaluated.

Summary of Available Information

There are over 200 reports on the Giant Mine related to air quality, disturbed and undisturbed soils on the site, fish in Yellowknife Bay, and the aquatic environment in Baker Creek. The focus of the HHERA was on current conditions (2011 to 2016) at the site. Other studies are available for soils in Ndilo, Dettah, and the City of Yellowknife as well as on garden produce; the findings of these investigations were also considered in the HHRA.

The available information in these reports was examined to identify where potential data gaps exist for the risk assessment. It became apparent that a few gaps needed to be filled for the HHRA and ERA. This included data for soils and sediments at the former Townsite and Shoreline lands and the Long Lake area where people camp and swim. In addition, little data were available on plants and small animals (mice) present on the Giant Mine. A program was completed in the summer of 2016 to collect these samples.

In addition there were limited data available for country foods that are consumed by people such as wild plants (e.g., berries, mushrooms, medicinal plants) and wildlife (large game, small mammals, and birds). Thus, a program was initiated with the (Yellowknives Dene First Nation) YKDFN, North Slave Metis Alliance (NSMA), and other members of the Yellowknife community to voluntarily collect samples in 2016 as well as the spring and summer of 2017. A dietary survey was also conducted in the YKDFN and NSMA communities to collect some Traditional Knowledge as to what types and how much country food people eat, and from where they collect the country food.

Stakeholder Involvement

There has been stakeholder involvement throughout the current risk assessment process through involvement with the Giant Mine Working Group (WG). The WG is made up of members from Indian and Northern Affairs Canada (INAC), Government of Northwest

Territories (GNWT), Public Services and Procurement Canada (PSPC), Environment and Climate Change Canada (ECCC), Department of Fisheries and Oceans (DFO), City of Yellowknife, Alternatives North, YKDFN, NSMA, Health Canada, Giant Mine Oversight Board, and Bill Slater, who is a technical consultant to the WG. Before the HHRA was initiated, consultation had been undertaken to develop the basis of the assessment. During the course of the project, five meetings occurred where discussions were held with the WG on the approach and assumptions that would be used in the HHERA and findings of the dietary survey.

The study team has also had meetings with the YKDFN Giant Mine Advisory Committee (GMAC) to discuss aspects of the risk assessment and to solicit their input on the HHRA. In addition they have been consulted on the voluntary sampling program.

Members from the YKDFN and NSMA provided samples to be analyzed as part of the voluntary sampling program and also participated in the update to the dietary survey and provided valuable information that was used in the risk assessment.

Remedial Activities at Giant Mine

Arsenic trioxide waste is present in underground chambers at the site that will be frozen to create a barrier that will prevent groundwater contacting this waste. As part of the GMRP, numerous buildings have been demolished and the mill and headframe have been taken down. The GMRP has a number of remedial actions to be carried out at the Giant Mine; those that were accounted for in the risk assessment included:

- *Capping of the four tailings ponds, filling in the eight open pits, remediating contaminated soils in the disturbed areas of the site to GNWT industrial land use soil criteria, and active management of areas with arsenic concentrations greater than 3,000 mg/kg in the form of excavation and/or fencing*
- *On-going treatment of water, including the relocation of the outfall of the treatment plant from Baker Creek to a location in Yellowknife Bay near the outlet of Baker Creek.*
- *Dredging of the sediments in the section of Baker Creek downstream of the Giant Site (i.e., Reaches 0 to 6).*
- *Remediation of the soils in the former Townsite and Marina to GNWT residential criteria and dredging and covering of the sediments in the near shore.*

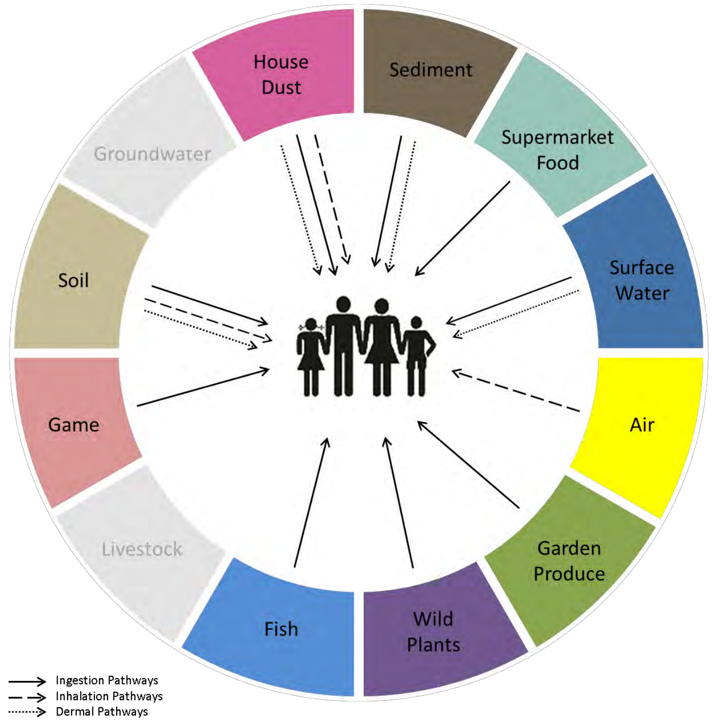
Human Health Risk Assessment

The HHRA followed guidance outlined by Health Canada (Health Canada 2010a). A screening process was used to determine which contaminants should be carried through the risk assessment process as constituents of potential concern (COPC); this process involved comparing measured concentrations in soil and water to Canadian Soil Quality and Water Quality guidelines. Arsenic and antimony were identified as contaminants of potential concern through this process. There are no guidelines for manganese in soil, and the measured concentrations were above background; thus, manganese was also identified for inclusion in the risk assessment. For evaluating current conditions, the HHRA considers risks from exposure to arsenic, antimony, and manganese to members of the public in Ndilo, Dettah, Latham Island, Ingraham Trail, and the City of Yellowknife. For the future scenario, the remedial actions associated with the GMRP were taken into account. The future scenario involved recreational use of the Giant Mine outside of the actively managed areas and a potential for residential use at the former Townsite. It is acknowledged that members of the YKDFN have indicated that they do not want to use the Giant Mine in the future; however other stakeholders have indicated a desire to do so and thus this was evaluated. The future land use has not been determined for the Townsite; however, a residential scenario represents the most restrictive land use in this area.

The HHRA took a multi-media approach, which considered exposure to COPC from all relevant environmental components such as air, dust, soil, sediment, water, and country foods. Background exposures from store-bought food and from other sources not influenced by the Giant Mine were also taken into account in the assessment.

Figure ES.1 shows the ways that people are exposed (exposure pathways) that were considered in the HHRA.

Figure ES.1 Exposure pathways for the human health risk assessment



The HHRA assumed that people drink water from a municipal supply. However, as some people have indicated that they drink water directly from Yellowknife Bay, this pathway was also evaluated. People are exposed to soil and house dust from where they live and this was considered at the various locations. Children have been reported to wade in shallow water along the shores of the Ndilo and Dettah communities as well as near the marina and other areas on Latham Island; therefore, wading was included in the assessment. Swimming and playing on the beach at Long Lake was also evaluated.

People were assumed to eat fish from Yellowknife Bay. Samples of country foods were voluntarily provided by the YKDFN, NSMA, and other community members for analysis; this information was used to evaluate the country foods that people eat. The samples provided included moose, duck, grouse/ptarmigan, rabbit, medicinal plants (including rat root), berries, and mushrooms.

People do have vegetable gardens in the area; however, it was determined that most of the soil in these gardens (which are generally raised) comes from outside of the area or is compost from the City. A previous study into vegetable gardens determined that there *was little, if any, risk for residents eating garden vegetables. Based on all these findings, garden produce was not considered further.*

Dietary Survey

Human receptor characteristics were obtained from Health Canada or other authoritative sources and include body weight, food and drinking water ingestion rates, amount of time spent outside, etc. and were defined in order to complete estimates of potential exposure. A dietary survey was completed in early 2017 to update the types and amount of food the YKDFN and the NSMA would typically eat and to gather information on areas from which food (plants, fish, game) were generally obtained.

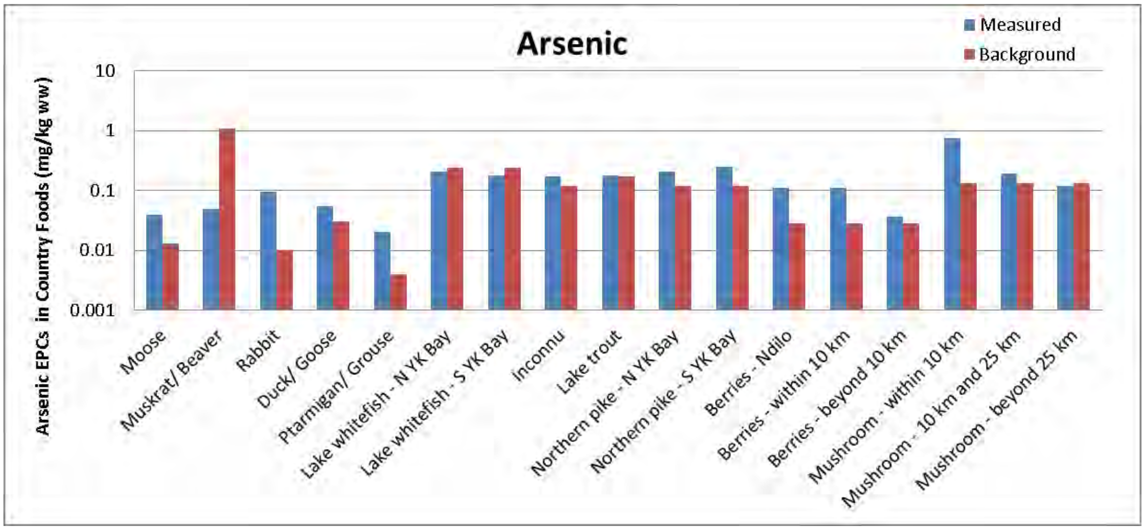
Voluntary Sampling

The voluntary sampling program for country foods was very successful, with a total of over 130 samples collected for use in the HHRA. Figure ES.2 shows a comparison between measured arsenic concentrations in various sampled media and background. The figure shows that:

- *concentrations of arsenic in moose samples are higher than background;*
- *concentrations of arsenic in beaver/muskrat meat caught more than 50 km from the Giant Mine are higher than in animals caught closer to the site;*
- *concentrations of arsenic in rabbit meat from samples close to the Giant Mine are higher than background;*
- *concentrations of arsenic in duck/goose meat are slightly higher than background;*
- *concentrations of arsenic in grouse/ptarmigan meat are higher than background;*
- *concentrations of arsenic in lake whitefish, inconnu and lake trout in North Yellowknife Bay and South Yellowknife Bay are similar to background;*
- *concentrations of arsenic in northern pike in North Yellowknife Bay are similar to concentrations in South Yellowknife Bay but are higher than background;*
- *arsenic concentrations in berries close to the Giant Mine are higher than concentrations in samples further away; and*
- *the concentration of arsenic in the mushroom samples within 10 km and 25 km of the Giant Mine are higher than background concentrations and samples from greater than 25 km from the Giant Mine are similar to background concentrations.*

Additional samples were obtained in the summer 2017 and were considered in the risk assessment.

Figure ES.2 Summary of Arsenic Concentrations in Country Foods



HHRA Results

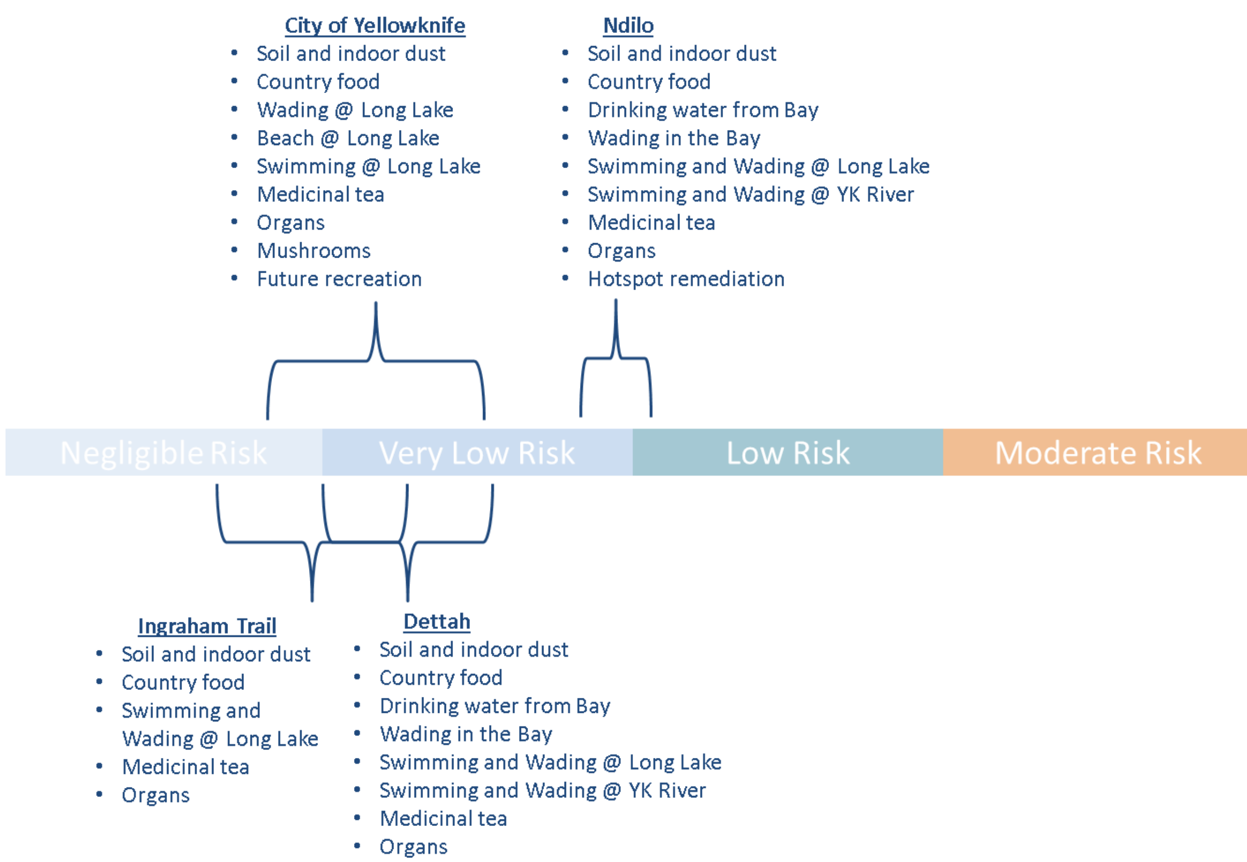
The risk assessment considered the exposure to arsenic, antimony and manganese in detail and the risks from antimony and manganese were found to be negligible. Arsenic was identified as the key concern and it is considered to cause cancer, therefore, the risk assessment evaluated the incremental, above-background, risk from exposure to arsenic in air, soil, indoor dust, water, sediment, and country foods in the area.

Figure ES.3 shows that the risks calculated are mainly within the negligible to very low risk range. For Ndilo, the calculated risks are higher than at other locations and are within the very low risk to the low risk range, which are equivalent to having x-rays or a CT scan. The incremental arsenic risks are dominated by local soil and indoor dust exposure at the various locations. Soil concentrations at Ndilo are as a result of historical contamination when the Giant Mine was in operation. Not every possible scenario was evaluated, however, it is noted that any exposure in the Yellowknife area will be within the negligible to low end of the low risk range. Risks are not expected to be any higher than the low end of the low risk range. Mushrooms within 10 km of Giant Mine have higher arsenic concentrations than background and eating these mushrooms results in risks in the very low range. Eating mushrooms from distances greater than 25 km from the Giant Mine results in negligible risks from arsenic exposure. The arsenic-

accumulating species Tricholomatacae collected within 10 km of the Giant Mine has very high arsenic concentrations and people should only eat small amounts. Eating Tricholomatacae obtained from distances greater than 25 km from the Giant Mine results in negligible risks from arsenic exposure.

For the future, after the Giant Mine has been remediated, the risks will not be changed substantially as the remedial actions at the Giant Mine will not alter the arsenic exposure across the Yellowknife area.

Figure ES.2 Summary of estimated incremental lifetime cancer risks from arsenic – current and future



In terms of the population of the City of Yellowknife, which by the 2016 census was 19,569 people, about 1 additional person in the population may develop cancer in their lifetime associated with arsenic exposure; exposure largely associated with historical contamination across the Yellowknife area. It should be noted that the nature of risk assessment is to generally over-estimate actual exposures. Therefore, actual cancer incidence associated with the Giant Mine may be less than indicated here.

Currently the members of the public do not have access to the Giant Mine site. In the future, after the Giant Mine has been remediated, there may be the potential for people to access the portions of the site which are not being actively managed for recreational use (such as hiking). This activity will not result in any increase in risk than is already occurring in the Yellowknife area. It is noted that the YKDFN do not want to use the site in the future. In addition, at the former Townsite location, remedial activities will reduce arsenic concentrations; even under a residential scenario (most restrictive land use), the risks are considered to be very low.

HHRA Recommendations

It is recommended that post-remediation sampling be completed to confirm that concentrations in the future Townsite are similar to the post-remediation values assumed in the risk assessment.

In addition, as the risks in Ndilo are higher than in other areas as a result of historical activities when the Giant Mine was in operation, consideration should be given to developing a remedial action plan for soil clean-up in the community. The sensitivity analysis demonstrated that soil clean-up will reduce risks in Ndilo. Additional soil sampling should be carried out at Latham Island to determine whether the concentrations in the soil are similar to those assumed in the risk assessment.

Finally, it is recommended that the results of the HHRA be used to inform the Health Effects Monitoring Program.

Ecological Risk Assessment

The ERA followed guidance outlined by Environment and Climate Change Canada (ECCC) from their Federal Contaminated Sites Action Plan (FCSAP) Ecological Risk Assessment guidance document (FCSAP 2012a). The Giant Mine was divided into four areas, or quadrants, in order to focus the evaluation on the areas where remediation was occurring. A number of different ecological receptors were selected, ranging from small animals that have limited home ranges, such as mice, to larger animals that could roam across the Giant Mine, such as a lynx or a fox. Plants that grow on the site were also considered. Very large animals such as moose, caribou, and bear were not considered as the Giant Mine only occupies a very small portion of the area in which they would roam. Additionally, previous assessments have indicated that these larger animals are not at *risk. Fish, aquatic plants, insects, and small animals (muskrat, mink) that are present in the water and sediment of Baker Creek were also considered.*

For the future scenario, a simple fate and transport model was used to estimate post-remediation water and sediment concentrations in Baker Creek and Yellowknife Bay. For the Giant Mine, the remedial actions associated with clean-up of the soils in the disturbed areas to GNWT industrial criteria were used to determine the future soil conditions at the Giant Mine.

ERA Results

There are elevated levels of arsenic in the sediment of Yellowknife Bay, especially in Back Bay. Although there is remediation planned for sediment along the shore near the Giant Mine, this will have limited impact on the future sediment concentrations in Yellowknife Bay as a whole. However, the conditions in Yellowknife Bay are expected to improve over time, albeit slowly.

The ERA found that there are effects on aquatic biota, such as invertebrates and fish, in Baker Creek due to current conditions. There will be some improvement with remediation, but there is a large upstream load that will cause concentrations of arsenic and antimony in Baker Creek to remain elevated post-remediation. Dredging of sediments will destroy habitat, but it will recover over time. However, the relocation of the treatment plant effluent to the mouth of Baker Creek will change the flow, and Baker Creek may be dry during the summer months. The remediation activities will affect how the creek will be used by fish and wildlife in the future.

At the Giant Mine, the assessment determined that there is the potential for the smaller animals at the site to be affected by arsenic and antimony. This is a particular concern for those animals that consume insects. As animals can adapt to living in areas of high concentrations, the effects may not be as significant as predicted. The remediation will improve the situation, but adverse effects are still predicted in the future.

ERA Recommendations

Based on the results of the ERA, the following activities are recommended:

- *completion of biological studies to examine the health of vegetation at the site;*
- *collection of insect data to verify assessment assumptions; and*

- *examination of any differences in abundance and diversity of vegetation and mammals, particularly small mammals (shrews at terrestrial sites and muskrat in aquatic environments) by conducting biological surveys at the site compared to an appropriate reference area.*

Significant changes are expected to habitats at the site due to remedial activities. It is recommended to update the wildlife surveys, including the presence of species at risk, after the remediation activities are completed. It is also recommended to complete post-remediation monitoring to determine whether any adverse effects are occurring in ecological species.

LIST OF ACRONYMS

ATSDR	Agency for Toxic Substances and Disease Registry
BCMOE	British Columbia Ministry of Environment
BG	Background
CCCSN	Canadian Climate Change Scenarios Network
CCME	Canadian Council of Ministers of the Environment
CCPP	Centralized Composting Pilot Project
CINE	Centre for Indigenous Peoples' Nutrition and Environment
COPC	Constituent of Potential Concern
COPD	Chronic Obstructive Pulmonary Disease
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CSM	Conceptual Site Model
DAR	Developer's Assessment Report
DQRA	Detailed Quantitative Risk Assessment
ECCC	Environment and Climate Change Canada
Eco-SSL	Ecological Soil Screening Level
ECOTOX	U.S. EPA ECOTOXicology database
EEM	Environmental Effects Monitoring
EPA	Environmental Protection Agency
EPC	Exposure Point Concentration
ERA	Ecological Risk Assessment
ETP	Effluent Treatment Plant
FAO	Food and Agriculture Organization of the United Nations
FCSAP	Federal Contaminated Sites Action Plan
GMAC	Giant Mine Advisory Committee
GMRP	Giant Mine Remediation Project
GNWT	Government of Northwest Territories
GSC	Geological Survey of Canada
HHERA	Human Health and Ecological Risk Assessment
HHRA	Human Health Risk Assessment
HQ	Hazard Quotient
IARC	International Agency for Research on Cancer
INAC	Indian and Northern Affairs Canada
IRIS	Integrated Risk Information System
ISQG	Interim Sediment Quality Guidelines

LOAEL	Lowest Observable Adverse Effects Level
LOE	Lines of Evidence
LOEC	Lowest Observable Effect Concentration
MDL	Method Detection Limit
MVEIRB	Mackenzie Valley Environmental Impact Review Board
MOECC	Ontario Ministry of the Environment and Climate Change
NOAEL	No Observable Adverse Effects Level
NOEC	No Observable Effect Concentration
NSMA	North Slave Metis Alliance
NWT	Northwest Territories
PSPC	Public Services and Procurement Canada
PQRA	Preliminary Quantitative Risk Assessment
RAF	Relative absorption factor
RfC	Reference Concentration
RfD	Reference Dose
RSL	Regional Screening Levels
SARA	Species at Risk Act
SEQG	Saskatchewan Environmental Quality Guidelines
SSD	Species Sensitivity Distribution
SDE	Surface Design Engagement
SF	Slope Factor
SI	Screening Index
TF	Transfer Factor
TRV	Toxicity Reference Value
TSS	Total Suspended Solids
UCLM	Upper Confidence Level of the Mean (95% 1-sided)
WG	Giant Mine Working Group
WHO	World Health Organization
WOE	Weight of Evidence
YGB	Yellowknife Greenstone Belt
YKDFN	Yellowknives Dene First Nation

GLOSSARY

Term	Description
Assessment Endpoint	A quantitative or quantifiable expression of the environmental value considered to be at risk in a risk assessment.
Background	The typical level of a chemical present in naturally occurring or uncontaminated areas. For example, background concentrations of arsenic and other metals are higher in Yellowknife due to the geology of the area (Greenstone Belt).
Benchmark	A standard by which something can be measured or judged.
Bioavailability	The fraction of an administered dose that reaches the central blood compartment from the gastrointestinal tract.
Bioaccessibility	The quantity or fraction, which is released from the food matrix in the GI tract and becomes available for absorption.
Biota	The animal and plant life of a region.
Cancer	A disease that happens when cells in the body begin to grow and multiply out of control.
Cancer Risk Level	A term uses to describe the likelihood that someone will develop cancer over a 70-year lifetime.
Carcinogen	An agent that has the potential to cause cancer.
Cautious	As used in the term cautious estimates, this is considered a pessimistic or an over-estimate of the level, effect or hazard, as the case may be.
Constituent	A substance that has the potential to alter the natural composition of air, water or soil.
Dermal	Refers to skin.
Dose	The amount of a substance to which a person or ecological receptor is exposed over some time period. Dose is a measurement of exposure.
Ecological Risk Assessment	The application of a formal framework, analytical process, or model to estimate the effects of human actions(s) on a natural resource and to interpret the significance of those effects in light of the uncertainties identified in each component of the assessment process. Such analysis includes initial hazard identification, exposure and dose-response assessments, and risk characterization.
Environmental Impact	A change in environmental conditions resulting from an action or development, which may be negative, positive, or neutral.
Exposure	The amount of a pollutant (chemical) present in a given environment that represents a potential health threat to living organisms.
Exposure Pathway	The path from sources of COPC via air, soil, water, or food to man and other species or settings.

Hazard	Potential for exposure to radiation, a chemical, or other COPC to cause illness or injury to humans or ecological receptors. Hazard identification of a given substances is an informed judgment based on verifiable toxicity data from animal models or human studies.
Hazard Assessment	Evaluating the effects of a COPC or determining a margin of safety for an organism by comparing the concentration, which causes toxic effects with an estimate of exposure to the organism.
Hazard Quotient	The ratio of estimated site-specific exposure to a single chemical from a site over a specified period to the estimated daily exposure level at which no adverse health effects are likely to occur.
Hepatotoxicity	A general term for liver damage.
Human Health Risk Assessment	The evaluation of whether there is likely to be an adverse health effect caused by the potential exposure to COPC in the environment.
Incremental	Increase in a concentration of some chemical or radionuclide over background conditions as a result of human activities.
Ingestion	Refers to swallowing.
Inhalation	Refers to breathing in air into the lungs.
Lifetime receptor	A theoretical person representing all life stages from infant to an adult, which is used to assess the risk of developing cancer. The lifetime receptor is used because often it takes a long time between exposure to a chemical and the development of cancer.
Line of evidence (LOE)	Any pairing of exposure and effects measures that provides evidence for the evaluation of a specific assessment endpoint.
Lowest Observed Adverse Effect Level (LOAEL)	The lowest concentration or amount of a substance, found by experiment or observation, which cause an adverse effect in a target organism distinguishable from normal (control) organisms of the same species and strain.
Measurement Endpoint	A quantitative summary of the results of a toxicity test, a biological monitoring study, or other activity intended to reveal the effects of a substance.
Modelling	Using mathematical principles, information is arranged in a computer program to model conditions in the environment and to predict the outcome of certain operations.
Morbidity	Occurrence of a disease or condition that alters health and quality of life.
Mortality	Death.
Negligible	Refers to a level of risk that is not expected to result in an adverse health effect.

No Observed Adverse Effects Level (NOAEL)	The highest tested dose of a substance that has been reported to have no harmful effects on people or animals.
Nephrotoxicity	A general term for kidney damage.
Neurotoxicity	A general term for nervous system effects.
Oral	Refers to the mouth.
Permissible Dose	Considered to be a safe level of exposure as it is the amount of a chemical that someone can be exposed to over a lifetime that does not result in an adverse health effect.
Pathway	The physical course a chemical or pollutant takes from its source to the exposed organism.
Pathways Analysis	A method of estimating the transfer of chemicals (i.e., radionuclides released in water) and subsequent accumulation up the food chain to fish, vegetation, mammals and humans and the resulting dose to humans.
Receptor	A human or ecological entity exposed to a COPC released to the environment.
Risk	A measure of the probability that damage to life, health, property, and/or the environment will occur as a result of a given hazard.
Risk Assessment	Qualitative and quantitative evaluation of the risk posed to human health and/or the environment by the actual or potential presence and/or use of specific COPC.
Safe	Implies low or negligible risk.
Toxicological Reference Value	A value/criterion used to judge whether a predicted exposure may potentially have an adverse effect on human and/or ecological species.
Transfer Factor (TF)	An empirical value that provides a measure of the partitioning behaviour of a chemical or substance between two environmental media that is used to estimate concentrations in one environmental medium based on concentrations in another.
Trophic Level	The position an organism occupies on the food chain.
Uncertainty	A quantitative expression of error.
Uptake	The process/act by which a chemical enters a biological organism (e.g., inhalation, ingestion by humans, etc.).
Weight-of-Evidence	An approach for interpreting and integrating scientific information from different lines of investigation.

1.0 INTRODUCTION

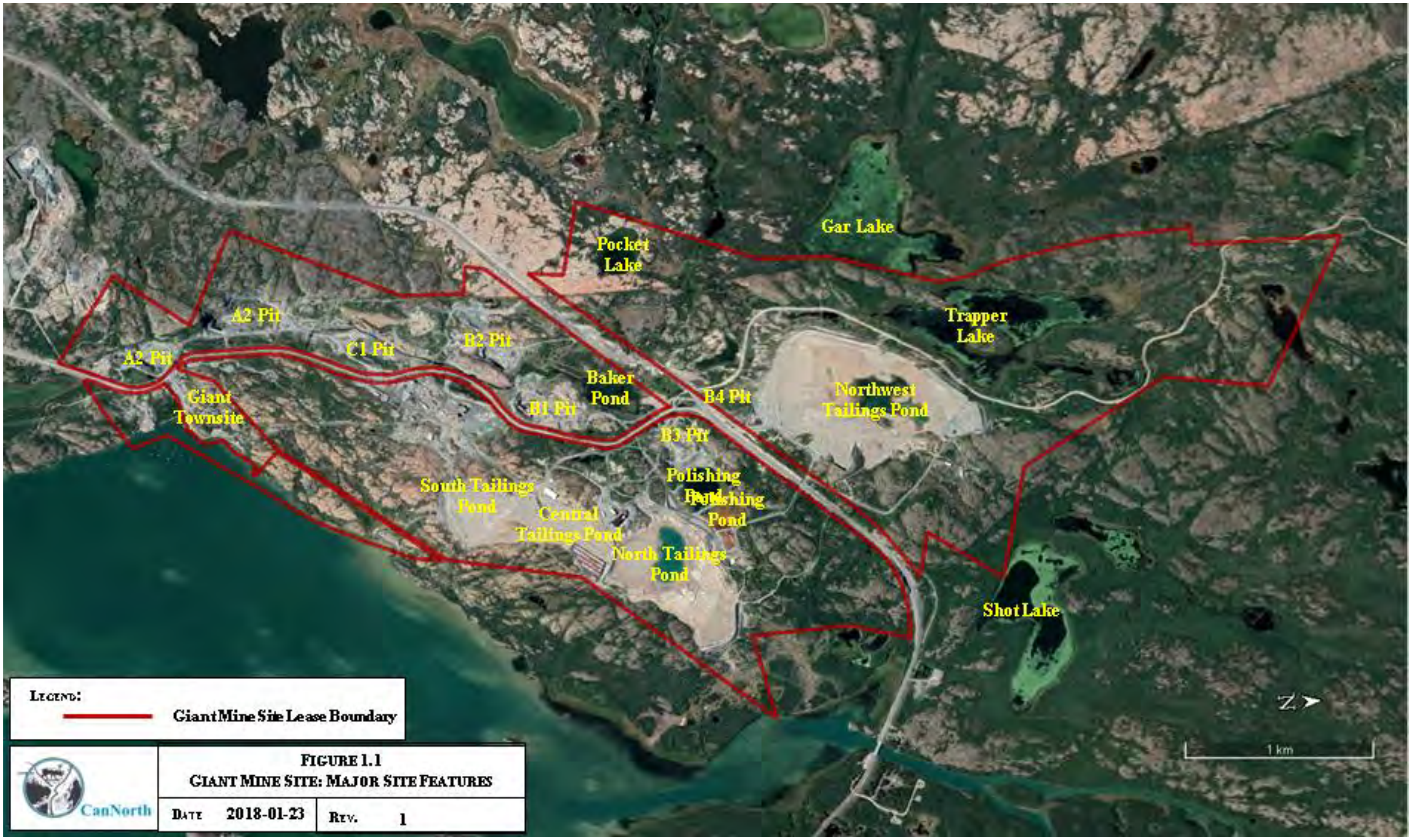
The Giant Mine is located in Yellowknife, Northwest Territories (NWT), about five kilometers (5 km) north of the city center. The mine produced gold from 1948 until 1999, and gold ore for offsite processing from 2000 until 2004. The gold in the ore is associated with an arsenic-bearing mineral known as arsenopyrite, and the roasting process used to liberate the gold led to production of arsenic-rich gases. During the initial years of operation, arsenic was released to the atmosphere without control. With the installation of emission control technologies, arsenic emissions were gradually reduced over time; however, it is estimated that more than 20,000 tonnes of arsenic were released to the atmosphere during the operation of the mine.

From 1951 to 1999, the arsenic-rich gases were captured in the form of arsenic trioxide dust. Approximately 237,000 tonnes of the dust was pumped into sealed underground storage areas. The dust is approximately 60% arsenic, which is hazardous to both people and the environment. In addition, the form of arsenic present in the dust is soluble; therefore, it could dissolve in any water that comes into contact with the dust and could then be transported to Baker Creek or Great Slave Lake, via surface runoff and groundwater migration.

The roasting process also produced tailings that contain arsenic, mostly in the form of arsenopyrite, but also in more soluble forms. A total of approximately 13.5 million tonnes of tailings are stored in four impoundments, which together cover 95 hectares (ha) of the site. Other areas have been contaminated with arsenic by emissions from the processing facilities, tailings spills, and mine rock usage for construction. There are 8 open pits and 35 openings to the underground mine. Baker Creek flows through the site in a channel that has been heavily altered to accommodate mining, ore processing, and highway construction. Both the water and sediments of Baker Creek are contaminated with arsenic. Figure 1.1 provides an overview of the Giant Mine, showing the major features on the site.

There have been several risk assessments completed at the Giant Mine since 2002 as part of the remedial planning exercises for the Giant Mine Remediation Project (GMRP). These assessments only focused on arsenic as the contaminant of potential concern. The assessments considered different areas, including the Giant Mine itself, as well as the surrounding areas, such as the City of Yellowknife, Latham Island, Ndilo, and Dettah.

Figure 1.1 Major site features at Giant Mine



In 2010, the Developer's Assessment Report (DAR) for the GMRP (INAC/GNWT 2010) was submitted to the Mackenzie Valley Environmental Impact Review Board (MVEIRB) for approval to proceed with the remedial activities at the site. As part of the findings (Measure 10), MVEIRB indicated that a comprehensive quantitative Human Health Risk Assessment (HHRA) was needed before regulatory approvals would be provided. This risk assessment report has been prepared in response to Measure 10. In addition to the conduct of a HHRA, an Ecological Risk Assessment (ERA) was carried out to evaluate potential risks to wildlife and plants at the Giant Mine.

1.1 Definition of a Human Health and Ecological Risk Assessment

A Human Health and Ecological Risk Assessment (HHERA) is a scientific process used to describe and estimate the likelihood of potential risks (i.e., adverse health effects) to humans and ecological receptors resulting from exposure to environmental contaminants (i.e., chemicals). Figure 1.2 demonstrates that HHERA is a stepwise process to answer:

- What are we concerned about? – what are the chemicals of concern.
- Who is being exposed? – people, wildlife, or vegetation.
- How are they being exposed? – what are the exposure pathways.

All three of these components must be present in order for there to be a risk. It should be noted that the HHRA does not provide a direct assessment of cause and effect concerning current health problems or effects. Any link between exposure and actual health effects comes from epidemiological studies, which include surveys of health problems in a community, and compares them to health problems in other cities and populations where the same type of exposure does not occur. The separate Health Effects Monitoring Program which is on-going is a component of these epidemiological studies.

1.2 Objective

The objective of the HHERA is to quantify the likely change in exposure and risk for people in the area as well as wildlife at the Giant Mine site from exposure to arsenic and other Constituents of Potential Concern (COPC) associated with the GMRP. Therefore, a current, as well as a predictive, assessment of future conditions after remediation and 100 years into the future are evaluated. Background exposures from store-bought food and from other sources not influenced by the Giant Mine are also taken into account in the assessment.

Figure 1.2 Schematic of risk assessment process

The risk assessment is being conducted to respond to concerns from the public and nearby communities as to the residual risks to humans and wildlife after the remedial actions at the Giant Mine have been implemented, as well as to address Measure 10 from MVREIB. Appendix Q indicates how the HHERA fulfils the requirements specified in Appendix F of the Report of Environmental Assessment.

1.3 Site Description

The Giant Mine is within the boundaries of the City of Yellowknife and is situated on Commissioner's Land administered by the Government of Northwest Territories' (GNWT) Department of Municipal and Community Affairs (MACA). The lease boundary is provided on Figure 1.1. The total area of the site is approximately 949 ha.

The Giant Mine falls within the Akaitcho Dene asserted territory and is in the vicinity of the Yellowknives Dene First Nation (YKDFN) communities of Ndilo and Dettah. The

Giant Mine is also within the traditional land use area of the Tłįchǫ, known as Monfwi Gogha De Niitlee, and it falls within the provisions of the Tłįchǫ Agreement (2003).

Ownership of Giant Mine changed hands several times prior to its last owner, Royal Oak Mines Inc., which went into receivership in 1999. At that time, control of the property was transferred to the federal department of Indian and Northern Affairs Canada (INAC) now known as Indigenous and Northern Affairs Canada, which assumed responsibility for the site. In addition, as the administrator of the lands upon which Giant Mine is located, the GNWT has also assumed responsibility for various aspects of the site. By virtue of their shared responsibilities, INAC and the GNWT are Co-Proponents of the GMRP.

1.3.1 Physical Setting and Surrounding Land Use

The Giant Mine is located approximately 5 km north of the Yellowknife city centre. Yellowknife has a population of about 19,600, according to the 2016 census. Currently, some of the buildings at the Giant Mine have been removed. The roaster complex has been consolidated into containers and placed on the central tailings until the final decision has been made for disposal. The results from the Surface Design Engagement (SDE) process will be considered by the GNWT and/or the City in finalizing the plans for the future use and development of the site.

The region surrounding Giant Mine is characterized by cool summers, very cold winters, and low humidity. Over the last 10 years (2007 to 2016), the average annual temperature has been -3.7°C; the coldest month is January and July is the warmest month (ECCC 2017). Over this same period the annual precipitation has been 285 mm, with 176 mm as rain and 152 cm of snowfall (ECCC 2017). The average wind speed recorded at the Yellowknife airport between 1971 and 2000 was 14 km/hr (INAC/GNWT 2010). Yellowknife’s monthly average wind speed varies little during the year with a range of 13 km/hr to 16 km/hr. North-westerly winds are most frequent during the winter and early spring, south-easterly winds dominate the summer months and easterly winds are frequent in the fall.

In general, the terrestrial habitat on and in the near vicinity of Giant Mine has been degraded by industrial impacts and proximity to urban development. However, some wildlife habitat is available and non-resident species use the site as a travel corridor to more favourable environments.

The aquatic habitat of the Giant Mine is dominated by Baker Creek, which runs through the Giant Mine lease area before entering Great Slave Lake on the western shoreline of Yellowknife Bay. The environmental quality of the creek has been adversely affected by historic mining operations, as evidenced by elevated arsenic concentrations in water and sediments, as well as by lower benthos diversity. Nonetheless, the creek currently serves as habitat for a variety of fish species, muskrats, and aquatic birds.

1.3.1.1 Terrestrial Environment

Yellowknife and the area around the Giant Mine lie on the border of two Level IV ecoregions termed the Great Slave Upland and Great Slave Lowland (INAC/GNWT 2010). These ecoregions have largely discontinuous permafrost, and the forests consist primarily of jack pine and black spruce stands on nutrient-poor soils. The physical topography consists predominantly of exposed bedrock with discontinuous till and thin soils over bedrock. Mixed stands of jack pine, aspen, white spruce, and birch are also common forest types within the region. Wetlands are a dominant feature.

Golder Associates Ltd. (Golder) completed a land cover classification for the Giant Mine (Golder 2016a). The total area covered by this classification survey was 15.3 km^2. Different land cover types were determined using supervised classification from available 2009 orthophotography and Light Detection and Ranging (LiDAR) data. The classification includes uplands with forest, exposed bedrock, disturbance, and regenerating disturbed areas. Lowland portions of the study area are dominated by peat bogs, lakes, streams, and accompanying shoreline vegetation. A summary is provided in Table 1.1.

Table 1.1 Different land classifications of the site

Land Classification	Coverage
Disturbance	19%
Disturbance with secondary growth	3%
Exposed bedrock	27%
Forest	32%
Open water	7%
Peat bog	6%
Shoreline vegetation	4%
Tailings pond	2%

1.3.1.2 On-Site Aquatic Environment

Baker Creek originates approximately 25 km upstream and northwest of the Giant Mine at Duckfish Lake, from where it flows in a south and southeasterly direction through a series of wetland ponds and bedrock outcrops and into a marsh that is separated by a breakwater from Yellowknife Bay of Great Slave Lake. Baker Creek is the dominant surface water feature at the Giant Mine where the creek channel has been heavily altered to accommodate mining, ore processing, and highway construction. The ridges on either side of Baker Creek are about 10 m to 20 m high with very little soil on the ridge slopes (Golder 2013a). Trapper Creek is a tributary of Baker Creek and is on the Giant Mine surface lease.

Baker Creek consists of lotic habitat, and depths vary along the creek from a few centimeters to 2.3 m deep. There is a large marsh area at the mouth of Baker Creek where it flows into Yellowknife Bay and sediments in this location consist primarily of fine material (silt and sand), which is typical of a depositional area (Golder 2013a).

Peak discharge for Baker Creek occurs during spring freshet, which is typically in May. Flow volumes in the creek are variable and the annual hydrographs for Baker Creek show that flow drops to zero almost every year during the winter, and that similar low flow conditions may occur under open-water conditions in the summer (Golder 2013a). Currently, treated water from the Giant Mine effluent treatment plant is discharged into Baker Creek during the summer months.

For monitoring and remediation design purposes, the lower portion of Baker Creek (approximately 3.5 km in length) that flows through the Giant Mine lease area has been divided into seven (7) reaches (Reach 0 to 6) based on major changes in creek hydraulics or channel conditions (INAC/GNWT 2010). The Baker Creek reach boundaries are shown in Figure 1.3, and the characteristics are summarized in Table 1.2. Reach 0 is located at the mouth of Baker Creek, where it flows into Yellowknife Bay (Back Bay) behind a constructed breakwater. Reach 6 includes Baker Creek Pond where mine effluent was discharged during mine operations and where treated effluent is currently discharged seasonally (typically during open water between July and September). Figure 1.3 shows the path of Baker Creek across the site along with the identification of the different reaches of the creek. It should be noted that the upper portion of Baker Creek on the Giant Mine Lease includes Reach, 7, 8 and 9; however, they are not affected by the remediation plan as they are up stream of any inputs from Mine activities. Reach 10 and 11 are not on the Giant Mine lease area.

As an emergency flood prevention measure, Reach 4 was realigned into a new channel in the summer of 2006 to mitigate against the possibility of surface water flow reaching the underground mine workings in the area around Mill Pond (INAC/GNWT 2010). The realignment also included the creation of habitat features that allowed for upstream fish passage.

Studies conducted since the realignment of Reach 4 have shown that the modifications markedly improved the spawning success of arctic grayling within the Creek in the spring. The large gravel present in the creek bed is well suited for concealing eggs until they hatch and Baker Creek is the only identified grayling spawning habitat in the Yellowknife area. Baker Creek has been deemed a "closed fishery" by the Department of Fisheries and Oceans in the hopes of restoring the arctic grayling population.

Figure 1.3 Baker Creek and its various reaches

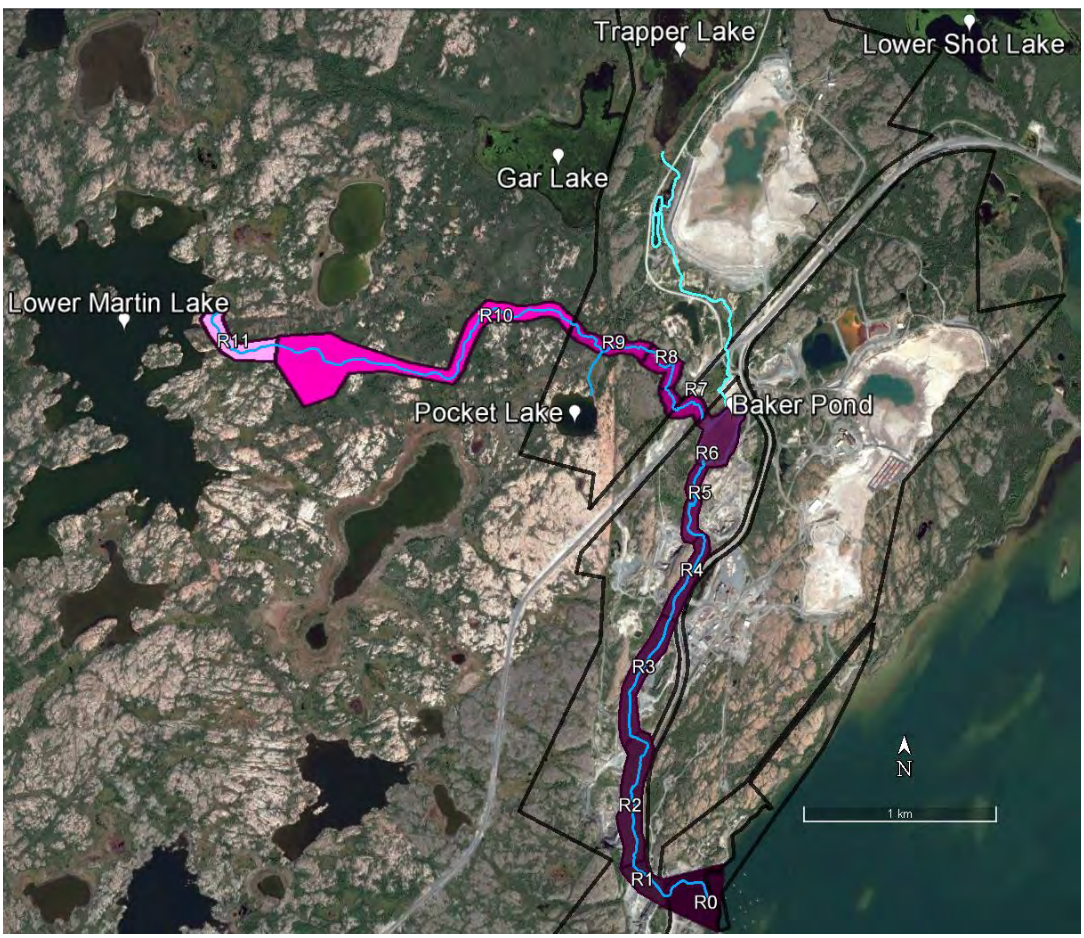


Table 1.2 Description of Baker Creek reaches

Reach	Description	Current Condition
0	Extends from just upstream of Yellowknife Bay, where the creek flows into Great Slave Lake.	Mostly marshy. A large area of vegetation.
1	Extends from marsh in Great Slave Lake to the channel north of A2 Pit; riparian vegetation is sparse and poor; channel structure and diversity is low.	395 m total length bedrock and degraded channel.
2	Straight reach that is physically undisturbed from historical mine activities; large part of riparian area is intact.	600 m total length natural channel.
3	Extends from north end of C1 Pit downstream to upper end of Reach 2; short alluvial section below culvert; aquatic habitat and riparian habitat poor.	750 m total length bedrock channel.
4	Extends upstream to the weir next to B1 Pit and downstream to below the former location of the old bridge north of C1 Pit; original channel physically disturbed and modified by contaminated sediments; in 2006, relocated to a new channel.	350 m total length. Man-made channel designed to provide conveyance and fish habitat features.
5	Extends from the former location of the old weir to the outlet of Baker Creek; moderately disturbed by mining activity in stream bed and riparian areas.	425 m total length degraded backwater-type channel.
6	Baker Pond, and includes Trapper Creek; lake bottom and shoreline contains contaminated mine tailings; discharge point for effluent.	Approximately 3.8 hectares of Pond.

Note: Adapted from INAC/GNWT (2010) and Golder (2013a).

In the spring of 2011, there was an unexpected water diversion event in Baker Creek. Over the winter, ice built up above Reach 6 for a distance of about 1 km, and in the spring (May 2011), the water from Martin Lake flowed around the ice creating a new channel and entered Reach 6 in a location where historically deposited mine tailings were present. This resulted in short-term high turbidity throughout the downstream portion of Baker Creek and the sediment plume was located as far as the mouth of Baker Creek. Remedial activities were undertaken to correct the flow path and monitoring was undertaken to determine the extent of the impacts in Baker Creek. The conclusion was that sediments and tailings from above Baker Creek Pond had likely deposited throughout Baker Creek and may remain in place or be flushed further downstream in the spring or during discharge of treated effluent (Golder 2013a).

Pocket Lake is a small headwater lake (4.8 ha) located in the southern portion of the Baker Creek watershed at the edge of the Giant Mine lease boundary. It has a small (less than 5 ha) catchment area that includes exposed bedrock (approximately 78% of the basin) and a soil-filled valley to the south (22%) (Thienpont et al. 2016). It does not have tailings or mine wastes present but has been impacted by historical roaster emissions and site runoff. Recent water quality has been measured at 2,070 µg/L arsenic, while surface sediment concentrations are 806 µg/g; these are elevated concentrations and extensive impacts on aquatic biota in the lake were observed (Thienpont et al. 2016).

Trapper Lake is a relatively large, shallow lake (less than 1 m in depth) located on the Giant Mine Site. Stantec (2015a) found arsenic levels measured up to 235 µg/L in the water and 1,060 mg/kg in the sediment. A fish habitat assessment of Trapper Lake found that it lacks adequate habitat features to directly or indirectly support life processes for freshwater fish. Trapper Creek is the largest tributary to Baker Creek in the vicinity of the mine and enters Baker Creek just upstream of the water treatment plant discharge point. Trapper Creek is monitored at two locations: the outlet of Trapper Lake and immediately upstream of Baker Creek. Monitoring at two locations is undertaken to measure the effects, if any, of seepage from the Northwest Pond on Trapper Creek water quality. Trapper Creek upstream of Trapper Lake was observed to consist of dry channels that did not show evidence of sustained flow.

A study on Trapper Creek (Stantec 2014a) found that the water was hard with neutral pH and higher conductance and total phosphorus than Upper Baker Creek. Several metals exceeded their water quality guidelines for the protection of aquatic life, including arsenic, aluminum, and iron. Arsenic and chromium also exceeded the sediment quality guidelines.

1.3.1.3 Tailings Ponds and Water Treatment Facility

At the Giant Mine, water is pumped from the mine throughout the year and is stored in the Northwest Tailings Pond before treatment and discharge to the environment. The Northwest Pond holds about 900,000 m^3 at the maximum operating level, with a maximum pond depth of 5 m. Arsenic concentrations in the pond water are typically around 15 mg/L and can vary from 10 mg/L to 20 mg/L. Besides the pumped discharges from the mine and the dam seepage collection systems, the tailings ponds also receive inputs of water from direct precipitation and runoff.

The Settling and Polishing Ponds form part of the current water treatment system and have been in place since 1981. The effluent treatment plant (ETP) operates within requirements of Metal Mining Effluent Regulations (MMER) and expired Water License (there is no current water licence for discharge). The ETP is typically well below the Maximum Authorized Monthly Mean Concentration allowed under MMER of 0.5 mg/L for arsenic. The water quality in the Polishing Pond normally has total arsenic concentrations below 0.4 mg/L.

The Northwest Tailings Pond along with the Settling and Polishing ponds are part of the active engineered water treatment system. The other tailings ponds (North, South and Central) are all dry areas with the exception of a small area in the North Tailings Pond.

1.3.1.4 Off-Site Aquatic Environment (Yellowknife Bay and Great Slave Lake)

Giant Mine is situated along the northeast shoreline of Yellowknife Bay on Great Slave Lake. Yellowknife Bay receives drainage from the Yellowknife River at its north end and extends approximately 18 km before opening into Great Slave Lake.

Yellowknife Bay receives drainage from Baker Creek, which traverses the Giant Mine. Tailings from the floatation process were discharged to the shore of Yellowknife Bay for the first three years of operation (now called the Historic Foreshore Tailings) before being held in a tailings pond on the site. The characteristics of the nearshore sediments of Yellowknife Bay are dominated by sand, while the deeper sediments have a large proportion of silt/clay and possibly fines (INAC/GNWT 2010).

Great Slave Lake is one of the largest lakes in North America (28,568 km^2) and is considered to be the deepest lake, with an average depth of 73 m and a maximum depth of 614 m (Mackenzie River Basin Board [MRBB 2003]). In general, Great Slave Lake is considered to be low in nutrients, alkalinity, hardness, and conductivity (INAC/GNWT 2010).

1.3.2 Site Geology and Hydrogeology

The Giant Mine is located within the Archean-aged Yellowknife Greenstone Belt (YGB), located in the southeast corner of the Slave Province and extends north from Great Slave Lake for almost 50 km. The YGB is bounded to the west by younger rocks composed of granite and to the east by silica-bearing sedimentary rocks. Therefore, portions of the Giant Mine contain exposed bedrock of the YGB formation.

The altered volcanic rocks of YGB are bounded to the west by granodioritic plutonic rocks that are in fault contact and bounded to the east by unconformably overlying sedimentary rocks along the shoreline of Yellowknife Bay. The main ore bodies of Giant Mine are hosted within a major brittle-ductile shear system that crosscuts the Kam Group of volcanic rocks that are dominated by vertical to sub-vertically dipping tholeiitic basalt flows. Mineralization is related to fluid movement through the shear system (INAC/GNWT 2010).

Geomorphological conditions at the site are controlled to some degree by a fault system, with the West Bay Fault, creating a steep cliff line along the west side of the property. However, minor structural features, such as fracture sets or shear zones, also have some role and create weaker zones that are followed by local creeks and erosional features.

The major sources of water entering the underground mine include runoff flowing into the open pits, seepage from Baker Creek, seepage from the tailings containment areas, infiltration through soils and bedrock in the mine area, and inflow from groundwater into the underground mine workings. Of the tailings containment areas, the Northwest Pond is the principal source of seepage into the mine. Several of these sources are controlled by climatic conditions, and the total inflow to the mine varies greatly during the year.

The main hydrological feature at the Giant Mine is Baker Creek which originates upstream of the site and generally drains in a southward direction and discharges into Yellowknife Bay. Baker Creek drains in a generally southward direction and discharges into Yellowknife Bay. The catchment area has very low relief and is characterized by a large number of lakes and wetland areas.

The very dry climate of the region also plays an important role in the flows in Baker Creek. The mean annual precipitation of the catchment is approximately 296 mm. The peak flow in 2016 was approximately 0.011 m^3/s. The total catchment area for Baker Creek is estimated at 121 km^2 (WSC 2017). The runoff generated by Baker Creek is only a small fraction of the total precipitation falling on the catchment. The flow in Baker Creek becomes minimal for some period in winter almost every year. Baker Creek can also dry up during the summer, as often as one of every four years.

Groundwater flow follows the generally flat topography eastwards towards Great Slave Lake. The bedrock surrounding the mine has relatively low hydraulic conductivity. Therefore it is expected that groundwater flow likely occurs through joints and fractures rather than the bedrock matrix. The mine is currently dewatered and this activity has lowered the local water table and changed groundwater flows near the mine. Deep groundwater between the lake and the mine is flowing towards the mine workings.

The groundwater flow to the mine is assumed to remain relatively stable throughout the year. The other significant component of base flow to the mine is seepage from the Northwest tailings pond. Infiltration through the ground surface in the local area around the mine enters the mine workings and is therefore captured by the mine dewatering. Once frozen, there will be no vertical or horizontal flow through the chambers. Water from the underground mine areas outside the frozen zones will continue to be pumped and treated as required.

1.4 Summary of Previous Investigations

Since 2010 when the last risk assessment was completed, additional data have been collected for air quality, disturbed and undisturbed soils on the site, fish in Yellowknife Bay, and the aquatic environment in Baker Creek in order to provide more data to support the risk assessment. In 2016, Golder completed a document entitled *Long Term Environmental Monitoring Program Information Consolidation.* This report provided a compilation of existing environmental monitoring reports related to the Giant Mine and its surroundings. The report separated the documents into five chronological periods as follows:

- Phase I: 1948 to mid-1999 when active mining/milling was occurring;
- Phase II: mid-1999 to mid-2004 when Miramar Giant Mine Ltd was on the site;
- Phase III: mid-2004 to early 2008 when the Remedial Plan was prepared;
- Phase IV: early 2008 to 2012 when the Environmental Assessment and Preliminary Design was conducted; and
- Phase V: 2013 to present when the Surface Design Engagement occurred.

There were over 200 reports identified in this compilation, and, as the focus of this risk assessment report was on current and future conditions, documents in the Phase IV and V periods (2011 to 2016) were considered to be representative of the current conditions for risk assessment purposes. Data from other phases were used to infill when it was determined that more current data were not available for some locations. It should be noted that the focus of many of the Phase I to III reports was on arsenic, whereas the Phase IV and V reports provide data for a wider suite of constituents. Appendix A provides a summary of the reports that were considered within the risk assessment.

The available information in these reports was examined to identify where potential data gaps exist for the risk assessment. The locations and pathways identified in the draft HHRA Problem Formulation (Stantec 2015b) were used to guide the data review. Similarly, for the ERA, the locations and pathways of receptors were considered in looking at the available data. Based on the data gaps review, it became apparent that a few gaps needed to be filled for the HHRA and ERA.

For the HHRA, there was a program in place to collect soils and sediments from the Giant Mine Townsite and Shoreline Lands in the summer of 2016. However, as this area is owned by the GNWT, it was determined that the evaluation of the bioaccessibility of the arsenic in the soils and sediments was important to determine the current realistic exposures and help direct remedial activities in this area. Therefore, samples were collected for bioaccessibility. It should be noted that the future land use in this area has not yet been determined.

The Long Lake area has been identified as an area where people camp and swim. The data gaps analysis determined that there was a lack of soil, surface water, and sediment data from this area. Thus, a program to collect soils, sediment and surface water data, as well as some bioaccessibility of the soils and sediments, was initiated in the summer of 2016.

There were limited data available for wild plants (berries, medicinal tea) and wildlife (large game, small mammals, and birds). Thus, a program was initiated with the YKDFN, Metis, and other members of the Yellowknife community to voluntarily collect samples. This program was very successful and a total of 91 samples were collected for use in the HHRA. These samples represented food that people in the community hunted, trapped, gathered, and ate.

Additionally, the amount of different types of food that people ate is available from studies conducted on Dene/Metis communities in 1996 (Receveur et al. 1996) and 1998 (Receveur et al. 1998) by the Centre for Indigenous Peoples' Nutrition and Environment (CINE). These studies were comprehensive studies at the time. However, there have been dietary changes over the last 20 years, mainly pertaining to the ban on caribou hunting. Thus, other wild game has been used as a substitute for the lack of caribou meat in the YKDFN diet. The YKDFN identified the need for an updated dietary survey. A dietary survey was conducted in the YKDFN and Metis communities to update the data collected by the CINE studies.

From an ERA perspective, there was not a lot of information on the chemistry of the terrestrial or aquatic vegetation present at the Giant Mine. Thus, a sampling program was initiated in the summer of 2016 to collect vegetation species that represent browse and forage from both disturbed and undisturbed areas of the Giant Mine to determine whether differences exist in the uptake of COPC from both these areas. Co-located soils samples were collected so that transfer factors could be developed to describe future conditions in the risk assessment. In addition, bioaccessibility of arsenic in the plant species was also undertaken.

Another area of uncertainty in risk assessments surrounds the use of transfer factors to determine concentrations of COPC in prey. In order to reduce this uncertainty and data gap, a program to collect small mammals (mice/voles) from both the disturbed and undisturbed areas of the Giant Mine was initiated. The data from these mice/voles would serve as a surrogate for other small mammals at the site and would also reflect the uptake of arsenic from plants.

1.5 Remediation Actions

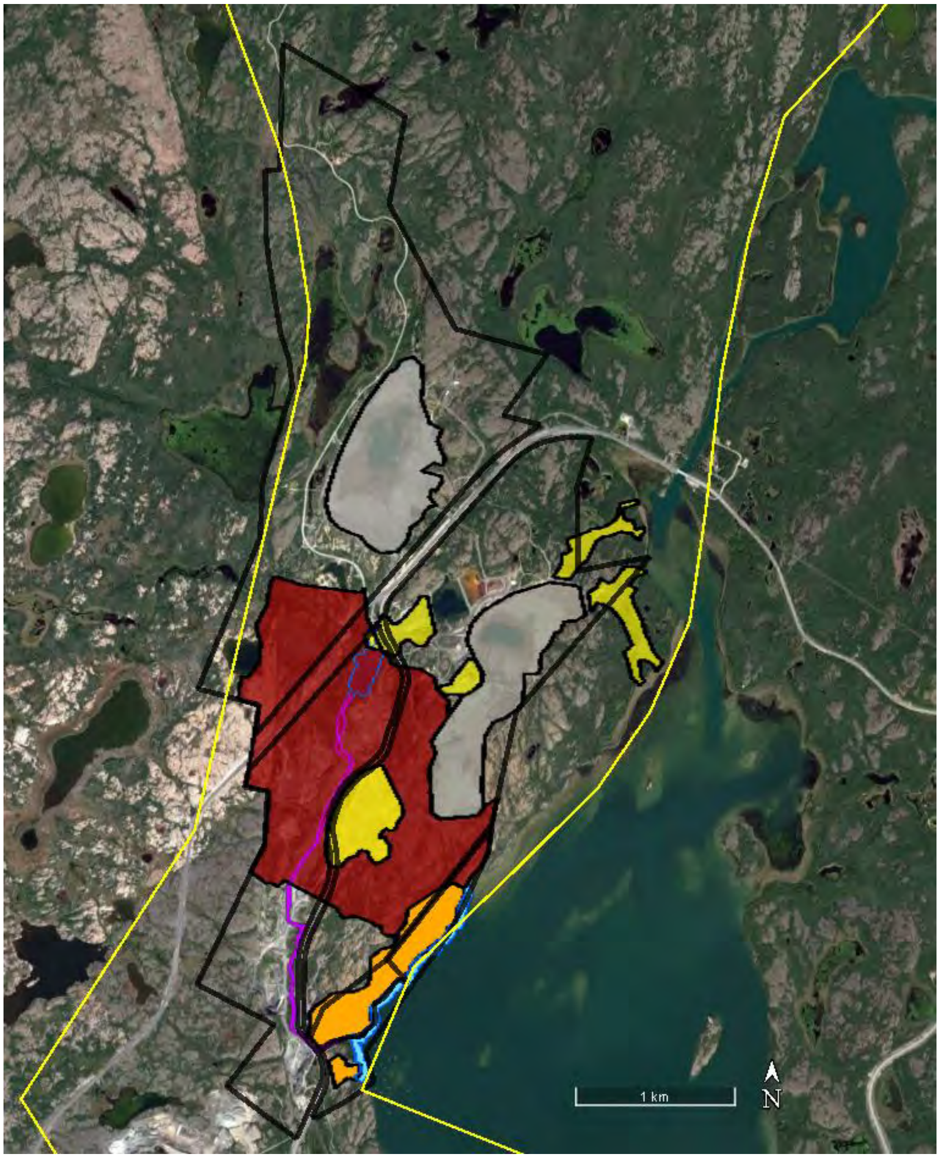
As part of the GMRP, several remedial activities have occurred on site. Numerous buildings have been demolished and the mill and headframe have been taken down.

A high level overview of the Giant Mine Remediation is as follows:

- Arsenic trioxide in the sealed underground chambers and vaults will be frozen *in situ*, in artificial permafrost.
- Surface conditions at the Giant Mine will be remediated. This includes the capping of the four tailings ponds, filling in the 8 open pits, remediating contaminated soils in the disturbed areas of the site to GNWT industrial land use soil criteria, and active management or areas with arsenic concentrations greater than 3000 mg/kg in the form of excavation and/or fencing.
- Water will continue to be treated on site and the outfall of the treatment plant will be relocated from Baker Creek to a location in the vicinity of Reach 0 in Yellowknife Bay. Water will be treated to the Canadian Drinking Water Guideline of 10 µg/L and will meet Site Specific Water Quality Objectives to prevent significant adverse impacts to Great Slave Lake as required by Measure 12 (MVEIRB).
- The sediments in Reach 1 to 6 in Baker Creek will be dredged and Baker Pond will be capped and investigated further as potential wetland.
- The soils in the former Townsite will be remediated to GNWT residential criteria and the sediments in the near shore will be dredged and covered.
- Ongoing monitoring will continue indefinitely at the Giant Mine after remediation is completed.

Figure 1.4 shows a schematic of the areas that will undergo remediation and active management at the Giant Mine.

Figure 1.4 Schematic of remediation activities for soils at Giant Mine



Note: Thick black line around coloured areas represent the lease boundary. Yellow lines denote the Yellowknife Greenstone Belt.
Yellow areas inside the lease boundary represent the disturbed areas to be remediated to GNWT industrial criteria for arsenic.
Red area represents area where the arsenic in soils exceeds 3000mg/kg.
Grey areas represent tailings ponds.
Orange areas at bottom of map represent the former Townsite and marina; these areas will be remediated to GNWT residential criteria.
Yellow areas outside boundary of East Baker creek are the tailings spills.
Baker creek (shown in purple), Baker Pond (outlined in blue), and the near-shore Townsite sediments (shown in light blue) are areas identified for sediment remediation.

1.6 Stakeholder Involvement

There has been stakeholder involvement throughout the current risk assessment process through involvement with the Giant Mine Working Group (WG). The WG is made up of members from INAC, GNWT, Public Services and Procurement Canada (PSPC), Environment and Climate Change Canada (ECCC), Department of Fisheries and Oceans (DFO), Alternatives North, YKDFN, North Slave Metis Alliance (NSMA), City of Yellowknife, Health Canada, Giant Mine Oversight Body, and Bill Slater, who is a consultant to the WG.

The preliminary problem formulation for the HHRA (Stantec 2015b) was prepared in consultation with the working group. The CanNorth study team has had five meetings with the WG to present data gaps, problem formulation, methodologies for the assessment as well as the dietary survey, the results of the dietary survey, and other aspects of the risk assessment.

The study team has also had meetings with the YKDFN Giant Mine Advisory Committee (GMAC) to discuss aspects of the risk assessment and to solicit their input in terms of different foods eaten in the community, locations where foods are hunted, trapped, and gathered, and what their concerns were. GMAC was also consulted on the voluntary sampling program, and YKDFN staff and Canada North Environmental Services (CanNorth) went into the YKDFN community to collect samples from various households. Members of the NSMA also provided samples to be analyzed as part of the voluntary sampling program.

Members from the YKDFN and NSMA also participated in the update to the dietary survey and provided valuable information that was used in the risk assessment.

1.7 Scope of Risk Assessment

For the current scenario, the HHRA considers risks from exposure to arsenic and other COPC to members of the public in Ndilo, Dettah, Latham Island, Ingraham Trail, and the City of Yellowknife. For the future scenario, the risk assessment considers the risk due to contamination at the Giant Mine that a person would likely experience after remedial activities at the site have been implemented.

A multi-media approach was taken that considered exposure from all relevant environmental components such as air, dust, soil, sediment, water, and country foods.

This risk assessment was conducted as a detailed Deterministic Quantitative Risk Assessment (DQRA), since it relied on a substantial database of available monitoring data, as well as anecdotal information regarding where hunting, trapping, and gathering occur in the vicinity of the Giant Mine and the potential future use of the Giant Mine after remedial activities have occurred. The risk assessment followed guidance outlined by Health Canada (Health Canada 2010a).

For the future scenario, the remedial actions associated with clean up of the disturbed areas on the Giant Mine to GNWT industrial criteria were used to determine what the future conditions at the Giant Mine would be. In addition, the remedial plans include active management in terms or excavation and/or fencing of an area where the arsenic concentrations are above 3000 mg/kg. Consultation with stakeholders on the future use of the Giant Mine indicated that members of the YKDFN did not want to use the site in the future; however other stakeholders indicated that they would like to use the Giant Mine in the future. Therefore, the future scenario considered recreational use of the Giant Mine outside of these areas and a potential for residential use at the former Townsite. It is acknowledged that the future land use has not been determined for the Townsite; however, a residential scenario represents the most restrictive land use in this area.

The ERA was a deterministic Preliminary Quantitative Risk Assessment (PQRA) for exposure at the Giant Mine and was an update of the previous assessment carried out at the Giant Mine in 2006 (SENES 2006). The risk assessment followed guidance outlined by Environment Canada from their Federal Contaminated Sites Action Plan (FCSAP) Ecological Risk Assessment guidance document (FCSAP 2012a). The Giant Mine was divided into four areas or quadrants in order to focus the evaluation in the areas where remediation was occurring. A number of different ecological receptors were selected ranging from small animals that have small home ranges, such as mice, to larger animals that could roam across the Giant Mine, such as a lynx or a fox. Very large animals such as moose, caribou, and bear were not considered as the Giant Mine only occupies a very small area where they roam, and previous assessments indicated that they were not at risk. Fish, aquatic plants, and small animals (muskrat, mink) that are present in the water and sediment of Baker Creek were also considered.

For the future scenario, a simple fate and transport model was used to determine what the water and sediment concentrations in Baker Creek and Yellowknife Bay would be post remediation. This model used information from other studies, such as arsenic loadings from Golder (2016b), as input to the model. For the Giant Mine, the remedial actions associated with clean up of the disturbed areas to GNWT industrial criteria were used to determine the future conditions at the Giant Mine. There is the potential for changes in the environment in the future due to climate change. In general, the long-term meteorological data set for Yellowknife shows trends toward milder temperatures and more precipitation (INAC/GNWT 2010). There are a number of consequences of climate change, including greater precipitation and evaporation, the potential for more site runoff, water quality changes due to increased algae growth, changes to the vegetation in the area due to warmer temperatures and a longer growing season, presence of different wildlife, and changes to people's diet due to the presence of different species. Determining the effects of climate change on ecological and human health is complicated and is addressed in a qualitative manner in the risk assessment.

2.0 SITE CHARACTERIZATION

2.1 Review of Existing Site Information

The GMRP has conducted numerous studies at the Giant Mine in order to understand the conditions of the soils, sediments, and surface water on and around the site. These studies were all considered in the risk assessment, as well as in the development of the remedial action plans for the Giant Mine.

The GMRP does not conduct much sampling outside of the Giant Mine and, therefore, off-site sampling programs have been conducted as studies for the Cumulative Impact Monitoring Program (CIMP), the YKDFN, or the GNWT. The historic soil samples focused on arsenic, whereas the current programs analyzed a wider suite of COPC.

A summary of available data for each of the media considered in the human health and ecological risk assessment is presented below along with maps of the sampling locations. A full data set of all the samples that were considered in the HHERA is provided in Appendix O.

2.1.1 Air

Ambient air quality is monitored year-round under the Giant Mine Ambient Air Monitoring Program at the following community locations:

- Marina Station – Great Slave Sailing Club, near the Giant Mine public dock (Station YCC).
- Ndilo Station – Central Ndilo (Station NDL).
- Yellowknife Station – Downtown Yellowknife City (Station NAPS).

Additional atmospheric monitoring programs record conditions at six fenceline stations, as well as at a number of stations on the Giant Mine property.

Air quality data collected over the 2015 calendar year at the community, fenceline, and Giant Mine stations were used to represent current conditions. Sample locations are presented in Figure 2.1 and a summary of the data is presented in Appendix B. These data were used to evaluate the current conditions at the Giant Mine. In the future after the site has been cleaned up there will be no releases from the Giant Mine and air quality is assumed to be similar to baseline.

Figure 2.1 Air sampling locations around Giant Mine

2.1.2 Soil

2.1.2.1 Giant Mine

There have been a number of soil studies carried out at the Giant Mine that have focussed on the disturbed and undisturbed soils, and there were over 300 recent soil samples collected at the Giant Mine. The following studies were included in the characterization of Giant Mine soils:

- *AECOM (2016) Contaminated soils Task 2C: North Tailings Pond - historical tailings release preliminary results for 2016 field investigation. Memorandum to D. Hango, Public Services and Procurement Canada, October 7th, 2016.*

- *Contango (2016) Wetland field investigation report for Giant Mine. Document # 003_1116_04A. Prepared for Golder Associates, November.*

- *ESG (2001a) Arsenic levels in the Yellowknife Area: Distinguishing between natural and anthropogenic inputs.*

- *Golder (2014) Revised letter report on shallow soil sampling programs Giant Mine, Yellowknife, NWT. Project No. 13-1377-0147, February.*

- *Golder (2015a) Arsenic Characterization Disturbed Areas Giant Mine, Yellowknife, NWT.*

- *Golder (2016c) Arsenic Characterization Disturbed Areas Giant Mine, Yellowknife, NWT.*

- *Golder (2016d) Draft report on arsenic characterization undisturbed areas Giant Mine, Yellowknife, NWT.*

- *Golder (2016e) Task 2A - potential remedial strategy Town Site and shoreline lands, Giant Mine project, NWT. Report number 13-1377-0044, submitted to Public Works and Government Services Canada. Draft report, September.*

- *Golder (2016f) Preliminary findings memo - Task 2B: Development of institutional/engineering control strategy proposed core industrial area, Giant Mine project, NWT. Technical memorandum to D. Hango, Public Services and Procurement Canada, October 7th, 2016.*

- *Golder (2016g) Giant Mine data report - human health and ecological risk assessment data gaps.*

- *Golder (2016h) Roaster Complex soil and vegetation sampling Giant Mine, Yellowknife, NWT.*

- *Kerr (2001) Till geochemistry, Yellowknife area, NWT. Natural Resources Canada, Ottawa. http://geochem.nrcan.gc.ca/cdogs/content/svy/svy210026_e.htm.*

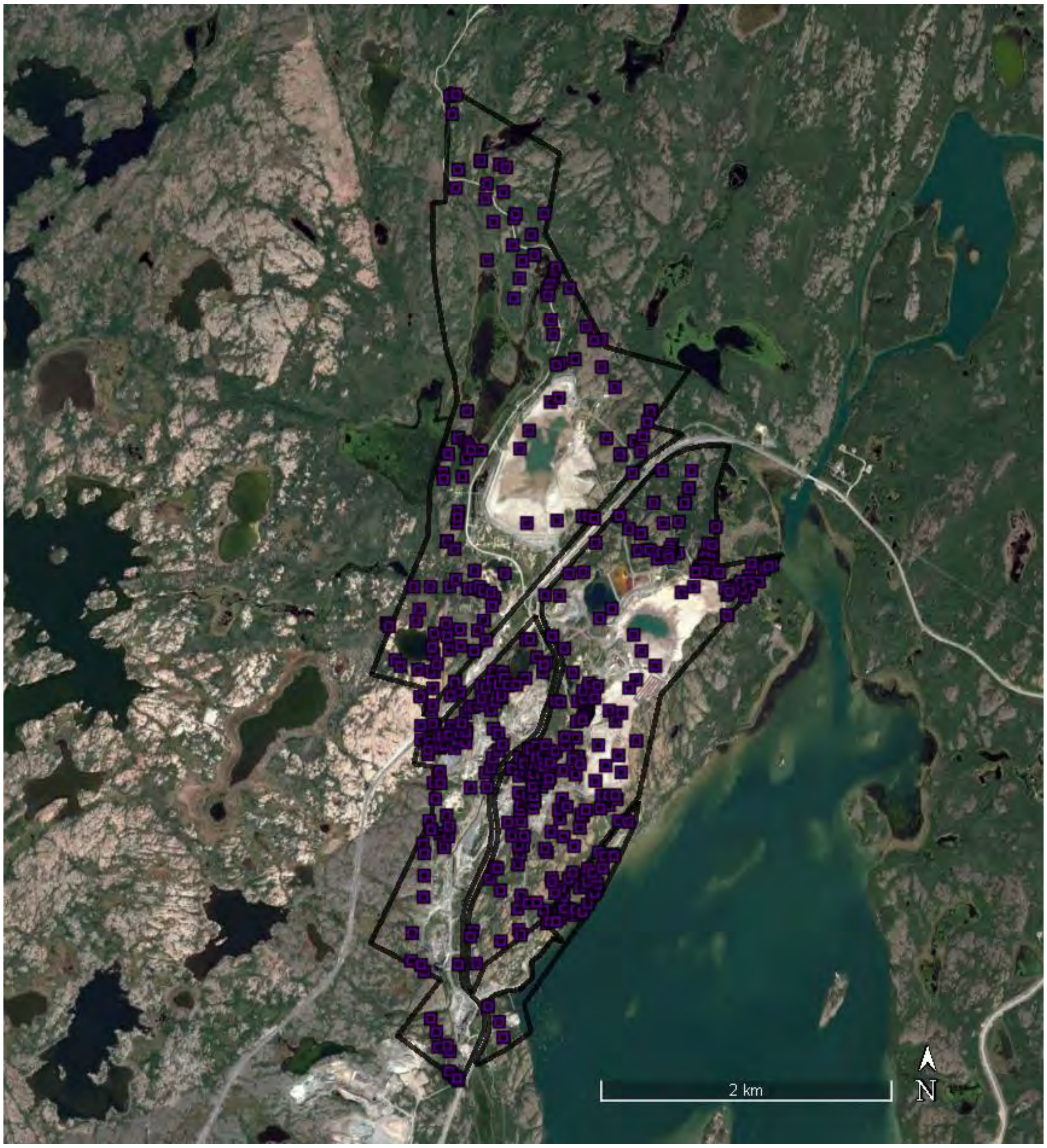
- *Stantec (2014b) Analysis of contaminants in tissues of fish captured in the Yellowknife Bay area, NWT. Task authorization 700263428, prepared for Public Works and Government Services Canada. Final report, March.*

- *Bromstad, M.J. (2011) The characterization, persistence and bioaccessibility of roaster-derived arsenic in surface soils at Giant Mine, Yellowknife, NWT. Master of Science thesis, Department of Geological Sciences and Geological Engineering, Queen's University.*

- *Wrye, L.A. (2008) Distinguishing between natural and anthropogenic sources of arsenic in soils from the Giant Mine, NWT, and the North Brookfield Mine, Nova Scotia. Queen's University.*

Sample locations are presented in Figure 2.2. As seen in the figure, there are an adequate number of samples to characterize soils at the Giant Mine. Appendix B provides a summary of the soil quality data for the Giant Mine.

Figure 2.2 Soil sampling locations on the Giant Mine



2.1.2.2 Former Townsite

There have been four studies with soil data at the former Townsite (Wrye 2008; Golder 2015a, 2016e, 2016g). More than 90 soil samples were available and were considered to be adequate to characterize exposure at the former Townsite. Sample locations are presented in Figure 2.3 and Appendix B provides a summary of the soil quality data for the former Townsite.

Figure 2.3 Soil sampling locations on the former Giant Townsite

2.1.2.3 City of Yellowknife

There have been six studies containing soil data for the City of Yellowknife (ESG 2000; Kerr 2001; NCP 1999; Ollson 2000; Obst 2014; SENES 2006). The majority of samples were collected at surficial soil depths and were sufficient for characterizing City of Yellowknife soils. Sample locations are presented in Figure 2.4. The sample locations only represent locations where co-ordinates are available. It should be noted that there are over 250 arsenic soil samples associated with the City of Yellowknife that are considered to be adequate to characterize exposure in the City of Yellowknife. Appendix B provides a summary of the soil quality data for the City of Yellowknife.

Figure 2.4 Soil sampling locations for the City of Yellowknife

2.1.2.4 Ndilo

For the community of Ndilo, one study contains soil sampling data in the upper 10 cm of soil:

- *RMCC (2013) Arsenic in Ndilo, NT: 2012 sampling (contains data from 2012).*

There are 25 surficial samples from this study. The RMCC (2013) dataset also included eight samples from the Environmental Sciences Group (ESG 2000) and 14 from SENES (2006).

Another study conducted in 2014 by Stantec collected 90 samples across Ndilo at depths ranging from 10 cm to 30 cm to represent tilled material:

- *Deton' Cho Stantec (2014) Characterization of arsenic concentrations in soils in Ndilo, NWT.*

It should be noted that only surficial soil samples from the first 10 cm were used to characterize soils in Ndilo. Soils deeper than 10 cm were not included in the dataset and thus the 2014 Stantec data were not used in the risk assessment as the arsenic concentrations were lower than the surface samples. Sample locations are presented in Figure 2.5, and it can be seen that exposure in Ndilo can be adequately characterized by these samples. Appendix B provides a summary of the soil quality data for Ndilo.

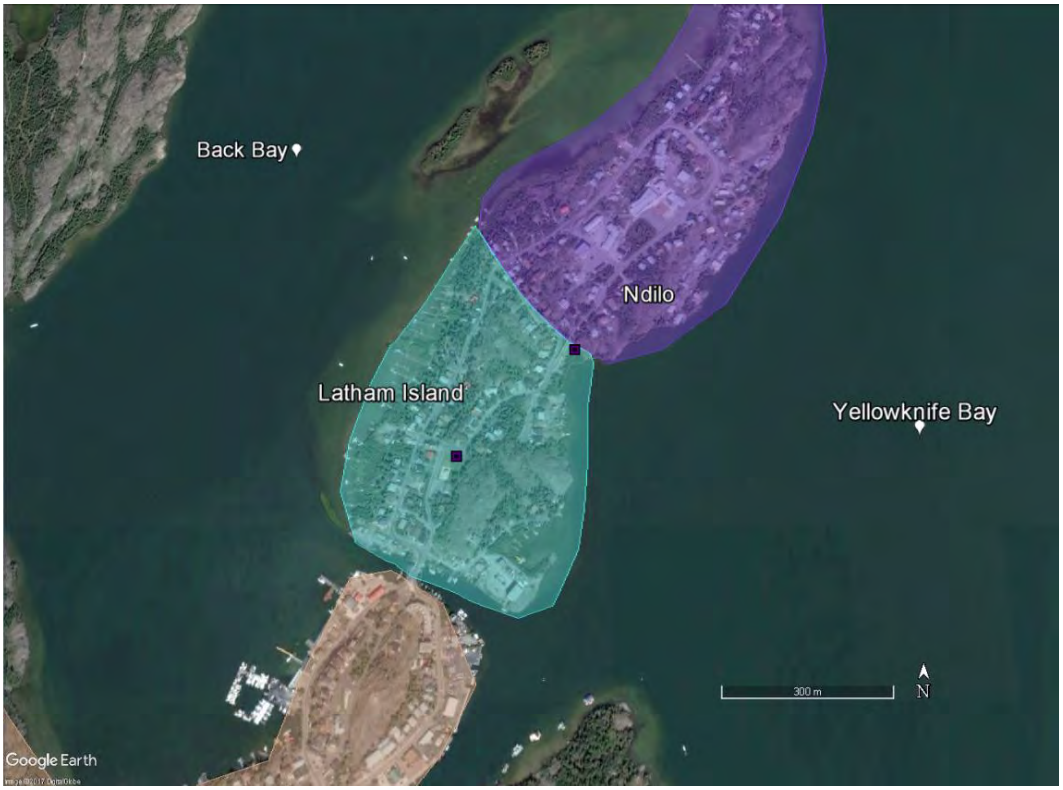
Figure 2.5 Soil sampling locations for Ndilo

2.1.2.5 Latham Island

There have been very little data collected in the community on Latham Island with only two samples available for most constituents. There were four studies that contained information on soil sampling (NCP 1999; ESG 2000; Ollson 2000; SENES 2006). Figure 2.6 shows the two sample locations on Latham Island. Due to the proximity to

Ndilo, the two datasets were combined to describe the exposure from soils at Latham Island. Appendix B provides a summary of the soil quality data for Latham Island.

Figure 2.6 Soil sampling locations for Latham Island



2.1.2.6 Ingraham Trail

There have been very little data collected in the community on Ingraham Trail. There were three studies that contained information on soil sampling (ESG 2001a; Kerr 2000; Obst 2014). All samples were obtained at surficial depths. There are 12 samples for arsenic and this is the main COPC identified. Sample locations are presented in Figure 2.7. These are the only data available and, therefore, were used in the assessment. Appendix B provides a summary of the soil quality data for Ingraham Trail. Additional samples were collected along the Ingraham Trail as part of the work done by Queens University (Jamieson et al. 2017) and the data are presented in Appendix P. This study resulted in an additional 16 samples being available for arsenic.

Figure 2.7 Soil sampling locations for Ingraham Trail

2.1.2.7 Fred Henne Campground

The Fred Henne Campground was identified as an area of concern for people from Yellowknife who go there to camp. This was recognized as a data gap, and 11 samples were collected in 2016 by Golder (2016g) to support the data gaps analysis. An additional sample from Ollson (2000) was also used to characterize soils. The samples were collected from areas where people were known to use tents. Sample locations are presented on Figure 2.8. Five samples were also sent for arsenic bioaccessibility testing. Appendix B provides a summary of the soil quality data for the Fred Henne Campground.

Figure 2.8 Soil sampling locations for Fred Henne Campground

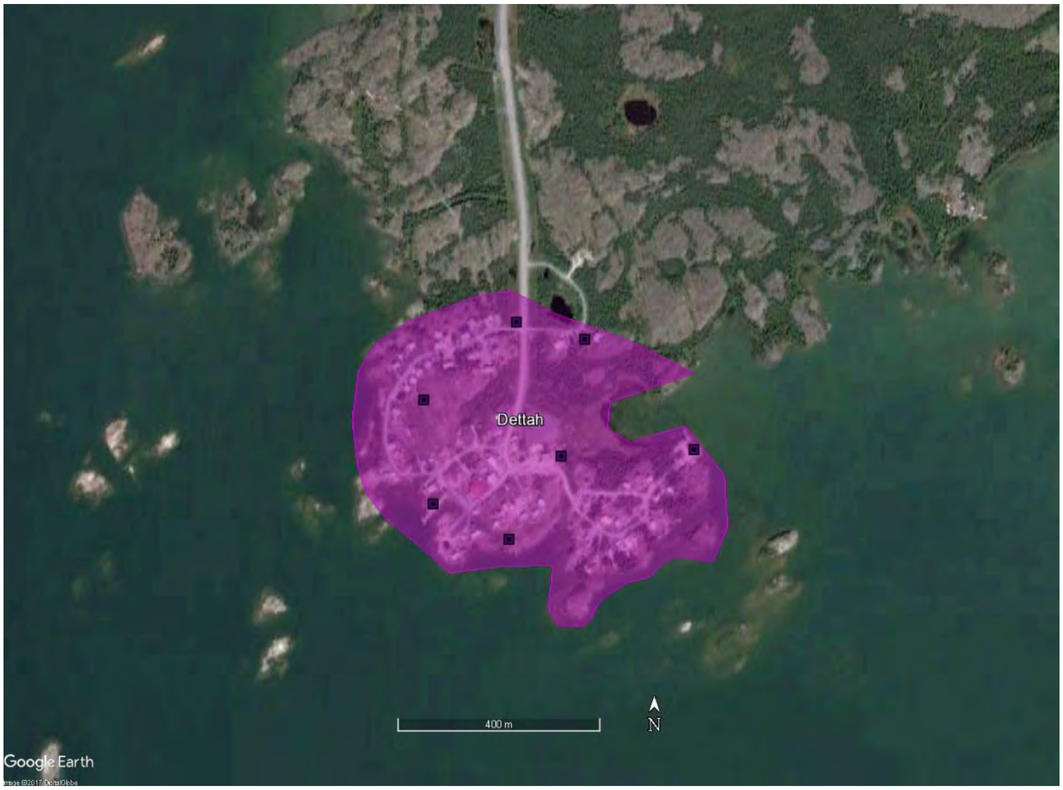
2.1.2.8 Dettah

There have been very little data collected in the community of Dettah. There were two studies that contained soil sampling:

- *ESG (2000) Arsenic Levels in the Yellowknife Area: Distinguishing Between Natural and Anthropogenic Inputs.*
- *NCP (1999) Risk Characterization of Arsenic Exposure to Berries in Akaitcho Territory.*

Sample locations are presented in Figure 2.9. These are the only data available and, as such, they were used in the assessment. It is acknowledged that adequate coverage has not been provided in Dettah, but these are the only samples available to be used in the risk assessment. Limited additional samples were collected in and around as part of the work done by Queens University (Jamieson et al. 2017) and the data are presented in Appendix P. This study resulted in two additional soil samples.

Figure 2.9 Soil sampling locations for Dettah



2.1.3 Surface Water

Surface water samples are available from various areas around Yellowknife Bay, Baker Creek, the Upper Baker Creek Watershed, and background locations not directly influenced by mining operations.

2.1.3.1 Baker Creek

There are a large amount of samples available for Baker Creek (more than 300 samples) from all the studies that have been completed on Baker Creek. The samples were obtained from several studies collected from 2011 through 2016 (Golder 2013a, 2013b, 2015a, 2015b; Stantec 2014a, 2014b; DCNJV 2015; Contango 2016). Sample locations are presented in Figure 2.10. Appendix B provides a summary of the water quality data for Baker Creek. There are enough surface water samples to adequately characterize Baker Creek.

Figure 2.10 Surface water sampling locations in Baker Creek

2.1.3.2 Yellowknife Bay

Yellowknife Bay was broken into three areas: Back Bay, which receives inputs from Baker Creek; North Yellowknife Bay, which interacts with Back Bay; and South Yellowknife Bay. The various areas of Yellowknife Bay (Back Bay, North Yellowknife Bay, and South Yellowknife Bay) have been well characterized, with more than 150 samples collected in recent years (2012 through 2016). Surface water samples were obtained from five studies (Golder 2012; Stantec 2014c; Palmer 2016a; Contango 2016; Chételat 2016, 2015). Sample locations are presented in Figure 2.11. There are enough surface water samples to adequately characterize the various areas of Yellowknife Bay. Appendix B provides a summary of the water quality data for Yellowknife Bay.

Figure 2.11 Surface water sampling locations from Yellowknife Bay

2.1.3.3 Municipal Drinking Water

Municipal drinking water data was provided to the study team by the City of Yellowknife from years 2002 until 2016. Appendix B provides a summary of the data.

2.1.4 Sediment

There have been a number of sediment studies carried out in Yellowknife Bay and in Baker Creek. For the purposes of the HHRA, sediments close to the shore were the focus, since people could be exposed to COPC while wading along the shoreline. For the ERA, shoreline sediments and sediments found at deeper depths were considered. Only sediment data in the top 10 cm were considered, as it is unlikely that benthic invertebrates would colonize the deeper sediments and people would only be exposed to the surficial sediments.

2.1.4.1 Baker Creek

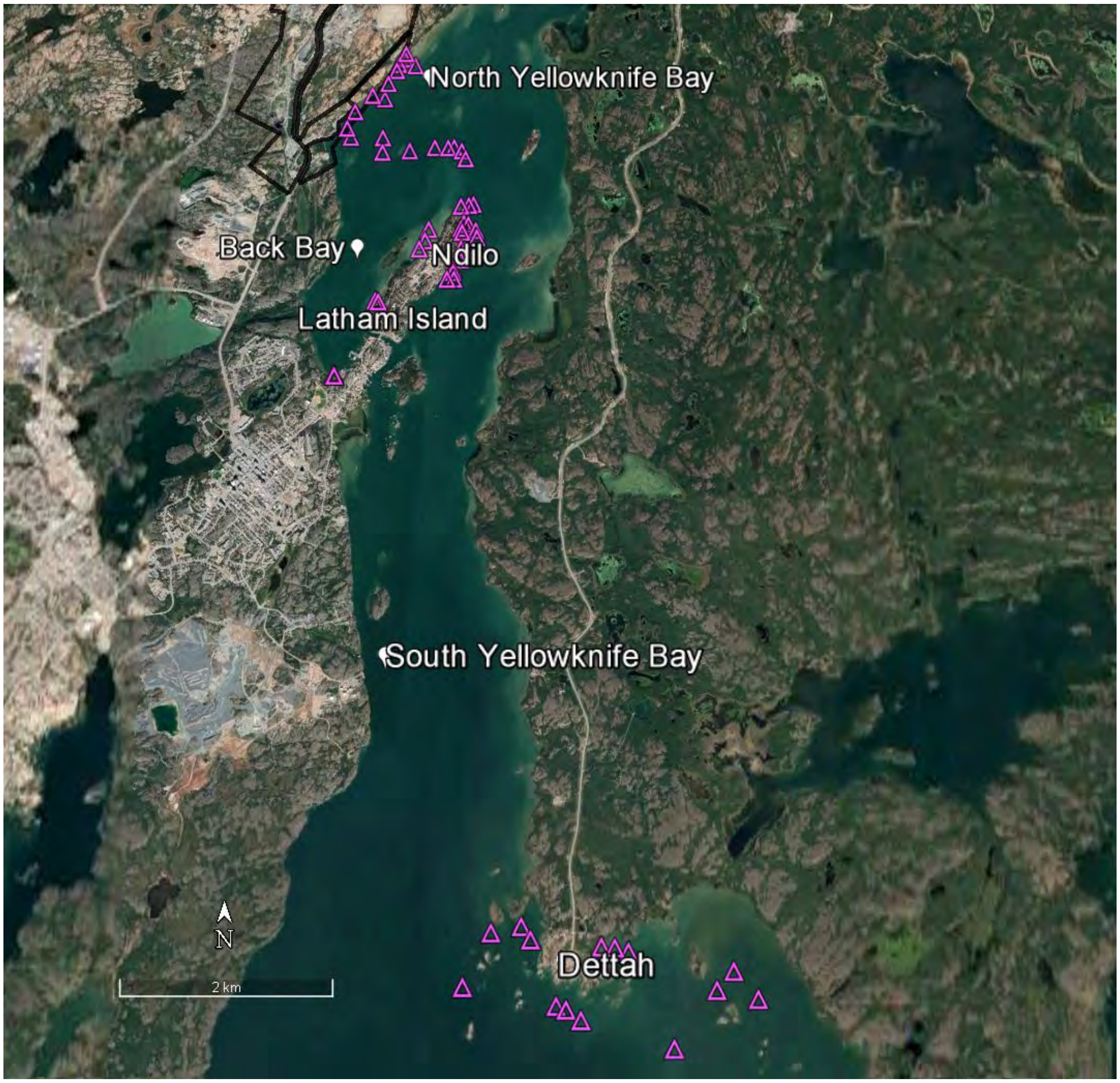
A total of 11 sediment sampling programs were available to characterize Baker Creek sediment (Jacques Whitford 2006; Stantec 2012, 2014a, 2015; Golder 2013a, 2013b, 2015b, 2016b, 2016e, 2017; Galloway et al. 2015). There were more than three hundred sediment samples collected across Baker Creek. Therefore, the creek is considered to be adequately characterized. Sample locations are presented in Figure 2.12 and Appendix B provides a summary of the sediment quality data for Baker Creek.

Figure 2.12 Sediment sampling locations from Baker Creek

2.1.4.2 Yellowknife Bay

Yellowknife Bay was broken down into three areas: Back Bay, which receives inputs from Baker Creek; North Yellowknife Bay, which interacts with Back Bay; and South Yellowknife Bay. The various areas of Yellowknife Bay (Back Bay, North Yellowknife Bay, and South Yellowknife Bay) have been well characterized, with more than 150 samples collected in recent years (2004 through 2016). A total of five sediment sampling programs were available to characterize Yellowknife Bay sediments (ECCC 2015a, 2015b; Golder 2016g; Palmer 2016b; Stantec 2014c). The majority of samples (approximately 150) were collected in surface samples (top 10 cm). Sample locations are presented in Figure 2.13. From a human health perspective, sediments close to the shoreline at Ndilo and Dettah were used to characterize exposure for a wading scenario. Additionally, Mike Palmer from GNWT collected some sediment samples in Back Bay, where concerns were raised about children wading in the areas near docks. There were about 20 sediment samples in Yellowknife Bay that were used to characterize sediments close to the shoreline. Over 60 sediment samples were used to characterize exposure in Yellowknife Bay from an ecological perspective. Appendix B provides a summary of the sediment quality data for Yellowknife Bay.

Figure 2.13 Sediment sampling locations from Yellowknife Bay



2.1.4.3 Long Lake

There were also concerns raised about children wading and playing in the shallow sediments in Long Lake. This was identified as a data gap and was addressed by sampling conducted by Golder (2016g). Sediment samples were collected from the beach area, day use area, and from the boat launch. Figure 2.14 shows the locations of the sediment samples, and Appendix B provides a summary of the sediment quality data.

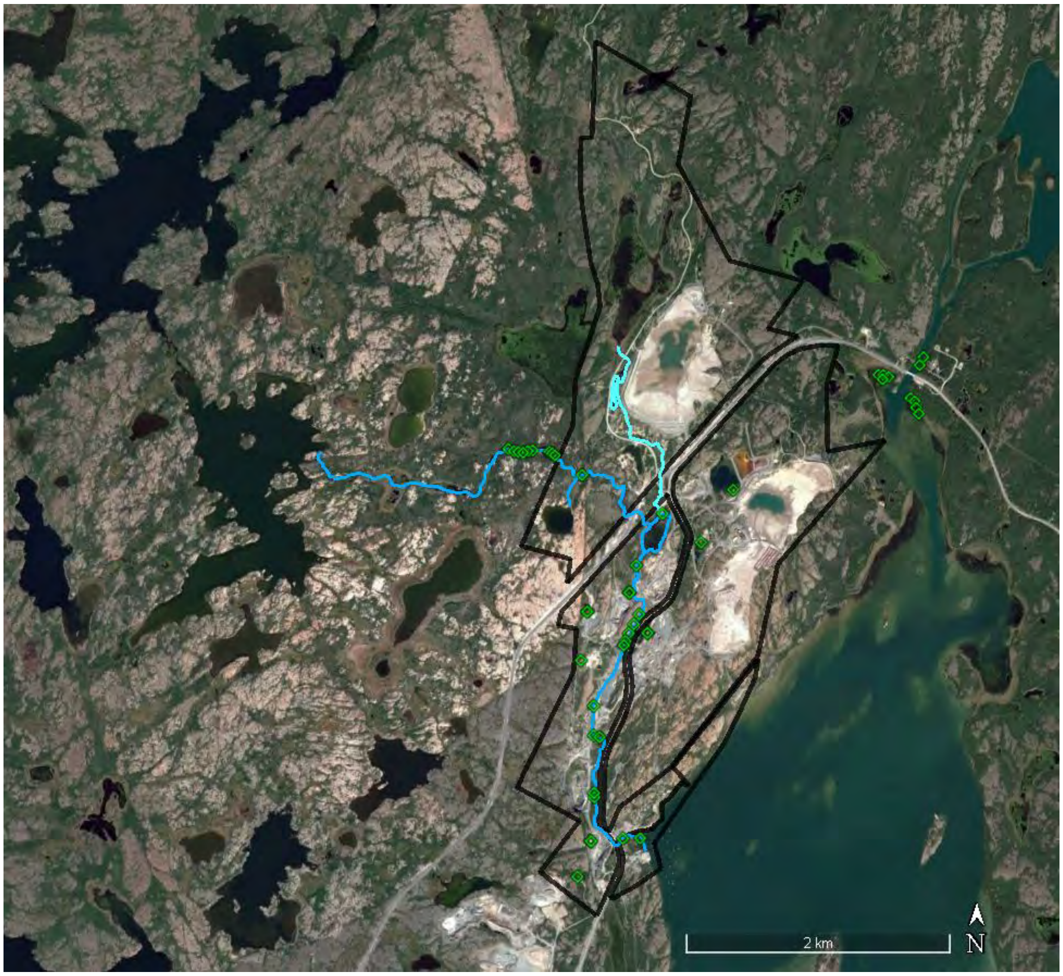
Figure 2.14 Sediment sampling locations from Long Lake

2.1.5 Vegetation

2.1.5.1 Aquatic Plants

Two recent aquatic plant sampling programs were conducted on the Giant Mine (Contango 2016; Golder 2016g). More than 30 samples of cattails and various species of sedges were collected for analysis to represent aquatic plants on the Giant Mine. There were 22 samples collected as part of the data gaps analysis gap filling study, since it was determined that there was not an adequate database available. Sample locations are presented in Figure 2.15. These samples were considered to be adequate for use in the risk assessment. Appendix B provides a summary of the aquatic plant data at the Giant Mine.

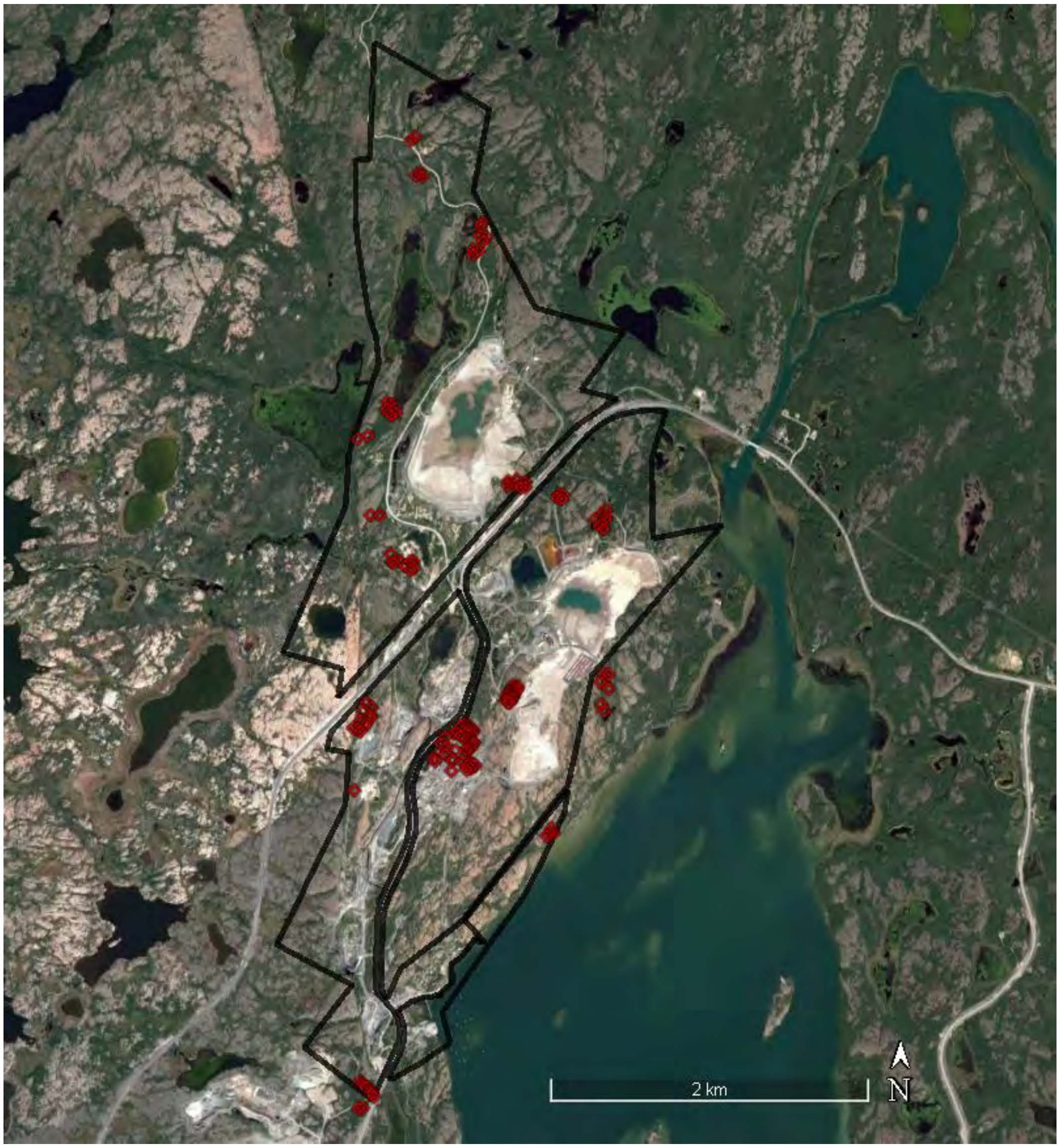
Figure 2.15 Aquatic plant sampling locations from Giant Mine



2.1.5.2 Terrestrial Plants

Four terrestrial wild plant sampling programs were conducted on the Giant Mine with more than 90 samples collected (Contango 2016; Golder 2016h, 2016g; Stantec 2014b). Foliage, fruits and flowers, lichen and moss, and woody vegetation samples were collected for analysis to represent terrestrial wild plants on the Giant Mine. Of the samples used to characterize the terrestrial plants on the Giant Mine, 87 were obtained as a part of the Golder (2016g) Giant Mine data gap filling report. Sample locations are presented in Figure 2.16. It was determined that these samples are adequate for use in the risk assessment. Appendix B provides a summary of the terrestrial plant data at the Giant Mine.

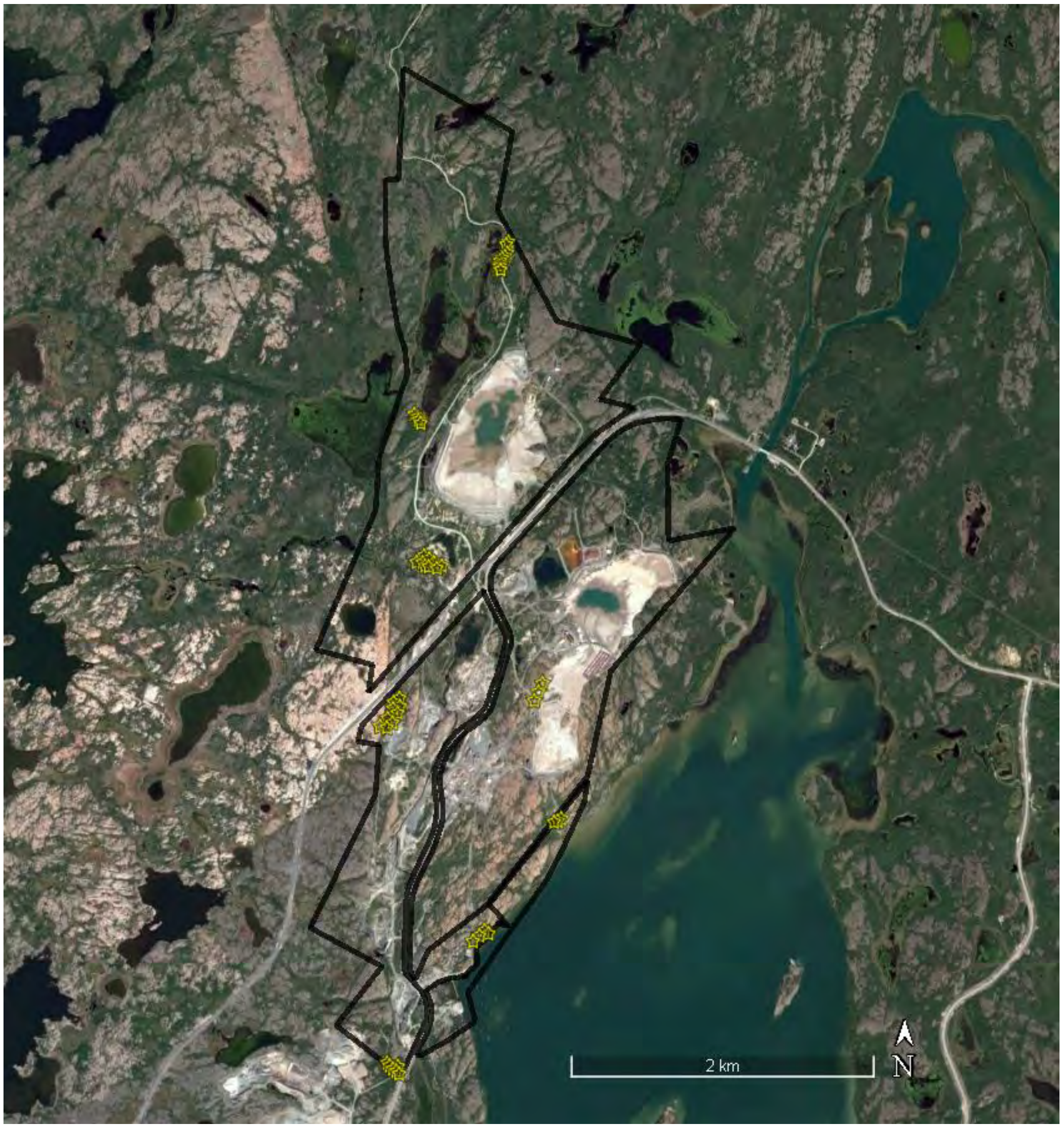
Figure 2.16 Terrestrial plant sampling locations from Giant Mine



2.1.6 Animals

The data gaps exercise identified that there was a lack of small mammal data at the Giant Mine. Therefore, Golder (2016g) undertook a program to characterize terrestrial small mammals on the Giant Mine and former Townsite (see Appendix B). A total of 50 northern red backed vole, deer mice, or shrew samples were obtained for analysis. Sample locations are presented in Figure 2.17. It was determined that these samples were adequate for use in the risk assessment. Appendix B provides a summary of the small mammal data.

Figure 2.17 Small mammal sampling locations from Giant Mine and former Townsite



2.1.7 Fish

There have been several fish studies carried out in Baker Creek and Yellowknife Bay since 2011 that were considered appropriate for consideration within the risk assessment. In examining the fish data, there are different requirements from both a human health and ecological perspective. For human health, fish tissue that is consumed by people was the focus of the summaries. Discussions with the YKDFN community indicated that they consume trout, lake whitefish, and inconnu.

2.1.7.1 Whole Body Fish from Baker Creek

Two studies contained data on whole body fish in Baker Creek (Golder 2013a; Stantec 2014d). All samples were obtained from lower Baker Creek (Reach 0 and Reach 1), with 36 samples of slimy sculpin, 9 spine stickleback, and arctic grayling obtained for analysis for most constituents. Appendix B provides a summary of whole body fish data in Baker Creek. Mapping has not been provided of these samples, as all of the samples were obtained from Reach 0 and 1 in Baker Creek. These samples were considered in the ERA.

2.1.7.2 Whole Body Fish from Yellowknife Bay

One sampling program contained data on whole body fish in Yellowknife Bay (Stantec 2014d). A total of 61 samples of slimy sculpin were obtained from North Yellowknife Bay and South Yellowknife Bay near the City of Yellowknife. These samples were considered in the ERA.

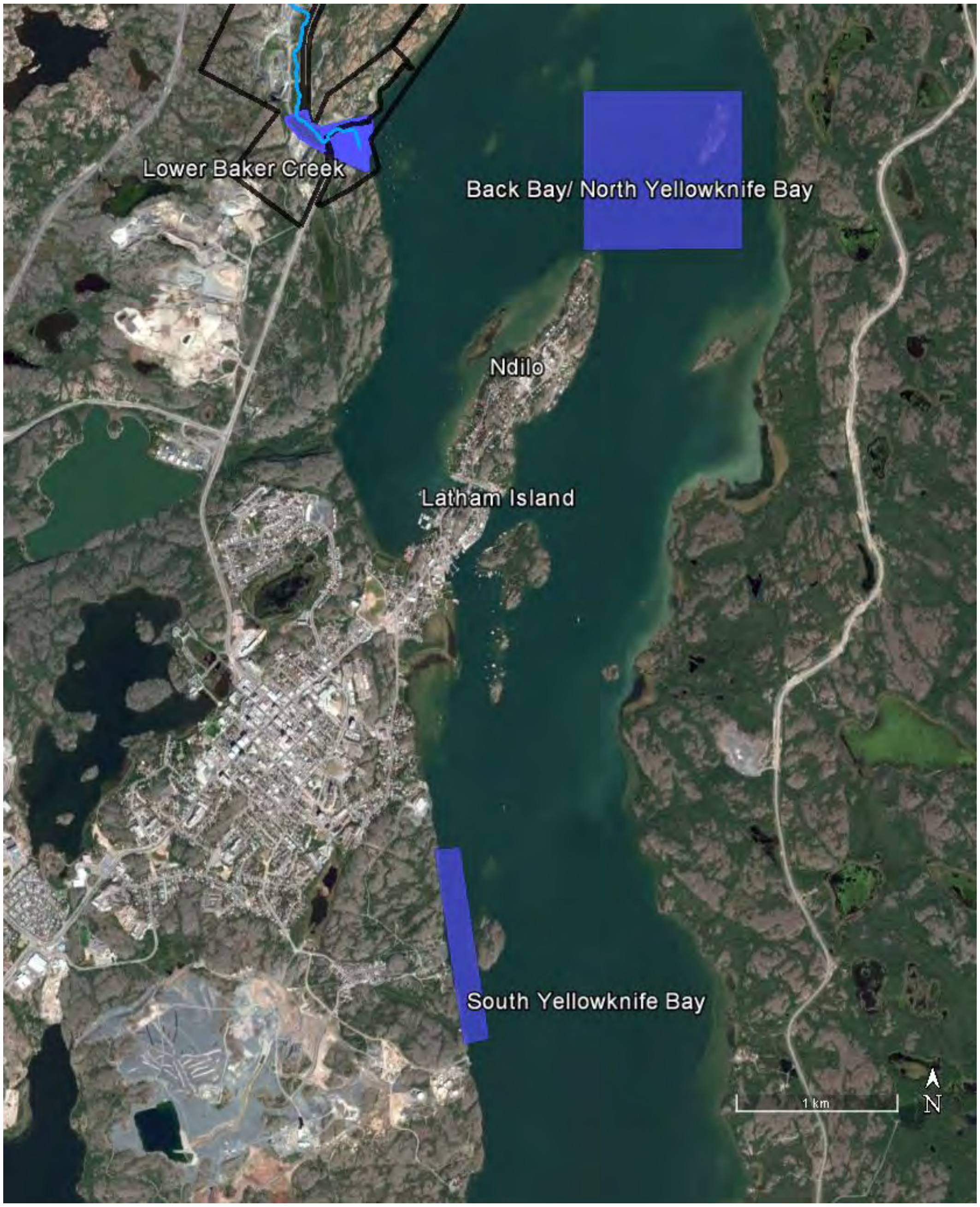
2.1.7.3 Fish Muscle from Yellowknife Bay

Two sampling programs contained information on fish muscle in Yellowknife Bay, which included samples from Back Bay, North Yellowknife Bay, and South Yellowknife Bay (Cott et al. 2016; Stantec 2014d). Samples of burbot, inconnu, lake trout, lake whitefish, and northern pike muscle were analysed for most constituents.

2.1.7.4 Fish Liver from Yellowknife Bay

Two sampling programs were identified to characterize fish liver in Yellowknife Bay, which included samples from Back Bay, North Yellowknife Bay, and South Yellowknife Bay (Cott et al. 2016; Stantec 2014d). Samples of lake whitefish and northern pike livers were obtained for analysis for most constituents.

Figure 2.18 Fish sampling locations from Baker Creek and Yellowknife Bay



2.1.8 Voluntary Sampling Program

As part of the risk assessment, a voluntary sampling program was initiated to collect samples of country foods that members of the different communities would eat. Members of the YKDFN, NSMA, and other interested stakeholders were asked to submit samples of country foods to the GMRP study team. The community was asked to provide large wild game (moose) samples, small game samples from different types of animals (i.e., rabbit, beaver, muskrat) and birds (i.e., grouse, ptarmigan, duck, goose), berry or edible plant samples, and medicinal plant samples. Organ samples were also requested. There was a large number of fish samples from different areas in Yellowknife Bay that were collected by various scientific programs; however, no lake trout samples were collected as part of these programs and, thus, community members were asked to provide lake trout samples if they had any. The samples provided by various community members were then sent to the laboratory for analyses.

This voluntary sampling program was not meant to be a rigorous statistically based study; rather, it was an attempt to collect country food samples that people were gathering and eating so that their current exposures could be quantified. Risk assessment programs generally do not have this information and instead use estimates based on calculations involving estimates of transfer of chemicals in the environment. Thus, the voluntary sampling program was a way of reducing this uncertainty in the risk assessment.

Figure 2.19 to Figure 2.23 show the approximate locations where the voluntary samples of country foods were obtained. Approximately 88 samples were submitted to the laboratory for analysis. The number of samples collected in this program was exceptional and has never been collected in any risk assessment project in Canada to the best of our knowledge. Table 2.1 provides a summary of the samples that were sent for analysis.

Table 2.1 Summary of country foods sent for laboratory analysis

Sample Type	Sample Species (Number of Samples Submitted)		Tissues Sampled
Plants	• Cranberries (11) • Labrador tea (4) • Raspberries (4) • Rose hips (3) • Red bear berries (1)	• Juniper berries (2) • Spruce gum (4) • Saskatoon berries (1) • Chives (1) • Birch syrup (1)	Berries, gum, syrup, tea
Fungi	• Mushroom (1)		
Birds	• White winged scoter (3) • Canada goose (1) • Ptarmigan (12)	• Black ducks (5) • Mallard ducks (2) • Spruce grouse (6) • Lesser scaup (1)	Flesh, Fat, Gizzard, Liver, Heart
Mammals	• Moose (10) • Muskox (1) • Muskrat (2) • Rabbit (2)	• Bear (1) • Beaver (4) • Caribou (1) • Reindeer (1) [a]	Flesh, Liver, Heart, Fat
Fish	• Lake trout (5)	• Whitefish (4)	Flesh, Eggs

Note: [a] reindeer sample from Inuvik which is greater than 200 km away

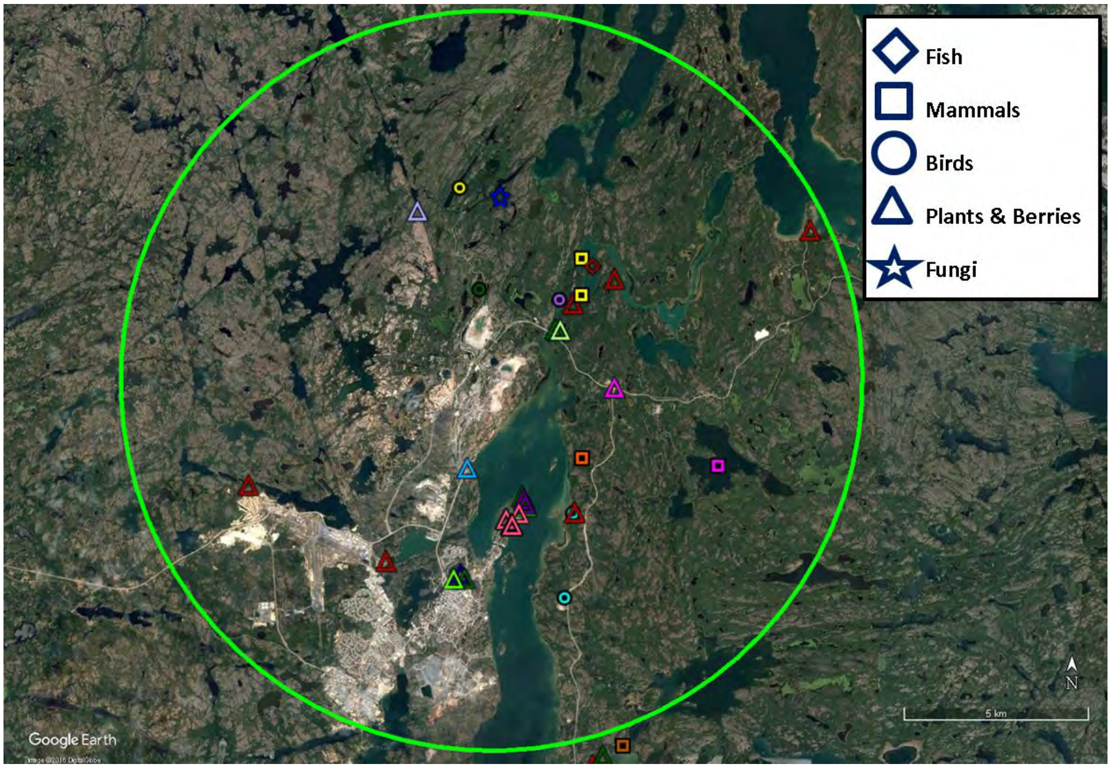
As can be seen in Figure 2.19, around half (43) of the samples collected were from within 10 km of the Giant Mine. Table 2.2 provides a summary of the samples and quite a few of the berries and other plants were collected from Ndilo (see Figure 2.20). Twenty four (24) of the samples were collected from between 10 km and 25 km of the Giant Mine (see Figure 2.21 and Table 2.3), 10 samples were obtained between 25 km and 50 km of the site (see Figure 2.22 and Table 2.4), and 9 samples were obtained between 50 km and 100 km from the site (see Figure 2.23 and Table 2.5). The remaining 8 samples were collected more than 100 km from the Giant Mine. More details on the program and all the results are provided in Appendix B.

This sample distribution of more than half of the samples within 10 km of the site and the rest further away is considered to be a good representation of the potential influence of the Giant Mine on the level of COPC in country food. For the purposes of this assessment, samples more than 50 km from the site were considered to not be influenced by the Giant Mine and were considered to represent background. Information from the mushroom sampling (Appendix P) as well as from the GNWT Open soils File (Jamieson et al. 2017) indicates that the influence of the Giant Mine is within a radius of 25 km and areas outside this are not considered to be affected by the Giant Mine.

Appendix B provides a summary of the analytical data for the voluntary sampling program.

The initial voluntary sampling program allowed only a few months to collect samples; but as identified by the YKDFN, the sampling period was extended to accommodate the inclusion of additional samples, including some that are seasonal and were not available during the initial program. Therefore additional samples were collected through the voluntary sampling program in the spring and summer of 2017, including rat root, mushrooms, and rabbits. Additional analyses with the new data are presented in Appendix P.

Figure 2.19 Voluntary samples from within 10 km of the Giant Mine



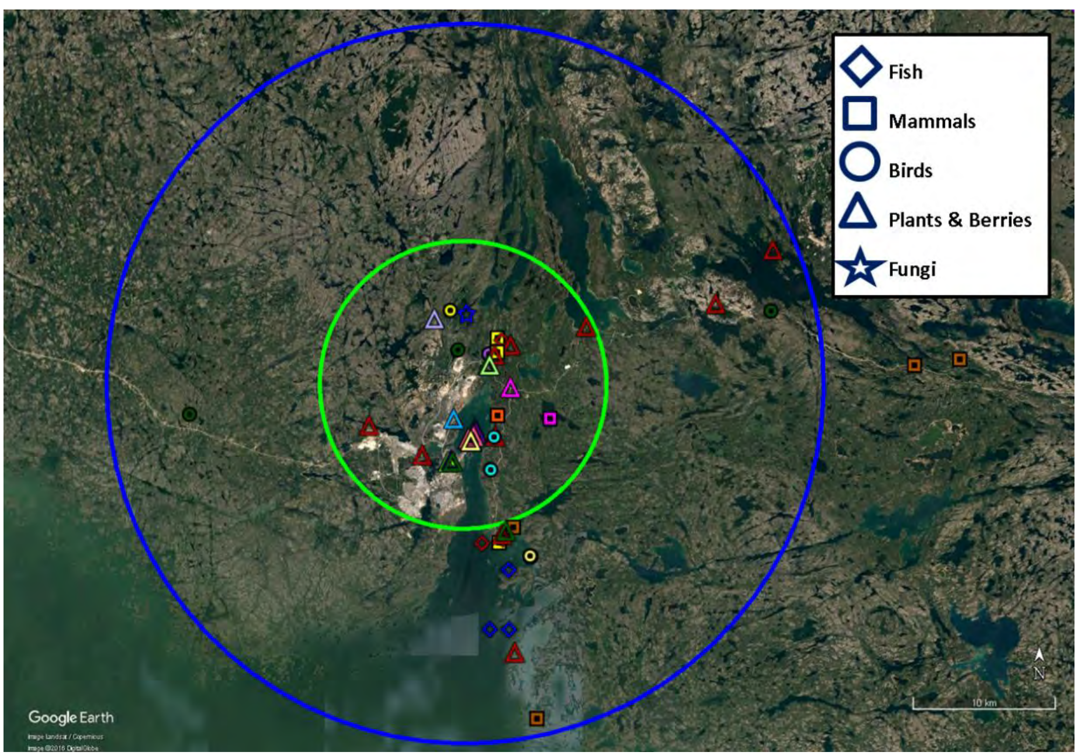
Note: Different coloured symbols indicate different species; green circle represents 10 km radius.

Table 2.2 Summary of country foods collected within a 10-km radius of Giant Mine

Sample Type	Number of Samples Submitted for Analysis	Types of Species
Plants and Berries	25	Cranberries, Labrador tea, Saskatoon berries, Rose hips, Chives, Spruce gum, Raspberries
Mushroom	1	-
Birds	10	Lesser scaup, Mallard, Spruce grouse, Ptarmigan
Mammals	6	Beaver, Muskrat, Rabbit
Fish	1	Whitefish

Figure 2.20 Voluntary samples from the Ndilo area

Figure 2.21 Voluntary samples from within 25 km of the Giant Mine

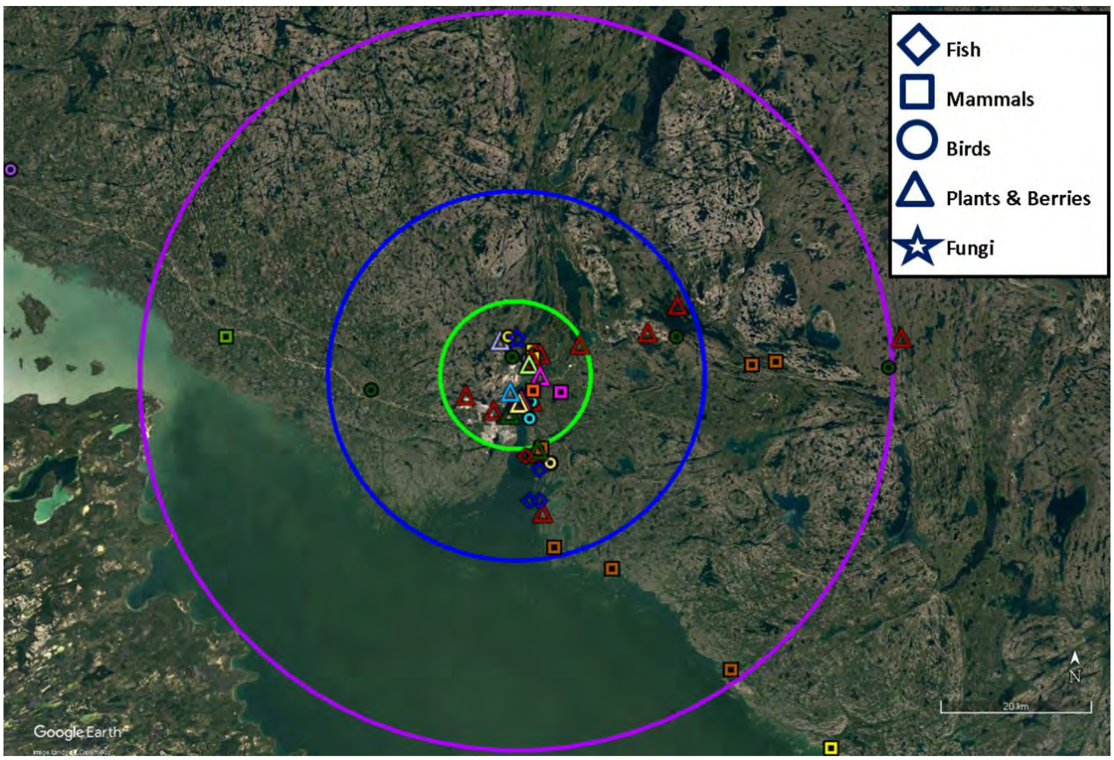


Note: Different coloured symbols indicate different species; green circle represents 10 km radius; blue circle represents 25 km radius.

Table 2.3 Summary of country foods collected within a 25-km radius of Giant Mine

Sample Type	Number of Samples Submitted for Analysis	Types of Species
Plants and Berries	6	Cranberries, Spruce gum, Raspberries
Birds	10	White winged scoter, Black duck, Ptarmigan
Mammals	3	Beaver, Moose
Fish	5	Whitefish, Lake trout

Figure 2.22 Voluntary samples from within 50 km of the Giant Mine

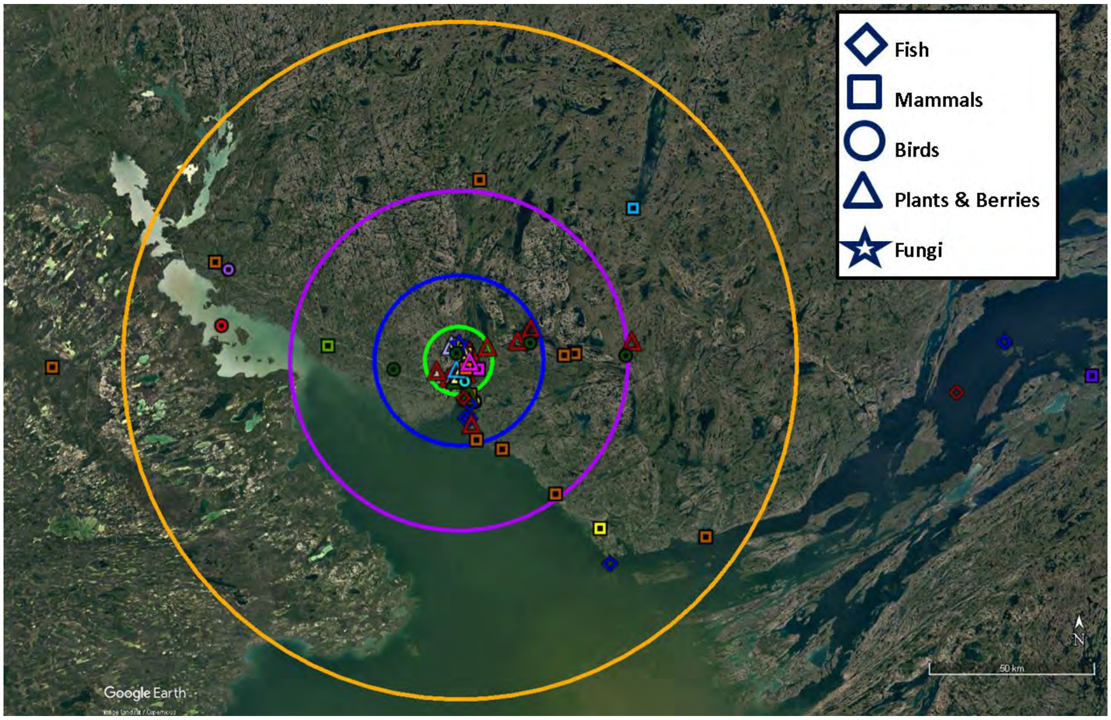


Note: Different coloured symbols indicate different species; green circle represents 10 km radius; blue circle represents 25 km radius; purple circle represents 50 km radius.

Table 2.4 Summary of country foods collected within a 50-km radius of Giant Mine

Sample Type	Number of Samples Submitted for Analysis	Types of Species
Plants and Berries	0	-
Birds	5	Ptarmigan
Mammals	5	Moose, Black bear
Fish	0	-

Figure 2.23 Voluntary samples from within 100 km of the Giant Mine



Note: Different coloured symbols indicate different species; green circle represents 10 km radius; blue circle represents 25 km radius; purple circle represents 50 km radius; orange circle represents 100 km radius.

Table 2.5 Summary of country foods collected within a 100-km radius of Giant Mine

Sample Type	Number of Samples Submitted for Analysis	Types of Species
Plants and Berries	1	Cranberries
Birds	2	Canada goose, Mallard
Mammals	5	Moose, Caribou, Beaver
Fish	1	Lake trout

2.1.9 Background

The Canadian Council of Ministers of the Environment (CCME 2016) indicates that natural background should represent the concentrations of chemicals in the environment that reflect natural geologic variations. This agrees with the discussion in the draft FCSAP guidance (FCSAP 2015a), which indicates that background is representative of the true range of concentrations associated with the geographic area of the site. Thus, the background samples selected for use in the risk assessment were from local areas around the Giant Mine, but outside of the area of influence. It should be noted that the FCSAP guidance document is a draft report and was provided by ECCC for use on this project; it should not be used on a wider basis until it has been finalized.

Many jurisdictions use an upper confidence level (95th or 98th percentile) to represent background as these percentiles encompass a large portion of variation in background whilst excluding extremes. These upper confidence levels represent the highest concentration that is likely to represent background. Regulatory agencies such as the British Columbia Ministry of Environment (BCMOE) and Ontario Ministry of the Environment and Climate Change (MOECC) use this definition of background for setting cleanup standards/criteria.

The CCME, in developing more recent soil guidelines for nickel (2015a), beryllium (2015b), and barium (2013), has used an arithmetic average for defining background. The FCSAP background document (2015a) refers to United States Environmental Protection Agency guidance (U.S. EPA 2002) for developing an appropriate background concentration, which uses an average concentration for background when comparing to exposure areas. In the Exposure Section of the FCSAP document (FCSAP 2015a), it is indicated that if there is a suitable sample size (N>10), then background concentrations should be based on the 95% Upper Confidence Level of the Mean (95% UCLM).

The Giant Mine risk assessment follows FCSAP guidance (FCSAP 2015a), using an average statistic to describe background in the screening for selection of COPC (see Appendix D) and the 95% UCLM to describe background within the risk assessment calculations.

2.1.9.1 Soil

The Giant Mine sits on a mineralized zone known as the Yellowknife Greenstone Belt (YGB); this was considered in developing the background for soils. The Geological Survey of Canada (GSC) has compiled till soil data (Kerr 1999, 2000, 2001) associated with the geographical area of the Giant Mine site, and this dataset was used to determine the background soil concentrations for use in the risk assessment. These samples were collected at a depth that would not have been influenced by deposition of historical releases from the Giant Mine. Figure 2.24 shows a map of the soil sample locations in relation to the YGB. It should be noted that this dataset has also been used to develop the background concentrations in support of the GNWT clean up criteria for arsenic and is considered to be appropriate for use to establish background for the risk assessment. There are samples collected from various programs in and around the Yellowknife area (e.g., City of Yellowknife, Ndilo, Dettah, etc.) that fall within the range of the concentrations found in the GSC dataset. These data could be used to augment the GSC database; however, as these are areas that are considered to be exposure locations in the HHRA, a decision was made not to consider these data for the determination of background.

Appendix C provides the detailed methodology for determining the soil background used for the risk assessment calculations. As prescribed by the FCSAP (FCSAP 2015a) guidance, 95% UCLM values were used to describe background. For arsenic in soils, a concentration of 94 mg/kg was used to describe background in the Yellowknife Greenstone Belt. All locations with the exception of Dettah are in the YGB. For other areas, including Dettah, a regional arsenic soil concentration of 41 mg/kg was used to describe background. Appendix C provides background concentrations for all other COPC considered in the risk assessment.

Figure 2.24 Background soil sampling locations

Note: Area in yellow denotes the Yellowknife Greenstone Belt

2.1.9.2 Surface Water

The background locations selected were based on the ones generally used for the aquatic studies related to the Giant Mine Project and have been identified as Yellowknife River and Horseshoe Island located in Yellowknife Bay. However, there have been a few studies that have used Prosperous Lake as a background location. It should be noted that Prosperous Lake is located approximately 12 km northeast of Giant Mine and away from the direction of prevailing winds. Figure 2.25 shows the background surface water sampling locations. There are only three samples available in Prosperous Lake and the concentrations measured were similar to the other locations; therefore, Prosperous Lake was considered in the dataset to develop background. Based on a dataset of 19 samples, the background arsenic concentration is 0.6 µg/L. Appendix C provides the methodology for deriving the surface water background concentrations; it also provides the background concentrations for all other COPC considered in the risk assessment.

2.1.9.3 Sediment

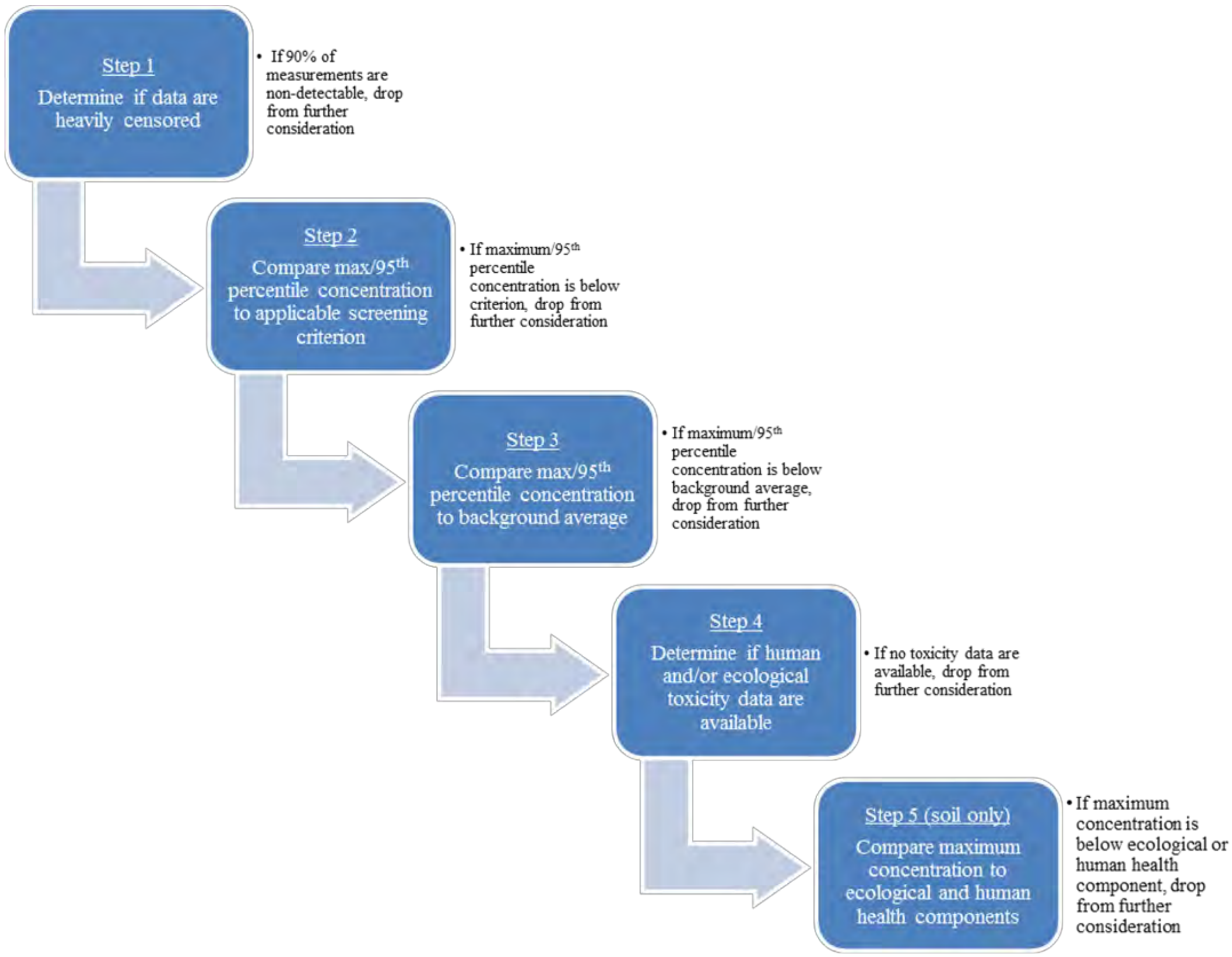
The background locations for the sediment samples were also considered to be Horseshoe Island and Yellowknife Bay, which were identified on Figure 2.25. These locations are representative of bay and river sediments. Concentrations in Yellowknife River were generally lower than those measured at Horseshoe Island. From an ecological risk assessment point of view, receptors were evaluated in both the lake and river environments and, therefore, the datasets were combined. From a human heath standpoint, combining the datasets results in a lower estimation of background concentrations and therefore represents a conservative estimate of background, especially for incremental arsenic exposure. The background sediment arsenic concentration was determined to be 23 mg/kg. Appendix C provides the methodology for deriving the sediment background concentrations; it also provides the background concentrations for all other COPC considered in the risk assessment.

Figure 2.25 Background surface water sampling locations

2.2 Constituents of Potential Concern

A tiered process was carried out to identify COPC in surface water and soil in the general vicinity of Yellowknife and the Giant Mine and involved an evaluation of measured environmental data. The general approach that was followed for selecting the COPC for consideration in the risk assessment involved using measured water and soil concentrations and comparing them to soil or water quality guidelines. This approach is shown in Figure 2.26. It should be noted that a soil concentration above a guideline does not necessarily mean that there is an actual risk to human health or the environment. A comparison to background concentrations was also done, and information on this can be found in Appendix D. Only chemicals present in soils and water above the soil or water quality guidelines or background were selected to be evaluated in the risk assessment. A key consideration in the examination of the COPC is that the chemical selected should be associated with the operations of the Giant Mine.

Figure 2.26 General selection process for constituents of potential concern



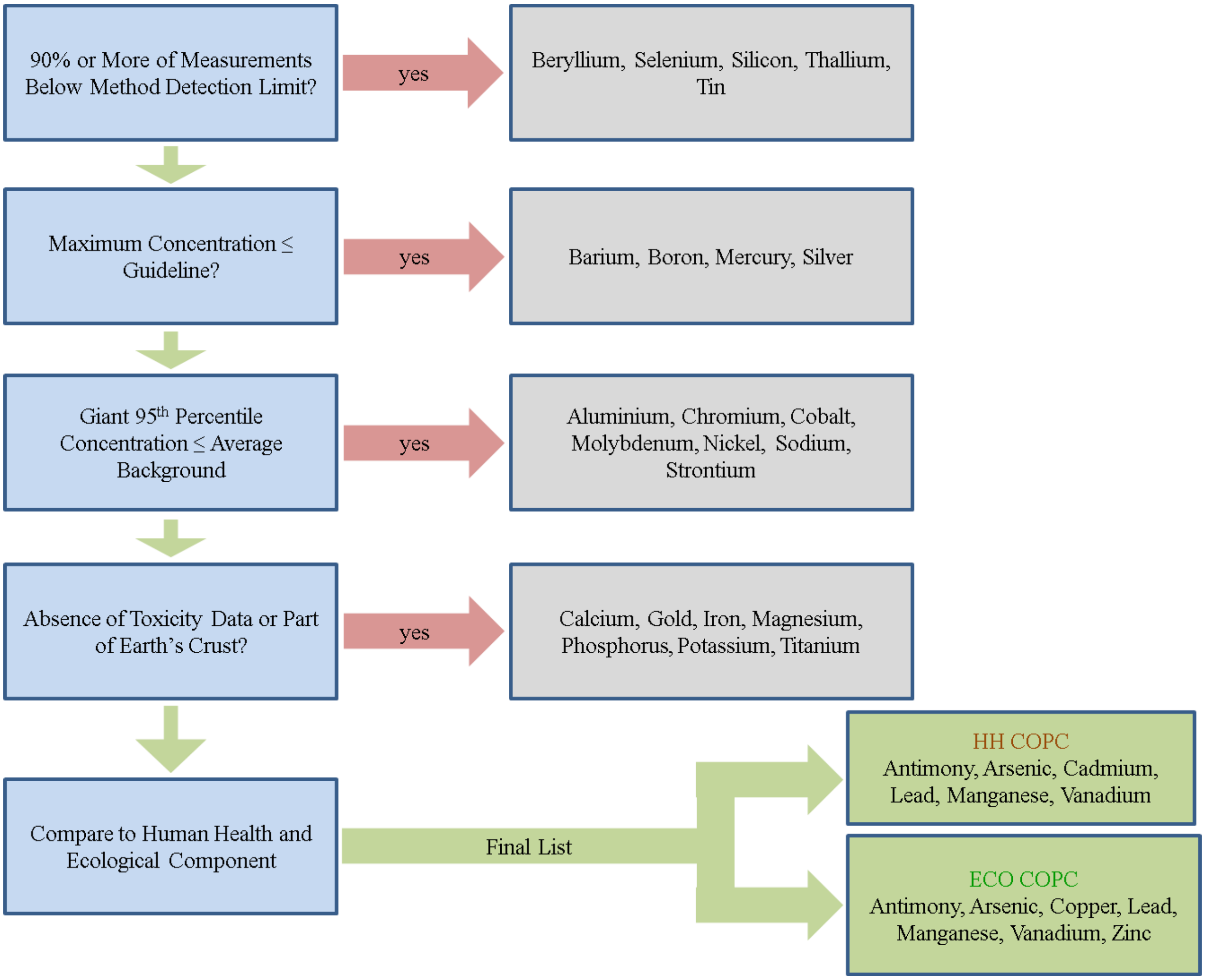
Other chemicals that may be present (such as petroleum hydrocarbons) would be present in localized areas associated with the disturbed areas. These would be addressed during remediation and were, therefore, not considered to be COPC.

Details of the COPC screen are provided in Appendix D and details on the derivation of background concentrations for the COPC screen are also provided in Appendix D.

2.2.1 Constituents of potential concern in soil

The soil COPC screen considered measured shallow soil concentrations from across the Yellowknife area. As soil concentrations generally change slowly over time, all data (from 1999 and onwards) were considered for the Yellowknife area. This ensures that both off-site and on-site conditions at the Giant Mine are considered. Analytical data has demonstrated that constituent concentrations are generally higher in surficial soils; in addition, this soil depth (≤ 10 cm) represents the likely exposure depth for both humans and wildlife.

Figure 2.27 Flowchart of soil constituents of potential concern screening results



For the soil COPC screen, the agricultural soil guidelines from the CCME (2017) were considered appropriate. The use of the most restrictive agricultural criteria ensures that all potential COPC are captured in the screening process. A summary of the screening process for COPC in soil is provided in Figure 2.27, while details on each step of the process are provided in Appendix D.

2.2.2 Constituents of Potential Concern in Surface Water

The surface water COPC screen was completed to identify COPC in Yellowknife Bay for humans (i.e., for the HHRA) that may use this water body as a drinking water source (i.e., not municipally treated and distributed) and to identify COPC in both Baker Creek and Yellowknife Bay for aquatic biota (i.e., for the ERA). Data for total metals collected from June 2011 onwards were considered in the process to represent current conditions as these data were collected after the JoJo tailings spill.

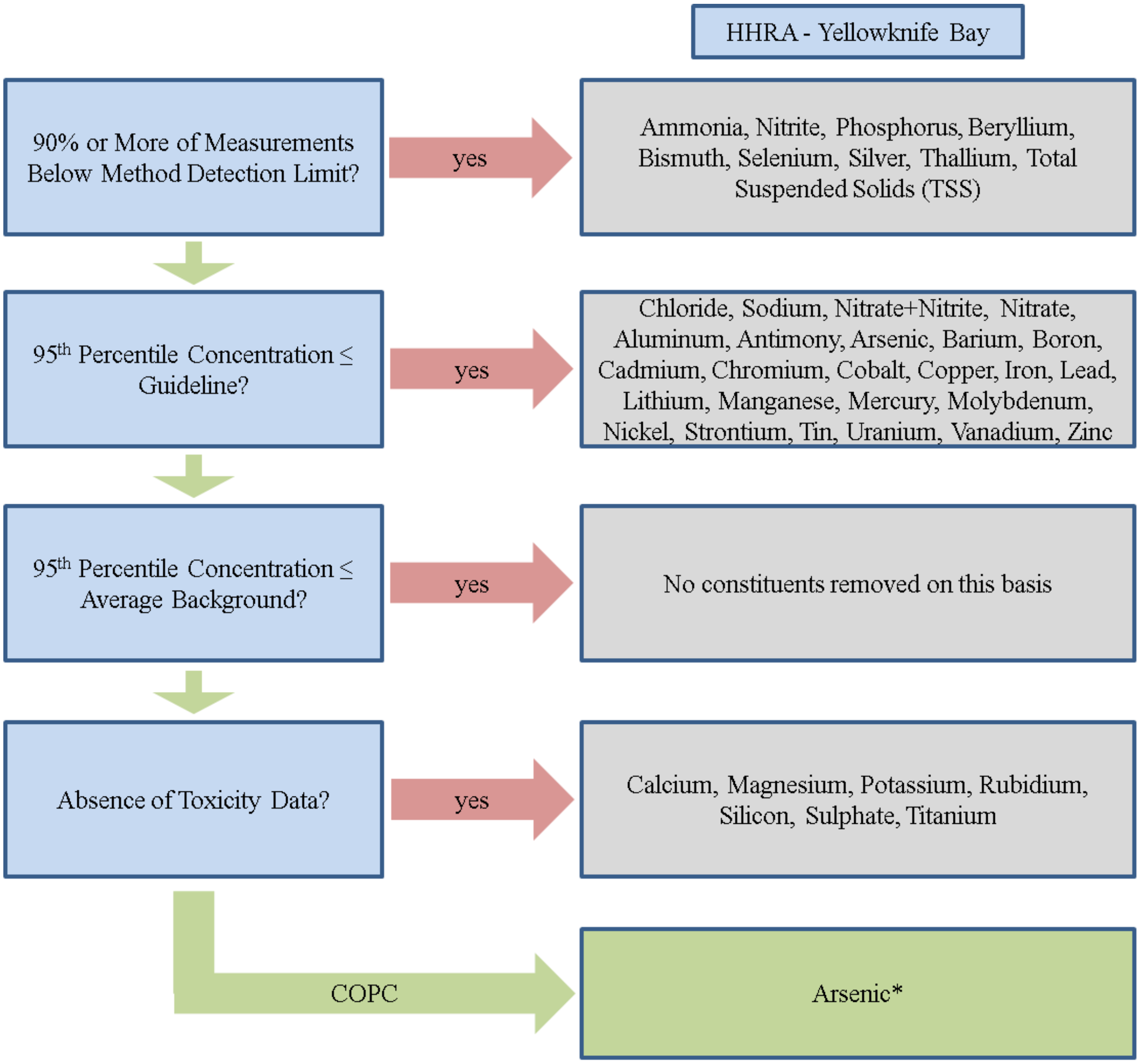
For Baker Creek, data from all reaches downstream of Baker Pond were included, as well as data collected from Back Bay at the outlet of Baker Creek. For Yellowknife Bay, data from all areas were considered, including Back Bay, North Yellowknife Bay (i.e., around Latham Island and Ndilo), and South Yellowknife Bay (i.e., east of Yellowknife and around Dettah). Due to the large number of measurements (close to 200 samples) available for each location, the 95th percentile concentrations of the measured data were used in the screening process. This approach eliminates outlier data and is considered to be a reasonably conservative approach.

For the HHRA, the Health Canada (2017) Guidelines for Canadian Drinking Water Quality were selected preferentially as the screening criteria. Health Canada indicates that these drinking water guidelines are maximum acceptable concentrations "designed to protect the health of the most vulnerable members of society, such as children and the elderly." considers water with concentrations of constituents below these values as safe to drink. Other sources of health-based drinking water guidelines were also consulted including the BCMOE (2010) Director's Interim Standards for Contaminated Sites for aluminum, iron, and manganese and U.S. EPA (2016a) Regional Screening Levels (RSLs) for tap water.

For selecting COPC for the ERA, surface water quality guidelines for the protection of freshwater aquatic life for long-term exposure from the CCME (2017) were considered. In the absence of a value from the CCME, other sources were consulted such as the Saskatchewan Environmental Quality Guidelines (SEQG; Government of Saskatchewan (GS 2015)), U.S. EPA (2016b) Water Quality Benchmarks for Aquatic Life, and the BCMOE (2017) Water Quality Guidelines to Protect Aquatic Life.

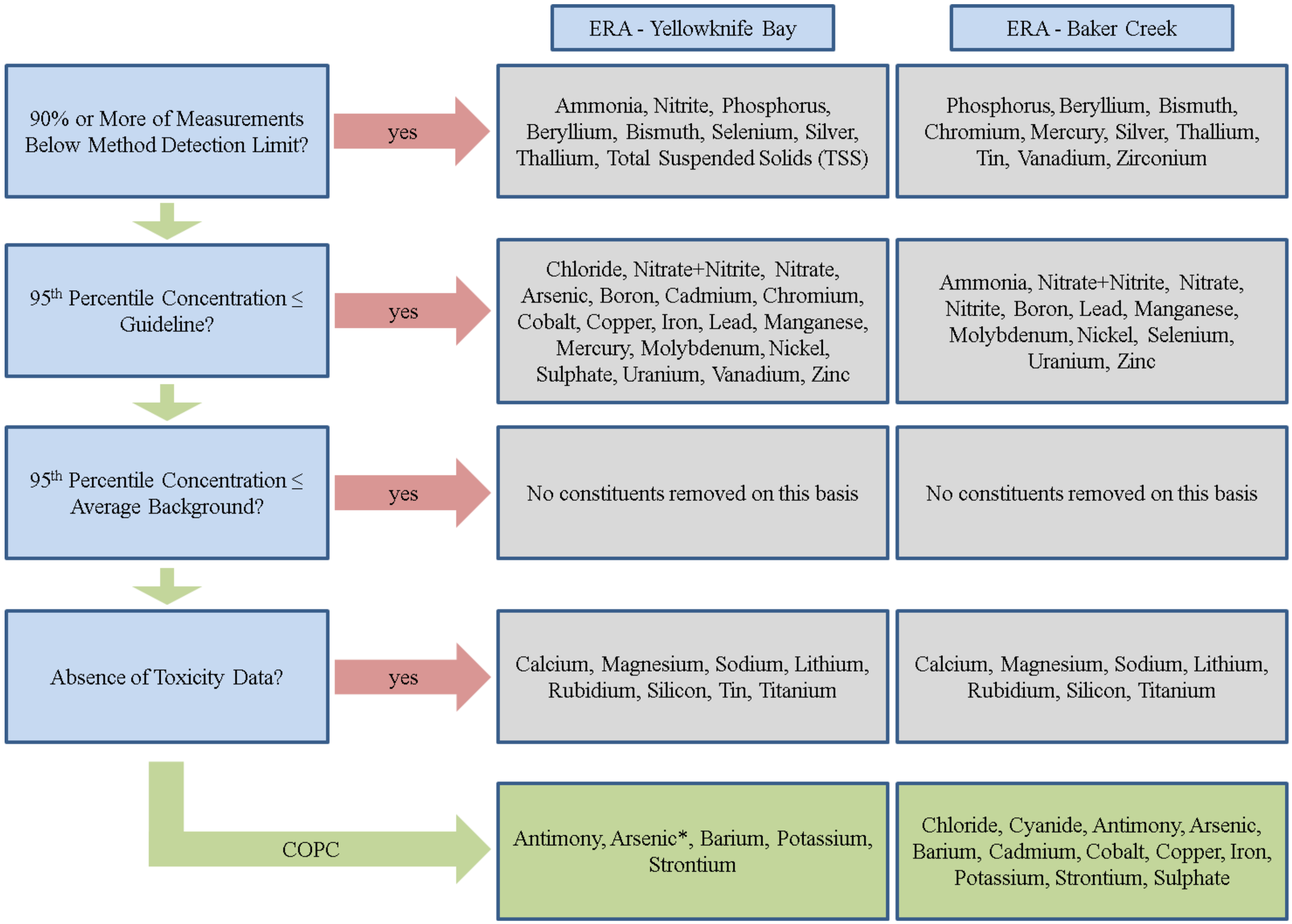
A summary of the screening process for COPC in surface water is provided in Figure 2.28 for the HHRA and Figure 2.29 for the ERA. Details on each step of the process are provided in Appendix D.

Figure 2.28 Flowchart of surface water constituents of potential concern screening results for the human health risk assessment



* Although arsenic concentrations were below the Health Canada Drinking Water Guideline in Yellowknife Bay, it was retained in the final list of COPC due to community concerns related to fish consumption and sediment contact.

Figure 2.29 Flowchart of surface water constituents of potential concern screening results for the ecological risk assessment



* Although arsenic was below the aquatic life guideline in Yellowknife Bay, it was retained in the final list of COPC due to community concerns.

2.2.3 Constituents of Potential Concern in Sediment

The available data on sediment was examined to determine whether any additional COPC should be added to the list. The process used sediment samples from Baker Creek and Yellowknife Bay. Data for total metals collected from May 2011 onwards were considered in the process to represent current conditions. For Baker Creek, data from all reaches downstream of Baker Pond were included as well as data collected from Back Bay at the outlet of Baker Creek. For Yellowknife Bay, data from all areas were considered, including Back Bay near Latham Island, North Yellowknife Bay near Ndilo, and South Yellowknife Bay by Dettah. Due to the large number of measurements available for each location, the 95% UCLM concentrations of the measured data were used in this approach, as this is considered to represent a reasonable exposure from sediments.

In this screening process, the 95% UCLM concentrations were compared to sediment quality guidelines for the protection of freshwater aquatic life for long-term exposure from the CCME (2017). The results of this process indicated that chromium, lead, mercury, and zinc were added to the COPC list for the Baker Creek, and chromium and copper were added for Yellowknife Bay.

2.2.4 Summary

The final list of COPC in soil, surface water, and sediment for the Giant Mine HHRA and ERA from this initial screening process is summarized in Table 2.6.

Table 2.6 Summary of constituents of potential concern for the human health and ecological risk assessment identified in initial screening process

Soil		Surface Water/Sediment		
ERA	**HHRA**	**Yellowknife Bay – HHRA**	**Yellowknife Bay – ERA**	**Baker Creek - ERA**
Antimony Arsenic Copper Lead Manganese Vanadium Zinc	Antimony Arsenic Cadmium Lead Manganese Vanadium	Arsenic	Antimony Arsenic Barium Chromium (*sed) Copper (*sed) Potassium Strontium	Chloride Cyanide Sulphate Antimony Arsenic Barium Cadmium Chromium (*sed) Cobalt Copper Iron Lead (*sed) Mercury (*sed) Potassium Strontium Zinc (*sed)

Note: Arsenic in Yellowknife Bay was measured below the drinking water guidelines as well as the guidelines for protection of aquatic life but was retained due to community concerns; *sed – Identified based on the sediment screen only.

3.0 HUMAN HEALTH RISK ASSESSMENT

3.1 Exposure Locations

The Giant Mine is an industrial site located close to the City of Yellowknife. Therefore, the HHRA evaluated the potential for exposures and risks from the Giant Mine on residential locations in and around the City of Yellowknife as well as locations where recreational activities take place. The locations selected for evaluation for human health were based on consultations with the WG and other interested stakeholders. The receptor identification took into account the diversity of inhabitants of the City of Yellowknife, Latham Island, the Ingraham Trail area, the communities of Ndilo and Dettah, as well as the wide range of land uses among these groups. Consideration was also given to future land use at the Giant Townsite area and the Giant Mine. Figure 3.1 presents the general geographic regions of the area, which were considered within the HHRA.

3.2 Problem Formulation

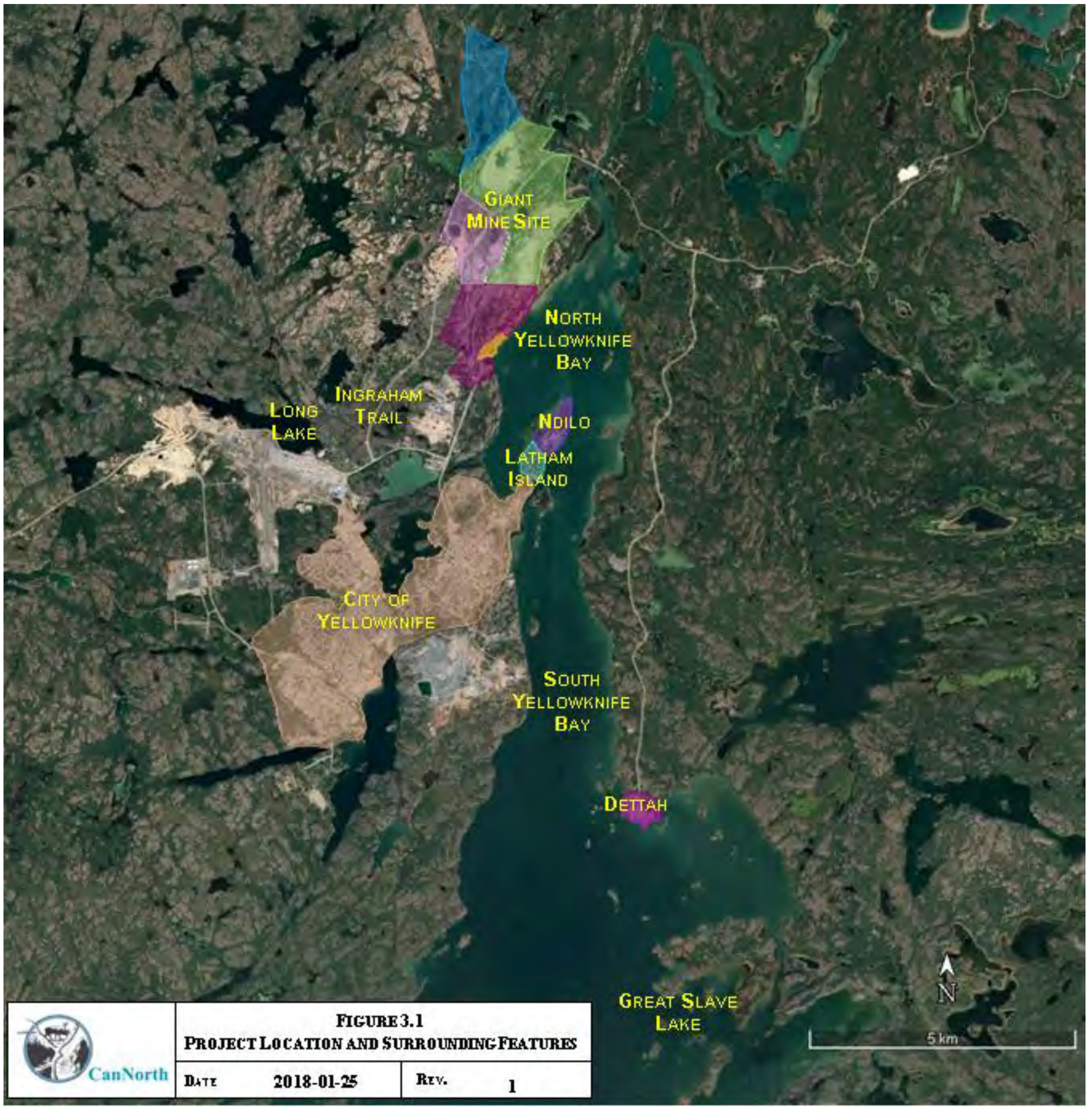
The problem formulation involved reviewing available data from all studies for the Giant Mine, as well as other information available from the communities including special sampling programs. This review helped to focus the approach of the study and lay the foundation for the HHRA. The following sections describe the different parts of the problem formulation for the HHRA. Section 2.0 provides a description of the site and the available information.

3.2.1 Hazard Identification

The initial COPC screen to identify COPC in soil and water for the HHRA was described in detail in Appendix D and summarized in Section 2.2. The result of the screening process for the HHRA for soils identified that antimony, arsenic, cadmium, lead, manganese, and vanadium were COPC from a consideration of all the soil data at the Giant Mine.

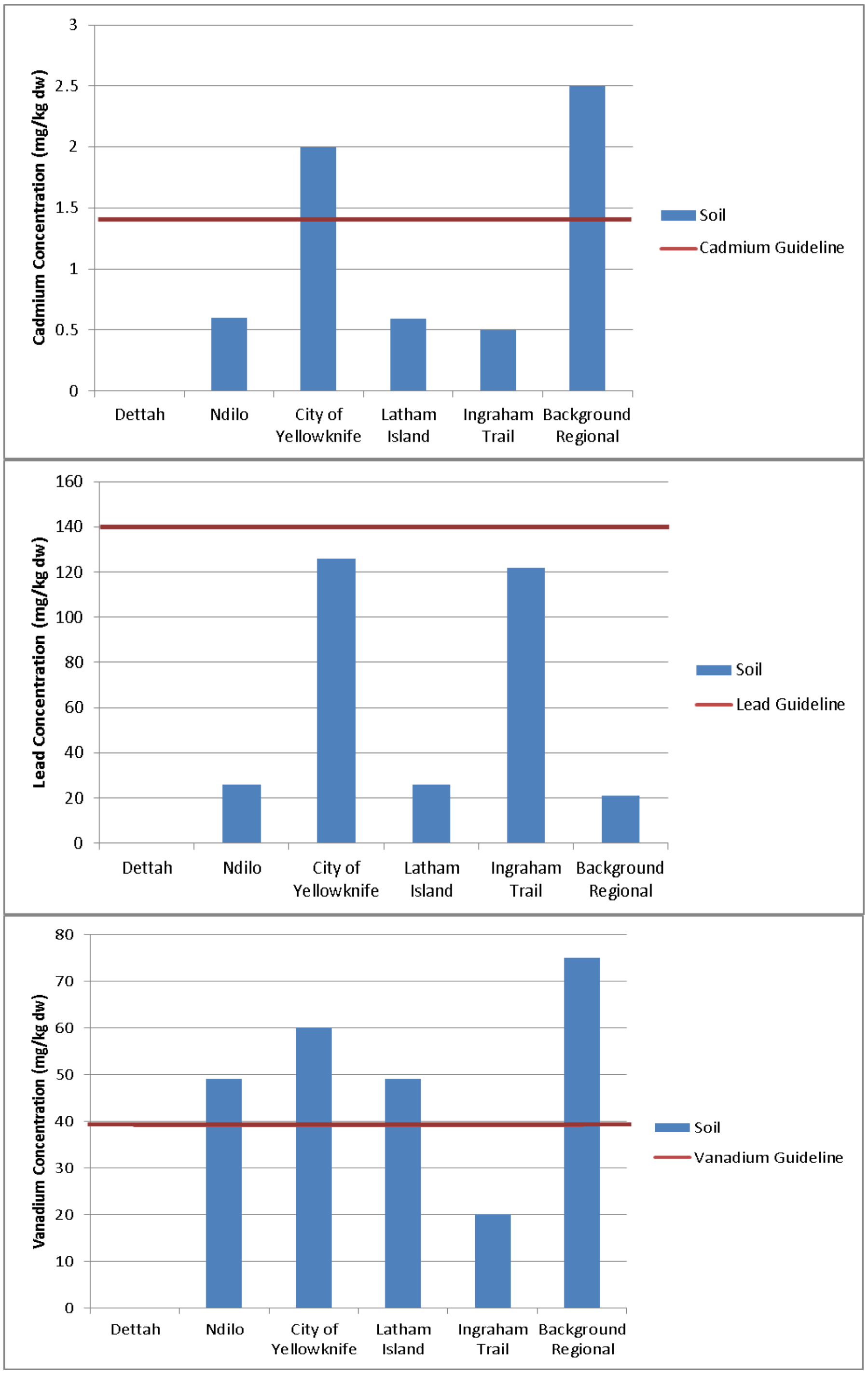
A qualitative assessment was carried out for the concentrations of the COPC in the soils at Ndilo, Dettah, Latham Island, City of Yellowknife, and Ingraham Trail. This qualitative assessment involved the comparison of concentrations at these locations to human health guidelines and/or background. Background concentrations are provided in Appendix C. The details of the qualitative assessment are provided in Appendix F.

Figure 3.1 Project location and surrounding features



Based on the qualitative analysis on the soils, cadmium, lead, and vanadium concentrations are below guidelines and/or background and, thus, do not represent a risk to human health. Figure 3.2 provides a representation of the screening process. As seen from the figure, concentrations of cadmium in soil are all below the guideline with the exception of the City of Yellowknife where the cadmium concentration is below background. Thus cadmium is not considered further in the risk assessment. All measured lead concentrations in soils at all locations are below guidelines and vanadium concentrations in soil, while above the guideline, are all below background. Therefore, the remainder of the discussion for human health will focus on arsenic, antimony, and manganese. Additional soil data available for Ingraham Trail and Dettah from work conducted by Queens University (Jamieson et al. 2017) does not result in changes to the qualitative assessment.

Figure 3.2 Summary of qualitative analysis for cadmium, lead, and vanadium



3.2.2 Receptor Identification

The people selected for evaluation in the HHRA were identified from the Problem Formulation (Stantec 2015b) as well as findings from consultation activities undertaken since the start of the project. This identification took into account the diversity of the people living in the City of Yellowknife, Latham Island, the Ingraham Trail area, and the communities of Ndilo and Dettah as well as the wide range of land uses among these groups. Consideration was also given to a future land use at the former Giant Townsite location as well as the Giant Mine. At present, there are no fixed plans for how the former Townsite will be used in the future; therefore the risk assessment took a conservative approach and assumed that people may build houses and live in this area. In order to provide a comparison of the impact of the remediation activities in the former Townsite, an unrealistic scenario of people living at the Townsite in its current condition was also evaluated. Figure 3.3 presents the locations that are assessed in the HHRA. Appendix E provides more details on the receptor characterization. The following list outlines the people evaluated in the HHRA:

- People (elders, adults, teens, children, toddlers) living in the City of Yellowknife. This also includes members of the Metis community.
- People (elders, adults, teens, children, toddlers) living in the community of Ndilo.
- People (adults, teens, children, toddlers) living on Latham Island, other than in the Ndilo community.
- People (elders, adults, teens, children, toddlers) living in the community of Dettah.
- People (adults, teens, children, toddlers) residing on the Ingraham Trail. There were some samples collected along the Ingraham Trail, and these samples were used to evaluate the residential exposure.

Concern has been expressed about children wading in shallow sediments in the communities of Ndilo and Dettah and also at the Marina near Latham Island. In addition, exposure at the beach at Long Lake and the shallow sediments has also been identified as a concern during consultations. The assessment considers all life stages exposed to sediments. It was also assumed that Yellowknife residents would swim in Long Lake. During meetings on the draft risk assessment, it was expressed that the YKDFN wanted analysis of their community using Long Lake as well as people from Latham Island and Ingraham Trail. These additional scenarios are presented in Appendix P.

Workers at the Giant Mine as well as Highway workers working close to the site have been identified as potential people to consider; however, workers were not included in the HHRA as they have their own, very rigorous, health and safety protocols and regulations. At the Giant Mine in particular, there are many programs in place, and the urinary arsenic program for on-site workers would also capture the exposure of workers who live in the community. In addition, during the COPC screening process, concentrations in the soil at the Giant Mine were compared to industrial/commercial guidelines, which are considered to be protective of worker exposure, and in addition to arsenic, only antimony concentrations were higher than the guideline. Antimony is known to be co-located with arsenic; thus, health and safety procedures targeted at protection from arsenic would protect workers from antimony as well. This provides additional evidence not to consider workers further.

The students of the K'àlemì Dene School in Ndilo were also identified for consideration since they consume lunches of fish caught in Yellowknife Bay and there were some elevated arsenic soil concentrations in the school yard. In Ndilo, all soil samples are considered in the residential scenario, including the high arsenic samples measured in the soils. Eating fish from North Yellowknife Bay where nets are set to catch fish for school lunches was also considered. Exposures for children living in Ndilo are for a longer time period (i.e., 24 hours a day, 365 days a year) than when they are at school (i.e., 6 hours a day for a maximum of 300 days a year) and, thus, capture potential exposures at the school.

As discussed above, a range of life stages (toddler, child, teen, and adult) were considered in risk calculations. Exposures for infants were not evaluated because it was assumed that they would be mainly consuming breast milk. It is not expected that COPC such as arsenic would be found at high concentrations in breast milk in either the current or future scenarios. Samanta et al. (2007) supports this statement with the finding that breast milk had low concentrations of arsenic even when women were being exposed to high levels of arsenic in their drinking water. Carignan et al. (2015) conducted a study that compared breastfed infants to formula-fed infants and determined that breastfed infants had lower arsenic exposure than formula-fed infants. These studies support the exclusion of infants in the risk assessment.

Figure 3.3 Human receptor locations

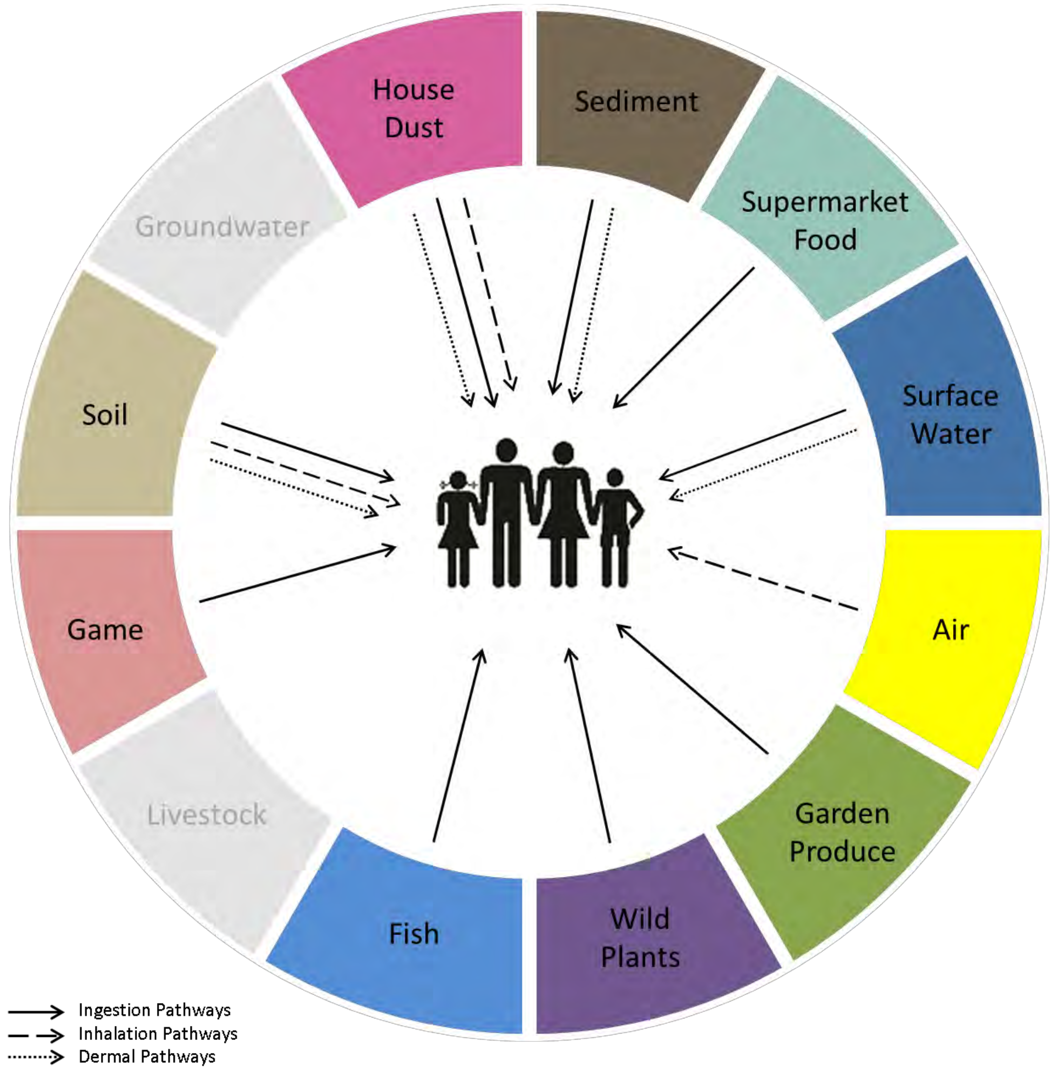
The Fred Henne Park and Long Lake have been identified as areas where people from the City of Yellowknife go to camp and swim. This recreational scenario is considered in the assessment.

3.2.3 Exposure Pathways

The ways that people get exposed (exposure pathways) were determined from consultations with the Giant Mine Working Group and other stakeholders by Stantec (2015b) as well as additional consultations by the CanNorth study team.

Figure 3.4 shows the potential exposure pathways that are evaluated for the current assessment.

Figure 3.4 Exposure pathways for the human health risk assessment



From the figure, the following ways of exposure are identified:

- Surface Water: People drink water from various sources. The municipal supply in Yellowknife comes from the Yellowknife River and people in the City of Yellowknife get pipe-borne water. In Latham Island, Ndilo and Dettah, the municipal water is delivered by tanker truck. However, there are also some members of the community in Ndilo and Dettah, as well as houseboaters, that indicate that they drink water directly out of Yellowknife Bay.

- Air: Metals such as arsenic may be present in the air and they can be breathed in by individuals.
- Soil: Individuals can come into contact with soil by gardening and other activities such as camping or being out on the land, and children and toddlers can be exposed by playing in soil. Chemicals in the soil can get into the skin by these activities, and soil on hands can end up in the mouth and be eaten. Exposures can occur outside the home, and if people are allowed to go onto the Giant Mine in the future for recreational activities, they can be exposed to soils on the Giant Mine.
- Dust: Dust in the house can have similar concentrations as soil, and dust can be picked up on hands and then ingested through hand-to-mouth contact.
- Sediment: Children have been reported to wade in shallow water along the shores of the Ndilo and Dettah communities, as well as near the marina and other areas on Latham Island, and concern has been expressed about this activity. In addition, playing on the beach can result in sediments getting on hands and then being transferred to the mouth. Sediment can also stick on the skin. The assessment considers all life stages wading in shallow sediment and being exposed to beach sediments.
- Fish: The City of Yellowknife and surrounding communities are located on Yellowknife Bay, and from the dietary survey, it was reported that a large proportion of people eat fish from different areas in the bay. Fish flesh and liver samples were collected from different kinds of fish in different locations in Yellowknife Bay.
- Moose: Because caribou cannot be hunted in the area anymore, more moose is being consumed, as indicated in the recent dietary survey. Moose flesh samples as well as organ (liver/heart) samples were collected from the community.
- Grouse/ptarmigan: The dietary survey indicated that people eat both grouse and ptarmigan from the area. Flesh samples as well as heart, liver, and gizzard samples were obtained from the community.
- Rabbit: The dietary survey indicated that people eat rabbit from the area. Information from other studies was considered along with samples from the community.
- Duck: People reported that they ate duck. Duck flesh samples were collected from the community.
- Medicinal Plants: In the dietary survey, people indicated that they drank Labrador tea, especially when they were on the land. In addition, they used different

medicinal plants, such as rat root and birch bark. Currently there are samples of Labrador tea, and this was used as a surrogate for all medicinal plants. Consideration of rat root and other medicinal plant data collected in the spring and summer of 2017 is shown in Appendix P.

- Berries: People collect berries from different locations across the study area. Many of the berries are collected at a distance from the Giant Mine; however, children in Ndilo have been reported to eat berries from local bushes. Samples have been collected from the community to represent exposure in all these areas.
- Mushrooms: The Metis community has indicated that their members eat mushrooms. Only one mushroom sample was provided by the community from the 2016 program. Additional mushroom data was collected in the spring and summer of 2017 and is provided in Appendix P.

In some places in Canada, drinking water may be obtained from groundwater wells. In the case of the City of Yellowknife and the surrounding communities, drinking water is obtained from the Yellowknife River municipal source or Yellowknife Bay. Given that these surface water sources are large and that there is no indication that the source of the municipal water system is likely to change, groundwater was not considered to represent a route of exposure.

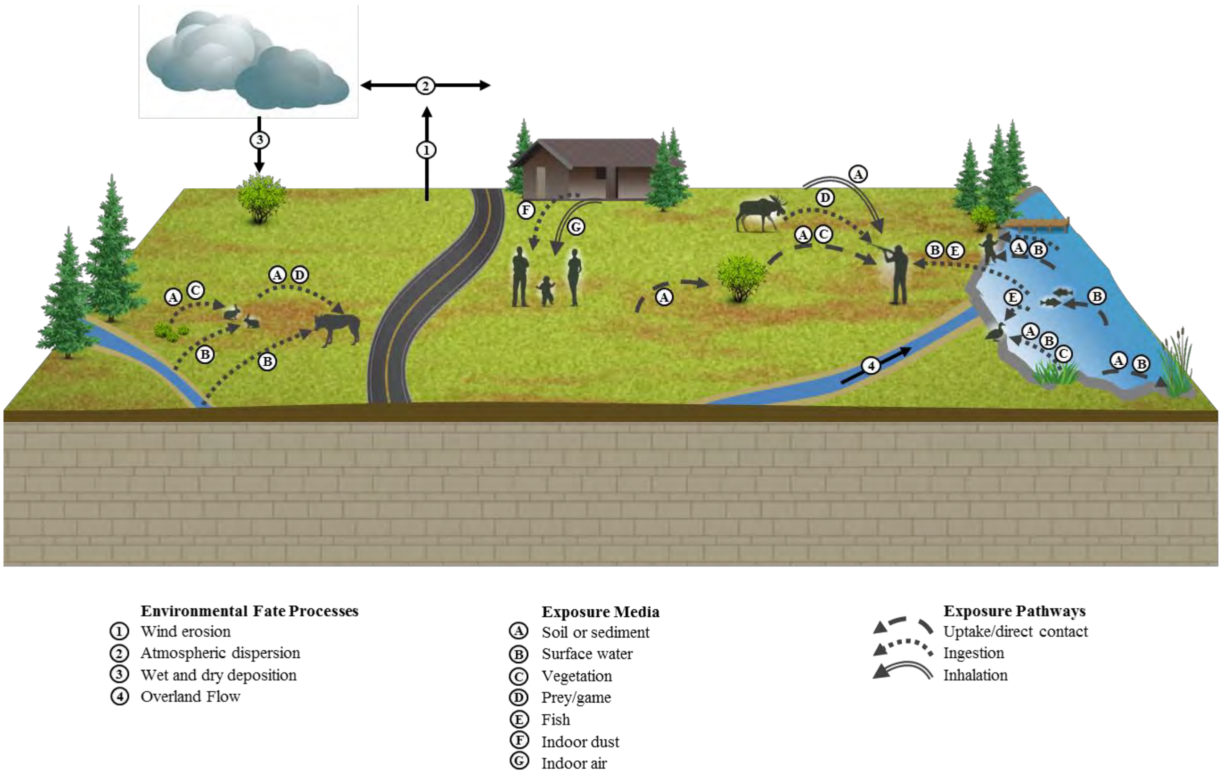
People do have vegetable gardens in the area; however, it was determined that most of the soil in these gardens (which are generally raised) comes from outside of the area or from compost from the City. An examination of the chemical concentrations in both the garden soil and compost indicated that concentrations were no different from background soil concentrations and, thus, were not influenced by the Giant Mine. In addition, in 2001 a risk assessment was carried out by the Royal Military College (ESG 2001b) related to exposure to arsenic from eating vegetables from backyard gardens in Yellowknife. This assessment involved the collection of soils and 61 different garden vegetables from 10 gardens across Yellowknife. The assessment considered the individual gardens as well as a garden that they considered to be representative of a typical resident in Yellowknife. The report concluded that even though residents in Yellowknife may eat garden vegetables with arsenic concentrations that are 10 times higher than in supermarket vegetables, when the amount of food consumed is considered there was no significant increase to the total daily intake of arsenic and therefore no indication that there was an increased health risk. Based on all these findings, garden produce was not considered further. Appendix E provides more details on the composition of the compost.

Children in particular may also drink small amounts of water from Yellowknife Bay water while swimming, playing on the shore, or boating. The assessment considers a resident drinking water from Yellowknife Bay and, thus, the exposure from these activities is accounted for within that scenario as people drink more water everyday than they do while they are swimming. City of Yellowknife residents were assumed to swim in Long Lake. The analysis of swimming in Long Lake by other people living in the Yellowknife area is provided in Appendix P. In addition, a scenario has been evaluated that considers people from Ndilo and Dettah swimming and wading in the Yellowknife River near the day use area (see Appendix P).

3.2.4 Conceptual Site Model

The Conceptual Site Model (CSM) for the Giant Mine HHRA is presented in Figure 3.5. A conceptual site model generally provides a picture to show the different pathways that are being evaluated in the risk assessment as well as the ways that the chemicals move from the soil, sediment, and water and are taken up by plants, fish, and other animals. The picture in Figure 3.5 captures many of the pathways that are being evaluated in the HHRA but does not include every pathway. For example, it shows a large animal, such as a moose, but does not show small animals, such as hare. The large animal is selected to represent all wild game.

Figure 3.5 Conceptual site model for the human health risk assessment



3.3 Exposure Assessment

Several different characteristics of individuals influence their exposure. These characteristics include how much they breathe, their body weight, how much water they drink, how much food they eat, and how much time they spend outdoors, to name a few. These characteristics are different depending on the age of the individual. For example, toddlers tend to eat more soil and dust since they are crawling and playing on the ground and then they put their hands in their mouths. Since they do not weigh very much, a toddler also tends to be the most highly exposed life stage in HHRA.

The exposure assessment involves the estimation of the intake of COPCs for people at Ndilo, Dettah, Latham Island, City of Yellowknife, and the Ingraham Trail using an approach that tends to overestimate exposures. The total intake for a COPC is the sum of the intakes calculated for each of the exposure pathways, including air, soil, water, sediment wading, and country foods. Calculating the intake rate of COPC uses the measured concentrations in air, water, soil, and sediments obtained from various sampling programs for the GMRP, as well as concentrations in country foods that were obtained from the voluntary sampling program in the community, and combines them with intake rates for each of the pathways. The intake rates for the country foods were obtained from the dietary survey that was conducted in the communities, and the other intakes related to how much water a person drinks etc. were obtained from values provided by Health Canada.

3.3.1 Fate and Transport Modelling

For the current scenario in the HHRA, measured concentrations for air, surface water, soils, and sediments at the various locations such as Ndilo, Dettah, Latham Island, Ingraham Trail, and the City of Yellowknife were used. For country foods, the measured concentrations in the country foods obtained from the voluntary sampling were used. For the unrealistic current scenario where it has been assumed that someone is living in the former Townsite area, measured concentrations were also used in combination with the measured country food concentrations. There were no indoor dust measured concentrations; therefore, the indoor dust concentrations were calculated from outdoor soil using a factor of 0.7 (U.S. EPA 1998). More details on the selection of this value are provided in Appendix F. The implications of this assumption were considered in a sensitivity assessment (Section 3.5.3).

For the future scenario, water and sediment concentrations in the future were predicted using simple fate and transport equations as outlined in Appendix K. These water and sediment concentrations were used to represent exposures at the various locations in the future. The soil concentrations at all the locations (Ndilo, Dettah, Latham Island, Ingraham Trail, and the City of Yellowknife) with the exception of the former Townsite will not change as the remedial activities on the Giant Mine will not have any affect in these areas. The future soil concentrations are discussed in Section 3.3.6.3.

3.3.2 Receptor Characterization

Information on human receptor characteristics were obtained from Health Canada or other authoritative sources, and include body weight, food, and drinking water ingestion rates, time spent outside, areas from which food (plants, fish, game) were obtained, etc., were defined in order to complete estimates of potential exposure. The YKDFN identified the need for an updated dietary survey; therefore, a dietary survey was completed in early 2017 to update the types and amounts of foods typically consumed by the YKDFN and Metis communities. Previous studies on the amount of food people consume were completed in the YKDFN community by the CINE in the mid to late 1990s (Receveur et al. 1996, 1998). In the current study, three workshops were held and a dietary survey questionnaire was developed to gather information on what country foods people from YKDFN and NSMA eat and where they get their country food from. This information was used in the HHRA to help reduce uncertainty in the use of data collected almost 30 years ago. Details of the survey results are provided in Appendix E. Reasonable assumptions were made or standard literature values were used for the other characteristics needed for the risk assessment, as described in the following sections.

3.3.2.1 Country Food Consumption

Based on the results of the January 2017 dietary survey and the NSMA questionnaire, the amount of country food that people reported eating was characterized for three different diets: a typical country foods eater from the YKDFN, a high country foods eater from the YKDFN, and a country food diet representative of the NSMA community. The country food diet of the NSMA community is also taken to represent Yellowknife residents who harvest, hunt, and fish. The assessment also considered people from the different locations that only eat supermarket food.

About five people from the YKDFN indicated that the only meat they consume is from country foods, and these people were captured in the high food diet. The largest number of people reported that country foods made up only 20% of their diet, and these people were captured in the typical food diet. A number of elders and young people in their 20s indicated that they either ate only food from the supermarket or food from the supermarket plus 5 to 10% country foods. Therefore, people with only a supermarket diet were also evaluated.

The survey also asked people how many portions of different country food they ate during a meal. For all meat and fish, a portion was described as the size of a palm of your hand and was equivalent to 85 g. For rabbit, the minimum reported amount corresponds to a person eating about 3 whole rabbits a year, and for grouse/ptarmigan, the minimum reported amount also corresponds to eating about 3 grouse a year. For berries, people were asked how many handfuls they ate, with a handful being equivalent to ½ cup or 50 g. The portions of food and the number of days reported for the three different types of diets are summarized in Table 3.1. The types of country food in the table are based on the different food samples collected in the voluntary sampling program. Additional details on the country food intakes are provided in Appendix E.

Table 3.1 Summary of the amount of country food eaten for three different diet assumptions

Country Food	Typical Country Diet	High Country Diet	Yellowknife Resident with Country Food Diet
Moose	2 portions/meal, 1 time/day, 15 days/year	3 portions/meal, 1 time/day, 30 days/year	1 portion/meal, 1 time/day, 12 days/year
Fish	2 portions/meal, 1 time/day, 365 days/year	3 portions/meal, 1 time/day, 365 days/year	1 portion/meal, 1 time/day, 210 days/year (4 days/week)
Rabbit	2 portions/meal, 1 time/day, 6 days/year	3 portions/meal, 1 time/day, 26 days/year	0.5 portion/meal, 1 time/day, 2 days/year
Grouse [a]	1 portion/meal, 1 time/day, 12 days/year	2 portions/meal, 1 time/day, 20 days/year	1 portion/meal, 1 time/day, 6 days/year
Duck	1 portion/meal, 1 time/day, 10 days/year	3 portions/meal, 1 time/day, 30 days/year	1 portion/meal, 1 time/day, 6 days/year
Muskrat	0.5 portion/meal, 1 time/day, 8 days/year	2 portions/meal, 1 time/day, 20 days/year	None
Beaver	1 portion/meal, 1 time/day, 4 days/year	2 portions/meal, 1 time/day, 24 days/year	1 portion/meal, 1 time/day, 2 days/year
Goose	2 portions/meal, 1 time/day, 4 days/year	3 portions/meal, 1 time/day, 8 days/year	1 portion/meal, 1 time/day, 2 days/year
Berries	1 portion per day, 15 times/year	1portion per day, 30 times/year	1portion per day, 15 times/year
Mushroom	None	None	½ cup once a month in spring and summer (4 months), adults only
Organs – Moose	1 portion, 2 days/year	1 portion, 2 days/year	1 portion, 2 days/year

Note: Based on dietary survey results for adults, 1 portion for meat and fish is equivalent to a palm size or 85 g. 1 portion for berries is equivalent to a handful, ½ cup or 50 g.
a – Combination of grouse and ptarmigan.

Since the dietary survey was completed by adults, it was necessary to make assumptions for the diets of elders, teens, children, and toddlers. Elder receptors were assumed to have the same ingestion rates as adults, while teen, child, and toddler receptors were scaled from adult rates, assuming 91%, 75%, and 50%, respectively. The value for teens is based on data from Richardson (1997) for First Nations people, and the values for child and toddler are based on data from a Canada-wide survey (Health Canada 1994).

The survey results also indicated that adults or elders ate organs and mushrooms. Therefore, the amount of organs from moose, fish, and grouse/ptarmigan that adults and elders eat also needed to be determined. The dietary survey provided information related to how much moose organs people eat (see Table 3.1); however, there was no information collected in the dietary survey on how much fish or bird organs people eat. Therefore, some assumptions were made to derive these values and are presented in Table 3.2. The assumptions were based on the weight of the organ in comparison to the whole body weight of the fish or bird. The amount of fish or bird organs was then determined by taking this percentage and applying it to the amount of meat people reported eating. For example, the fish liver is about 1 % of the fish body weight; thus, an adult or elder with a typical diet was assumed to eat about 2 g of fish liver (1% x 170 g fish flesh [2 portions]) every day. Thus, the amount of organs eaten assumes that people eat organs at the same relative rate as the meat from the rest of the animal. Specific values and ingestion rates are provided in Appendix E.

Table 3.2 Assumptions for size of fish and bird organs in comparison to the rest of the body

Food Item	Basis of Assumption
Fish Liver	Fish liver is approximately 1% of whole fish body weight.
Grouse heart	Grouse and ptarmigan heart is approximately 2% of whole body weight.
Grouse gizzard and liver	Grouse and ptarmigan gizzard is approximately 5% of whole body weight.

Specific ingestion rates determined for the adult and elder receptors are provided in Table 3.3, and the ingestion rates used for all receptors are provided in Appendix E.

Table 3.3 Summary of ingestion rates for adult and elder receptors

Country Food	Daily amount of country food eaten (g/d)		
	Typical Country Diet	High Country Diet	Yellowknife Resident with Country Food Diet
Meat	18.6	95.5	6.8
Fish	170	255	49
Berries	2.5	4.9	2.5
Organs	2.4	3.7	1.1

Note: Based on dietary survey results for adults and assumptions for organs; averaged over 365 days.

Medicinal Tea Intake

About ½ of the people surveyed indicated they drank Labrador tea. However, it was difficult to determine how much tea they drank and how much of the leaves went into the preparation; therefore, a number of assumptions were used to derive how much medicinal tea people drink. These assumptions are outlined in Appendix E. The values used for the typical country diet, high country diet, and Yellowknife resident with a country food diet were 0.05 g/d, 0.5 g/d, and 0.03 g/d, respectively. Only adult and elder receptors were assumed to drink medicinal tea on a regular basis. In the fall of 2017, additional plant samples were obtained, some of which were brewed into a tea and sent for analysis. Appendix P provides the results of these samples.

3.3.2.2 Supermarket Food Consumption

In the assessment, it was assumed that people with country food diets also ate some supermarket foods. In addition, a person only eating supermarket foods was evaluated. Typical intakes of antimony, arsenic, and manganese from supermarket foods were obtained from literature and are presented in Table 3.4. There is some double-counting in the assessment, since supermarket intakes were not reduced to account for the foods obtained from local sources such as country foods.

Table 3.4 Summary of general Canadian supermarket food dietary intakes

Constituent	Intake (mg/kg-d)				Reference
	Adult/Elder	Teen	Child	Toddler	
Antimony	$3.3x10^{-5}$	$5.0x10^{-5}$	$5.0x10^{-5}$	$7.7x10^{-5}$	FSA (2009), with consideration of information presented in Health Canada (1979).
Arsenic	$8.0x10^{-5}$	$1.0x10^{-4}$	$2.0x10^{-4}$	$3.0x10^{-4}$	EC (1999), inorganic arsenic in food.
Manganese	0.056	0.059	0.087	0.11	Health Canada (2011).

Note: FSA = United Kingdom Food Standards Agency, EC = Environment Canada.

3.3.2.3 Water Intake

The average amount of water drunk by an adult (20+ years of age) and elder (70+ years of age), teen (12 to 19 years of age), child (5 to 11 years of age), and toddler (0.5 to 4 years of age) are provided by Health Canada (2012) and are 1.5 L/d, 1 L/d, 0.8 L/d, and 0.6 L/d, respectively. This is equivalent to about 6 glasses, 4 glasses, 3 glasses, and 2½ glasses of water a day.

3.3.2.4 Soil Intake

Appendix E provides a detailed discussion for the selection of how much soil people end up eating during outdoor activities. For this assessment, soil ingestion rates from Wilson et al. (2013) were used, with average values for the elder, adult, teen, child, and toddler of 1.5 mg/d, 1.6 mg/d, 1.4 mg/d, 21 mg/d, and 14 mg/d, respectively.

3.3.2.5 Indoor Dust Intake

People can also eat some indoor dust when it is present on their hands and they then put their hands in their mouth. For this assessment, dust ingestion rates from Wilson et al. (2013) were used, with average values for the elder, adult, teen, child, and toddler of 2.5 mg/d, 2.5 mg/d, 2.2 mg/d, 31 mg/d, and 41 mg/d, respectively. Further discussion on the selection of indoor dust intake rates is provided in Appendix E.

3.3.2.6 Sediment Intake

Similarly, sediments present on hands can also end up in the mouth from hand-to-mouth contact. The estimated sediment ingestion rates from the literature for use in human health risk assessments are limited. A discussion of the available information is provided in Appendix E. Wilson et al. (2015) provided rates of 72 mg/hr, 57 mg/hr, 18 mg/hr, and 20 mg/hr for hand-to-mouth contact for the toddler, child, teen, and adult, respectively, for on-land activities, such as playing in the sand on a beach where sediment is exposed. These rates were used for the beach exposure scenario. Wilson et al. (2015) also provides a suspended sediment ingestion rate of 7.7 mg/hr for all age groups for near-shore, in-water activities in shallow water (i.e., wading, walking, playing in water). These rates were used for the wading exposure scenario.

3.3.2.7 Swimming Water Intake

There is limited available information related to the amount of water someone can drink while swimming. The U.S. EPA (2011) provides an estimate of the amount of water an adult and child could drink while swimming, based on results from swimming pool experiments (Dufour et al. 2006). Dufour et al. (2006) considered that swimming behaviour of recreational pool swimmers may be similar to freshwater swimmers. Based on the information from the U.S. EPA (2011), the mean hourly rate of 21 mL/hr for an adult was used for the adult, elder, and teen, and the mean hourly rate of 49 mL/hour for a child was used for the child and toddler. The Chicago School of Public Health (Dorevitch et al. 2011) carried out a study of water ingestion during recreational activities. This study indicated that the upper confidence estimate of water ingestion during swimming was 35 mL/hr, which is similar to the average of the adult and child ingestion rates provided by the U.S. EPA (2011). Further details on the amount of water swallowed while swimming are provided in Appendix E.

3.3.2.8 Skin Contact

Soil

People can be exposed through soil sticking to the skin during different outdoor activities. Exposed skin surface areas for hands for the adult, teen, child, and toddler of 890 cm^2, 800 cm^2, 590 cm^2, and 430 cm^2, respectively, were obtained from Health Canada (2010a). Exposed skin surface areas for arms and legs for the elder and adult, teen, child, and toddler of 8,220 cm^2, 7,200 cm^2, 4,550 cm^2, and 2,580 cm^2, respectively, were obtained from Health Canada (2012a). The total body surface area is not considered, since clothes provide protection to other areas of the body. Estimates for soil loading to exposed skin (hands, arms, and legs) were obtained from Health Canada (2012a); these values are 1×10^{-7} kg/cm^2-event for hands and 1×10^{-8} kg/cm^2-event for arms and legs. Further details on the calculated soil loading rates are provided in Appendix E.

Indoor Dust

People can also be exposed to dust on ledges and other areas in the house when dust sticks to the skin. Exposed skin surface areas for hands for the adult, teen, child, and toddler of 890 cm^2, 800 cm^2, 590 cm^2, and 430 cm^2, respectively, were again obtained from Health Canada (2010a). Indoor dust exposure was considered to occur through hand contact only, since clothes provide protection to other areas of the body and hands are the most likely to be in contact with indoor dust. Dust loading to exposed skin (hands) was obtained from Health Canada (2011); this value is 2×10^{-7} kg/cm^2-event for hands. Further details on the calculated indoor dust loading rates for dermal exposure are provided in Appendix E.

Sediment

Sediment can also stick to the skin, and then COPC can be transferred through the skin. Weighted sediment adherence factors for skin for all life stages were calculated based on Shoaf (2005a) for children and Shoaf (2005b) for adults. Full body (hands, arms, legs, feet) exposure was considered for toddlers (3,000 cm^2), while children were assumed to have feet and leg exposure (3,790 cm^2). Teens, adults, and elders were assumed to have sediment exposure to feet only (1,080 cm^2, 1,200 cm^2, and 1,200 cm^2, respectively). Further discussion on the selection of appropriate sediment adherence factors is provided in Appendix E. It should be noted that sediments that are underwater are likely to be washed off while wading in water whereas wet sediments at the shoreline may to stick to the skin.

Swimming Water

While swimming, skin is in contact with water and thus COPC can be transferred. Exposed total body skin surface areas for the adult, teen, child, and toddler of 17,640 cm^2, 15,470 cm^2, 10,140 cm^2, and 6,130 cm^2, respectively, were obtained from Health Canada (2010a). Further discussion on the calculation of dermal loading rates for swimming is provided in Appendix E.

3.3.2.9 Body Weight

The body weights (bw) of a toddler, child, teen and adult are needed to calculate daily intake rates (mg/[kg (bw)-d]). For this assessment, the body weights used for the adult, teen, child, and toddler were 70.7 kg, 59.7 kg, 32.9 kg, and 16.5 kg, respectively (Health Canada 2010a).

3.3.2.10 Exposure Frequency and Duration

The exposure assessment considers how often and how long people are exposed by the different pathways identified above. Exposure frequency refers to the how often a person is exposed via a particular pathway, while exposure duration refers to how long over a year that the behaviour occurs. Appendix E provides a discussion on the determination of exposure frequency assumptions for the assessment, and a summary is provided in the following section.

The assessment considered exposure to food, drinking water, and medicinal plants for 7 days per week, 52 weeks per year, or 100% of the time.

For outdoor soils, it was assumed the ground will not have snow for approximately four months (May to September) of the year. This represents the time when the soil is considered to be accessible. This translates to an exposure frequency of 7 days per week, 16 weeks per year. Exposures to the skin were assumed to occur at a frequency of one event per day of exposure.

Recreational soil exposures, such as from hiking, were assumed to occur on the weekend during the summer months, or for 2 days a week, 10 weeks a year. Half a day of soil ingestion was considered for the recreational soil exposures. Similar to outdoor soils, skin exposures were assumed to occur at a rate of 1 event per day of exposure. It is noted that the recreational scenario is in addition to the normal residential exposure, so there is some overestimation of exposures via this pathway for the recreational soil scenarios.

It was assumed that exposure to indoor dust would occur 7 days a week, 52 weeks a year. As above, skin exposures were assumed to occur at a frequency of one event per day of exposure.

It was assumed that people would wade in nearshore sediments or visit the beach at Long Lake about 10 weeks year, or when the water is warm enough to swim. Wading was assumed to occur for 2 hours per day, 7 days per week, during the warmer weather. It was assumed that people would swim at Long Lake about 10 weeks year, or when the water is warm enough to swim. Swimming was assumed to occur for 1 hours per day, 3 days per week, during the warmer weather and in combination with wading..

Exposure is averaged over a specified period, which is representative of the exposure frequency and duration. For the food, water, tea, and indoor dust exposure pathways, the averaging period was selected to be 52 weeks per year, consistent with the exposure frequency assumed for these pathways. Exposures to soil and sediment are assumed to occur on a consistent basis seasonally, as opposed to periodic or at defined intervals over the course of the year. Therefore, for these pathways, the averaging period was selected to be consistent with the exposure duration; 16 weeks per year for outdoor soil, 10 weeks per year for recreational soil, and 10 weeks per year for sediment exposure. However, it should be pointed out that residents in the communities surrounding Giant Mine are exposed every day to COPC in indoor dust, drinking water, and supermarket and country foods, and shorter term exposures to soil and sediment outdoors during the summer are not isolated but are in addition to the on-going daily exposures. Therefore, these shorter term exposures increase the daily exposures during the summer period. Given that exposures occur every day it may be more appropriate to average the exposure over 365 days rather than the shorter times that were used in the risk assessment. The approach used in the risk assessment results in overestimates of exposures via the soil and sediment pathways.

For the consideration of potential effects from carcinogenic COPC, the various durations of exposure for each life stage were considered in order to estimate a composite risk to a receptor from exposure over their lifetime. A lifetime receptor was calculated assuming

4 years as a toddler, 6 years as a child, 8 years as a teen, 52 years as an adult, and 10 years as an elder, for a total of 80 years of exposure.

3.3.2.11 Exposure Assumptions

The assessment considered exposure to country foods from the various locations where people provided the voluntary samples. For the wild game (moose, muskrat, beaver, hare, ptarmigan/grouse), measured concentrations from the voluntary sampling program were combined and used for all receptor locations as it was a small data set. However, data for berries showed that there was a decrease in concentrations away for the Giant Mine and, thus, the berry locations were separated into Ndilo, within 10 km of Giant Mine, and distances greater than 10 km from Giant Mine. In addition, people reported that they had nets set in North Yellowknife Bay and, therefore, the assessment evaluated consuming fish from North Yellowknife Bay and South Yellowknife Bay. It is noted that the assessment did not evaluate eating fish from small inland lakes. The assumptions used in the risk assessment are summarized in Table 3.5. The assumptions of berry consumption at Ndilo account for the fact that children have been reported to pick and eat berries from bushes in the community. There are not enough berry bushes to support getting all the berries from Ndilo and, thus, a value of 5% of total berry intake was used, although an assumption of eating all berries from Ndilo was included as part of the sensitivity assessment (Section 3.5.3). Similarly, it was assumed that people in Latham Island may eat berries from their back yards, and this was assigned 5%. However, it is noted that most respondents in the dietary survey indicated that they collect their berries more than 10 km from the Giant Mine. As there are a few nets set in North Yellowknife Bay by the YKDFN, it was assumed that people in that community obtain 10% of their fish from North Yellowknife Bay and 90% of their fish from South Yellowknife Bay.

Table 3.5 Summary of exposure assumptions for fish and berries

Country Food	Location	Percentage from Location					
		Dettah	Ndilo	Latham Island	City of Yellowknife	Ingraham Trail	Townsite
Fish	North Yellowknife Bay (A2)	10	10	0	0	0	0
	South Yellowknife Bay (A3)	90	90	100	100	100	100
Berry	Ndilo	0	5	0	0	0	0
	Within 10 km of Giant Mine	0	0	5	0	0	0
	More than 10 km from Giant Mine	100	95	95	100	100	100

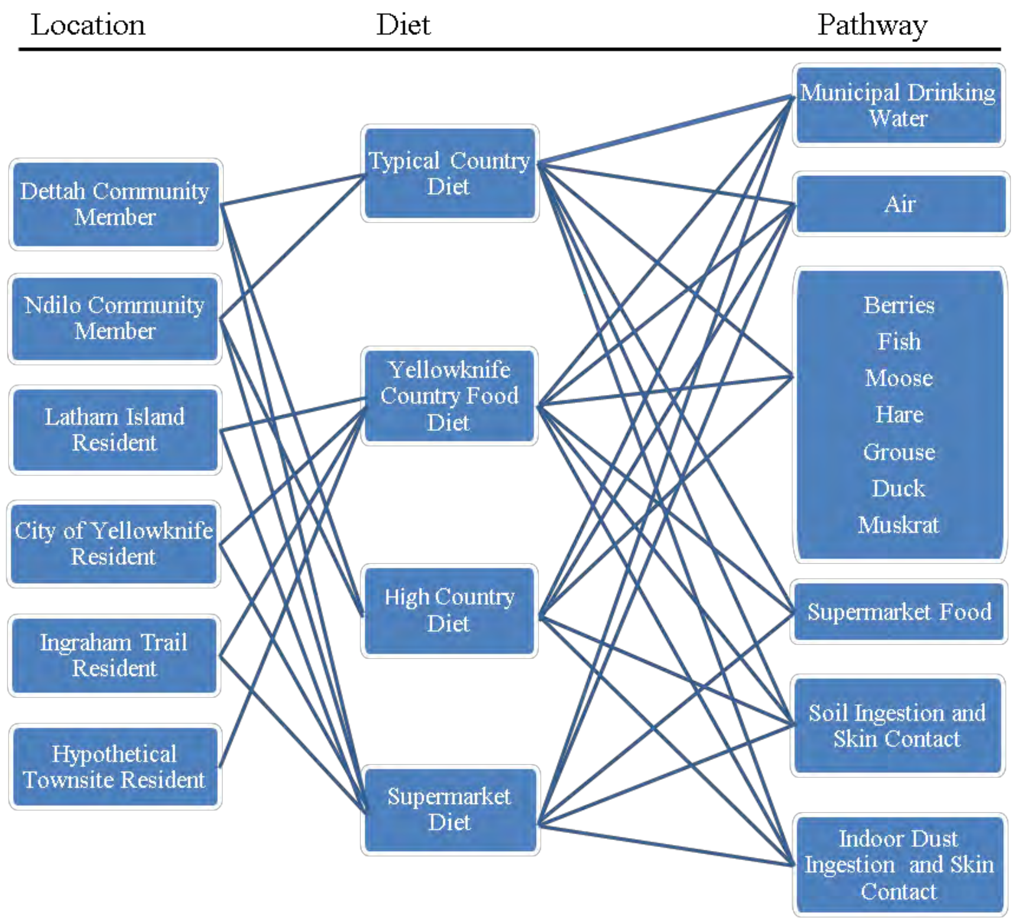
Note: Fish and berry locations based on dietary survey results.

3.3.3 Exposure Scenarios

3.3.3.1 Current

The exposure assessment estimated exposures to people living in the vicinity of the Giant Mine, with diets discussed in Section 3.3.2, and food from the locations where the country foods were collected. The exposure scenario that is considered to represent exposures for every location (i.e., base case) is provided in Figure 3.6. In the base case, everyone was assumed to get their drinking water from the municipal source and to be exposed where they live to concentrations in the air, soil, and indoor dust. Thus, this scenario captures the unique residential exposure in their areas. Members of the YKDFN community (Ndilo and Dettah) were assumed to have either a purely supermarket food diet, a typical country food diet that is also supplemented with supermarket food, or a high country food diet. People in the City of Yellowknife were assumed to have a diet consisting entirely of a purely supermarket food diet. In addition, because the Metis community also lives in Yellowknife and has some avid hunters and fishers, it was also assumed that people in Yellowknife would eat some country food as well as supermarket food. It was assumed that the Ingraham Trail resident and the Latham Island resident would also have a similar country food diet as residents in the City of Yellowknife. An unrealistic scenario was also evaluated where it was assumed that someone with a typical country food diet was living at the former Townsite. This scenario was used to demonstrate the impact of the remedial actions on the former Townsite location.

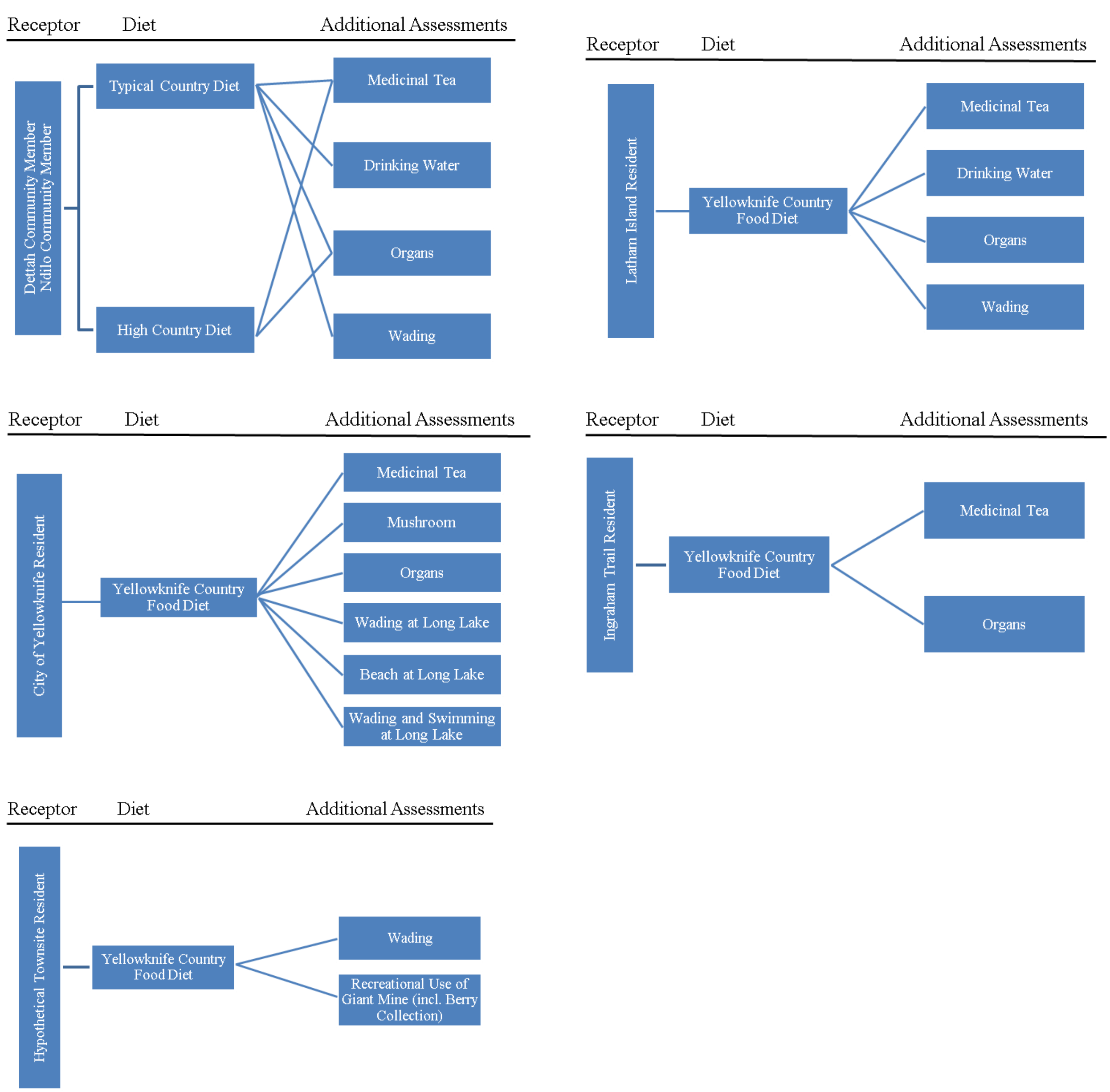
Figure 3.6 Base case exposure scenario



Other scenarios were also considered that were added to the base case. These scenarios are summarized in Figure 3.7. The scenarios for Ndilo and Dettah involve the assumption that people in these two communities would drink water from Yellowknife Bay instead from the municipal source and they would also wade in the shallow shoreline sediments. In addition, it was assumed that organs from moose, fish, and birds would be eaten and that they would drink medicinal tea. These same scenarios were considered for the Latham Island resident.

The Metis indicated in the dietary survey that they consumed mushrooms and, therefore, this scenario was considered for the City of Yellowknife resident that has a country food diet. In addition, the Fred Henne Campground and Long Lake were identified as areas where residents like to go and camp and swim/wade; thus, this scenario was considered. Eating organ meat and drinking medicinal tea was also evaluated for the City of Yellowknife resident, as well as the Ingraham Trail resident. For the unrealistic scenario at the former Townsite, it was assumed that people would currently wade in the shallow sediments. This wading scenario is also used to evaluate exposures at the boat launch and marina areas as the sediment concentrations are similar. An unrealistic scenario where people could access the Giant Mine under current conditions was also used to help frame the impact of the remedial activities. It is recognized that members of the YKDFN community do not want access to the Giant Mine.

Figure 3.7 Additional exposure scenarios considered



Note: It was assumed that Ndilo, Dettah, and Latham Island were assumed to get their drinking water from Yellowknife Bay.

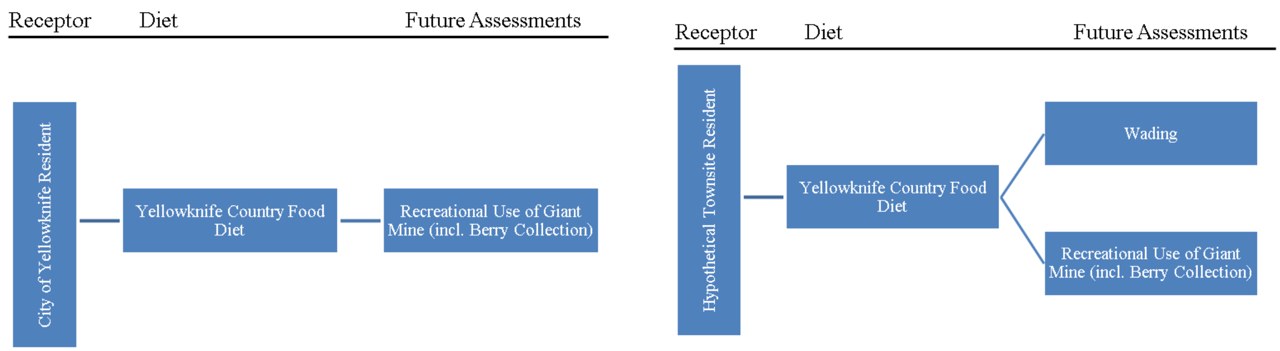
3.3.3.2 Future

The objective of the risk assessment is to determine what the effects of the remedial activities at the Giant Mine will have on the residents in the surrounding communities. The remedial actions at the Giant Mine involve the capping of the tailings, the remediation of arsenic concentrations in the disturbed areas of the site to the GNWT industrial criterion, the active management in terms of excavation and/or fencing of areas on the Giant Mine with arsenic concentrations above 3,000 mg/kg, and relocating the water treatment discharge pipe to near the mouth of Baker Creek. These remedial activities will not have any effect on the off-site community location exposures that were evaluated in the base case. In addition, remedial activities will not impact the concentrations in the country foods, as none of the samples were obtained from the Giant Mine. The remedial activities may allow for access to the Giant Mine for recreational activities such as walking, running, cycling etc., and this exposure was evaluated in the future scenario to help guide the remedial options planning. The effect of the relocation of the treated water discharge near the mouth of Baker Creek was evaluated using modelling to determine what the water and sediment concentrations would be in Back Bay and North Yellowknife Bay as described in Appendix K. The results determined that the concentrations in water and sediment in North Yellowknife Bay would essentially remain unchanged.

Figure 3.8 provides a summary of the exposure scenarios considered for future conditions. Public consultation has indicated that the YKDFN do not want to the Giant Mine to be used in the future; however other members of the public have indicated that they would like to use the site. Therefore, in the future scenario, it was assumed that people in the City of Yellowknife may be able spend some time on the remediated Giant Mine doing recreational activities. It was also assumed that, while they were on the site, they may pick some berries if they were in season (assumed to be 5% of total berry consumption). The consideration of people living in the City of Yellowknife would also account for residents on Latham Island and Ingraham Trail.

At the former Townsite, the remedial actions involve clean up of the soils to the arsenic GNWT residential criterion. No plans have been made for the final land use in this area; however, the risk assessment has evaluated the strictest land use where someone may live in this area. In addition, since this area is so close to the Giant Mine, it was assumed that people may be able to access the Giant Mine in the future. Additional details on exposure assumptions and scenario selection are provided in Appendix E.

Figure 3.8 Exposure scenarios for future conditions



3.3.4 Bioavailability/Bioaccessibility Assessment

Oral bioavailability is defined as the fraction of an administered dose that reaches the central blood compartment from the gastrointestinal tract. Bioavailability defined in this manner is commonly referred to as “absolute bioavailability”.

Relative bioavailability refers to comparative bioavailabilities of different forms of a substance or for different exposure media containing the substance (i.e., bioavailability of a metal from soil relative to its bioavailability from water), referred to as a Relative Absorption Factor (RAF). For skin contact, there are factors that account for the amount of a chemical that can be absorbed through the skin. RAF values for skin contact are available from literature and are provided in

Table 3.6 for the COPC considered in the HHRA.

Table 3.6 Dermal RAFs

COPC	Dermal RAF	Reference
Arsenic	0.03	Health Canada (2010b)
Antimony	0.1	MOE (2011)
Manganese	0.01	Health Canada (2010b), default

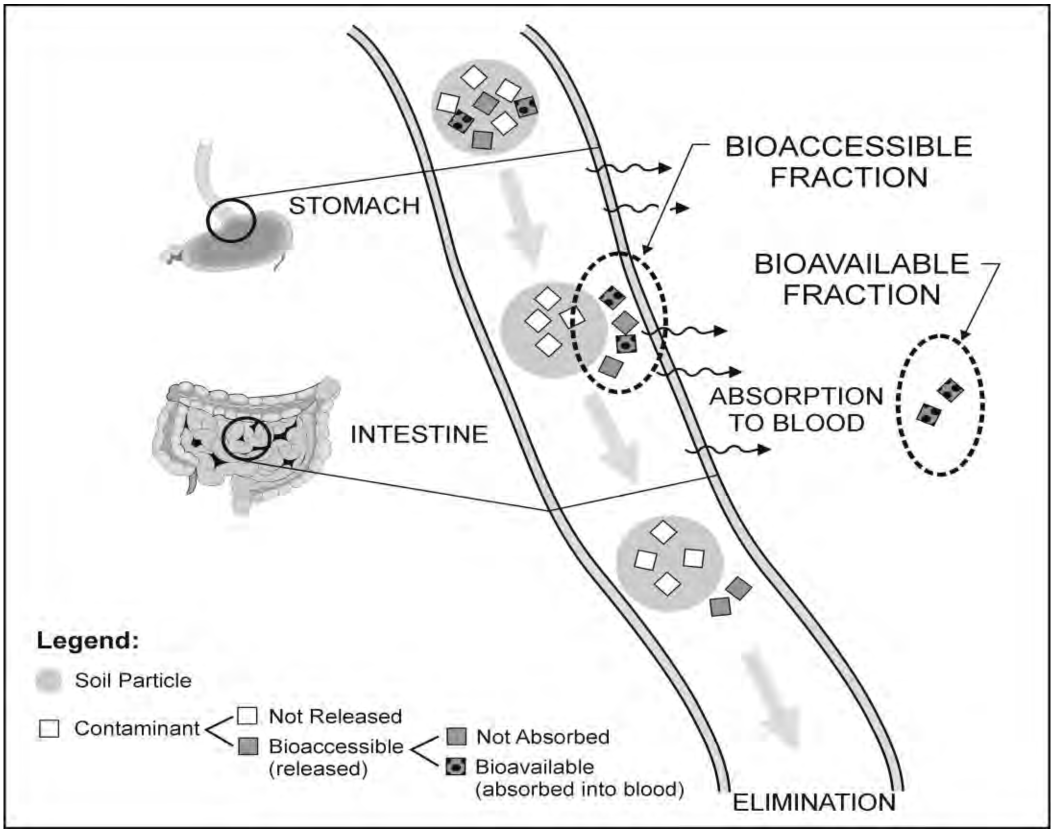
The oral bioaccessibility of a substance is the fraction of the administered dose that is soluble in a gastrointestinal environment and is available for absorption (into the central blood compartment). The bioaccessible fraction is not necessarily equal to the RAF but depends on the relation between results from a particular *in vitro* test system and an appropriate *in vivo* model. This is the measure of arsenic availability that is considered for the risk assessment.

Figure 3.9 provides a schematic representation of the difference between bioaccessibility and bioavailability.

For the Giant Mine HHRA, it was important to examine the bioaccessibility of arsenic in particular, since it was the primary COPC associated with the activities at the Giant Mine and since it is present in many different chemical forms (arsenopyrite, arsenic trioxide, etc.). Some of these forms can be absorbed into the bloodstream, while others cannot. In this study, laboratory analyses of soils, sediments, fish tissue and plants were conducted to determine the levels of arsenic that were available for exposure.

For the purposes of the Giant Mine, data on arsenic bioaccessibility in soils, sediments, and fish were obtained from samples collected in the study area as part of sampling programs for the GMRP. Bioaccessibility data for arsenic in plants and wildlife were obtained from a publication by Koch et al. (2013) related to bioaccessibility and speciation of arsenic in country foods from contaminated sites in Canada where Giant Mine was part of the study.

Figure 3.9 Schematic representation of bioaccessibility and bioavailability



The bioaccessibility of antimony and manganese were assumed to be 100% for this study as there were no available data. This represents a conservative assumption. Assumptions for the bioaccessibility of arsenic are described in the following section.

3.3.4.1 Summary of Arsenic Bioaccessibility Values Used in the HHRA

Appendix F provides a detailed discussion on all the bioaccessibility studies for various media that have been carried out as well as an analysis of the data for use in the risk assessment. Based on the bioaccessibility values provided in Appendix F, the specific assumptions for arsenic bioaccessibility for the HHRA are provided in Table 3.7. The soil bioaccessibility values for Long Lake and the former Townsite were all based on soil samples collected in those areas. For the Giant Mine site, the remedial plans indicate that an area of the site with arsenic concentrations above 3,000 mg/kg will be actively managed in the form of excavation and/or fencing. This area contains the disturbed soils and, thus, only the undisturbed soils were considered to represent exposure for humans. Thus, a bioaccessibility of 38% representing undisturbed soils was used.

For sediments, bioaccessibility data were available for sediments in Long Lake and along the shoreline of the Townsite. For the rest of Yellowknife Bay, it was assumed that the bioaccessibility of Townsite sediments was representative. This value seems reasonable as it is lower than the bioaccessibility of sediments in Long Lake and the undisturbed soils at the Giant Mine.

It was assumed that for lake whitefish, inconnu, and lake trout, the bioaccessibility was represented by the average value for all fish analyzed in Yellowknife Bay (Back Bay, Mosher Island, and background locations).

For medicinal tea, mushrooms, and hare, the bioaccessibility values were obtained from the literature for samples collected in the Yellowknife area (Koch et al. 2013). In the absence of data for other animals, it was assumed that the bioaccessibility of arsenic in the hare of 50% was considered to be representative.

The bioaccessibility of arsenic in other media (i.e., water, air, berry, organs) was assumed to be 100% in the absence of other information.

Table 3.7 Summary of arsenic bioaccessibility assumptions for HHRA

Medium	Location	Bioaccessibility Assumption	Rationale	Data Reference
Soil	Fred Henne Campground	36%	Average of five samples from Fred Henne Campground.	Site-specific; Golder (2016j), Table 17
	Townsite	30%	Average of eight samples from Townsite.	Site- specific Golder (2016j), Table 4
	Giant	38%	Average of nine samples representative of undisturbed soils.	Site-specific; Golder (2016j)
	All off-site locations including background	38%	Assumed to be represented by undisturbed soils.	–
Sediment	Long Lake	45%	Average of five samples from Long Lake.	Site-specific; Golder (2016g), Table 17
	Townsite	26%	Average of 10 samples from shoreline of Townsite.	Site-specific; Golder (2016g), Table 2
	Yellowknife Bay, including BG	26%	Assume same as shoreline Townsite sediments since in Yellowknife Bay.	–
Lake Whitefish	All	73%	Average of Back Bay, Mosher Island, and Background.	Site-specific; Stantec (2014d), Appendix C
Inconnu	All	38%	Average of Mosher Island and Background.	Site-specific; Stantec (2014d), Appendix C
Northern Pike	All	67%	Average of Back Bay, Mosher Island, and Background.	Site-specific; Stantec (2014d), Appendix C
Medicinal Tea	All	15%	Average of two samples from literature for Yellowknife area.	Koch et al. (2013)

Table 3.7 Summary of arsenic bioaccessibility assumptions for HHRA (cont'd)

Mushroom	All	70%	Average of 10 samples from literature for Yellowknife area.	Koch et al. (2013)
Hare	All	50%	Average of hare muscle from uncontaminated areas from literature for Yellowknife area.	Koch et al. (2013)
Moose	All	50%	Assumed to be the same as average of hare muscle from contaminated areas from literature for Yellowknife area.	Koch et al. (2013)
Grouse	All	50%	Assumed to be the same as average of hare muscle from contaminated areas from literature for Yellowknife area.	Koch et al. (2013)
Hare	All	50%	Assumed to be the same as average of hare muscle from contaminated areas from literature for Yellowknife area.	Koch et al. (2013)
Duck	All	50%	Assumed to be the same as average of hare muscle from contaminated areas from literature for Yellowknife area.	Koch et al. (2013)
Muskrat	All	50%	Assumed to be the same as average of hare muscle from contaminated areas from literature for Yellowknife area.	Koch et al. (2013)
Beaver	All	50%	Assumed to be the same as average of hare muscle from contaminated areas from literature for Yellowknife area.	Koch et al. (2013)
Goose	All	50%	Assumed to be the same as average of hare muscle from contaminated areas from literature for Yellowknife area.	Koch et al. (2013)

3.3.5 Summary of Arsenic Speciation Values Used in the HHRA

Chemicals such as arsenic are found in different forms in the environment. Speciation is the process of determining the proportions of actual chemical forms in a sample since the chemical form can affect the bioavailability or bioaccessibility and relative toxicity of the chemical. For example, in fish, there are many forms of arsenic both in an inorganic and organic form. Many forms of inorganic arsenic are considered to be toxic (see Section

3.4); however, arsenobetaine (an organic form of arsenic) is considered to be non-toxic. The incorporation of speciation information in fish and other plants helps to increase the accuracy of, and confidence in, the health risk predictions. The discussion below focuses on arsenobetaine as all other arsenic species are considered to be as toxic as inorganic arsenic.

The specific assumptions for arsenic speciation with respect to arsenobetaine content were discussed in detail in Appendix F. Data on arsenobetaine are only available for fish and mushrooms as detailed in Appendix F.

The percentage arsenobetaine values used in the HHRA are provided in Table 3.8. As seen from the table for lake whitefish, northern pike, and inconnu, the percentage arsenobetaine was represented by the average percentage arsenobetaine from all locations in Yellowknife Bay (Back Bay, Mosher Island, and background locations).

For mushrooms, the percentage arsenobetaine was based on literature values pertaining to samples collected in the Yellowknife area. For all other samples, speciation of arsenic was not accounted for.

Table 3.8 Summary of arsenic speciation assumptions

Media	Location	Arsenobetaine Assumption	Rationale	Data Reference
Lake Whitefish	All	59%	Average of Back Bay and Mosher Island	Stantec (2014d), Appendix C
Inconnu	All	23%	Average of Mosher Island and Background	Stantec (2014d), Appendix C
Northern Pike	All	35%	Average of Baker Creek Outlet, Back Bay, Mosher Island, and Background	Stantec (2014d), Appendix C
Mushroom	All	33%	Average of eight samples	Koch et al. (2013)

3.3.6 Exposure Point Concentrations

Exposure Point Concentrations (EPC) are estimations of the concentration of a chemical in the environment and are generally a conservative estimate of the average chemical concentration in the environment. Appendix F provides a summary of the selected EPCs for the HHRA; a discussion of the data considered is provided in the following sections.

3.3.6.1 Country Food Exposure Point Concentrations

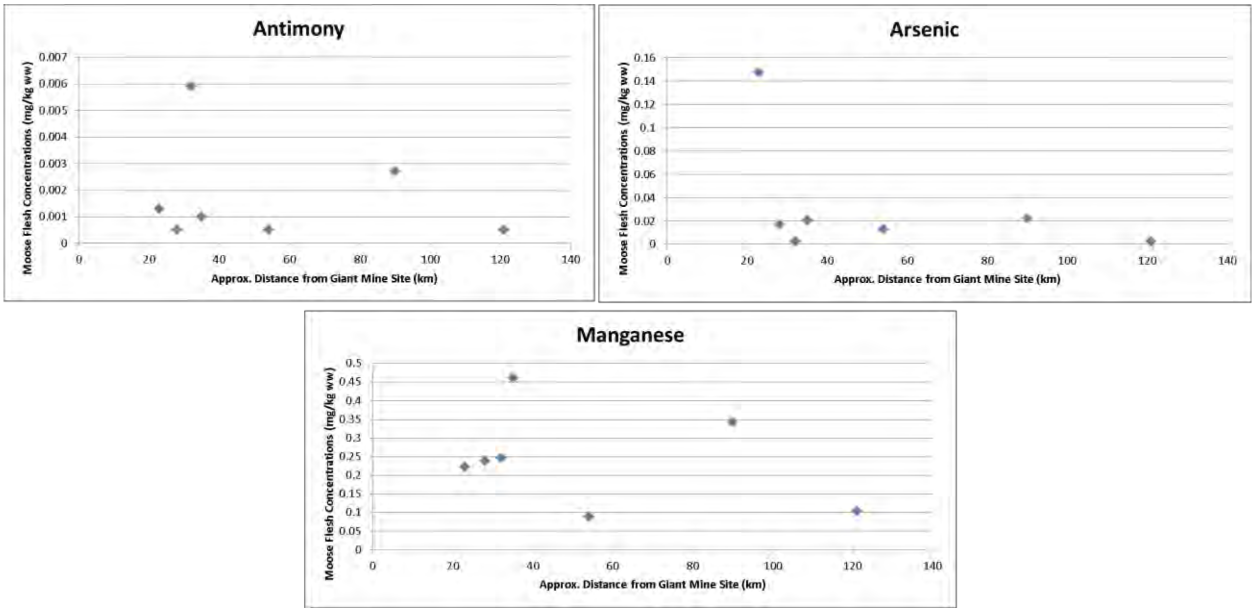
Section 2.1.7.1 provides a description of the voluntary sampling program for the country foods as well as the locations where the samples are collected, and Appendix B provides a summary of the data. The following discussion summarizes the results of the analyses of the country food samples for arsenic, antimony, and manganese and then develops the EPCs for use in the risk assessment.

Figure 3.10 shows the data for the eight moose meat samples plotting concentrations with approximate distance from the Giant Mine. Moose represents the most consumed meat in the 2017 Dietary Survey Update. There was a moose flesh sample with an arsenic level of 0.7 mg/kg on a wet weight basis (ww) that was obtained from a shoulder blade sample. Several statistical analyses were used to determine that this sample was an outlier for the arsenic concentrations in moose flesh. In addition, the concentration of arsenic in moose liver collected from the area is much lower than this measured concentration. Therefore, this sample was not considered in the development of the EPCs. However, it was considered as part of the sensitivity assessment (Section 3.5.3). The sensitivity analysis considered that all the moose consumed by people was at this elevated concentration. Figure 3.10 shows that there is no real trend in the concentrations of antimony and manganese in moose flesh with distance from the Giant Mine.

The arsenic concentrations in these moose flesh samples fall within the range of moose flesh data from samples across the Yukon which range from 0.01 to 0.4 mg/kg ww (Gamberg et al. 2005). Antimony concentrations in moose from the Yukon were reported below a detection limit of 0.01 mg/kg ww and manganese concentrations ranged from 0.005 to 0.56 mg/kg ww (Gamberg et al. 2005). Thus, the concentrations of antimony, arsenic, and manganese in the voluntary moose samples fall within this range of samples from other northern locations.

The moose liver sample had an arsenic concentration of 0.006 mg/kg ww, which is in the range of arsenic concentrations for 16 moose liver samples from the South Slave region (range 0.002 mg/kg ww to 0.044 mg/kg ww) and 12 moose liver samples from the Sahtu (range 0.002 mg/kg ww to 0.013 mg/kg ww) (GNWT 2015). No information was available for antimony or manganese concentrations in organs.

Figure 3.10 Moose meat concentrations with distance from Giant Mine



Note: A moose shoulder bone sample was found to be an outlier and the results of this sample are not shown in the figure. The HHRA considered this sample in the sensitivity analysis (see Section 3.5.3).

Figure 3.11 presents the measured beaver and muskrat meat concentrations with distance from the Giant Mine. There are four beaver flesh samples and only one muskrat flesh sample. The beaver sample captured farthest away from the Giant Mine has the highest concentrations of all three COPC; this sample was collected from Drybones Bay. The figure shows that the muskrat flesh concentrations for antimony, arsenic, and manganese are similar to the beaver concentrations and, therefore, these data were all pooled together. Two additional beaver samples were collected in the spring and summer of 2017 and the results are provided in Appendix P. These samples were obtained from areas more than 50 km from the Giant Mine, with arsenic concentrations of 0.12 mg/kg ww and less than 0.005 mg/kg ww. These concentrations are similar to concentrations obtained within 10 km of the Giant Mine.

Figure 3.11 Beaver and muskrat meat concentrations with distance from Giant Mine

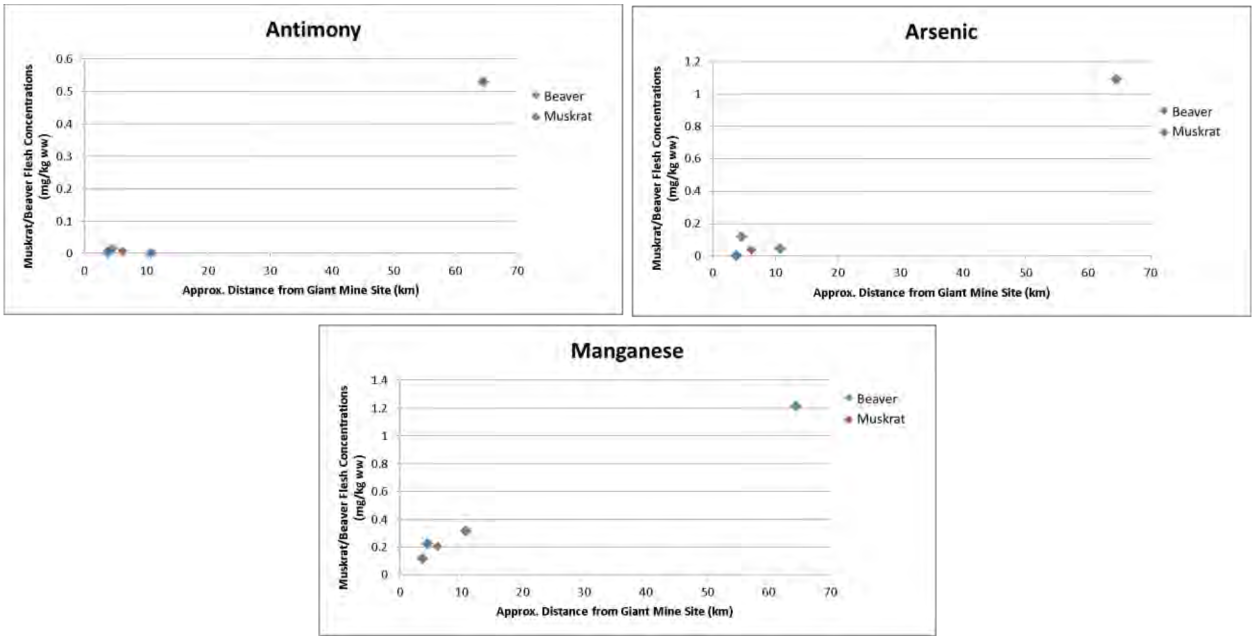
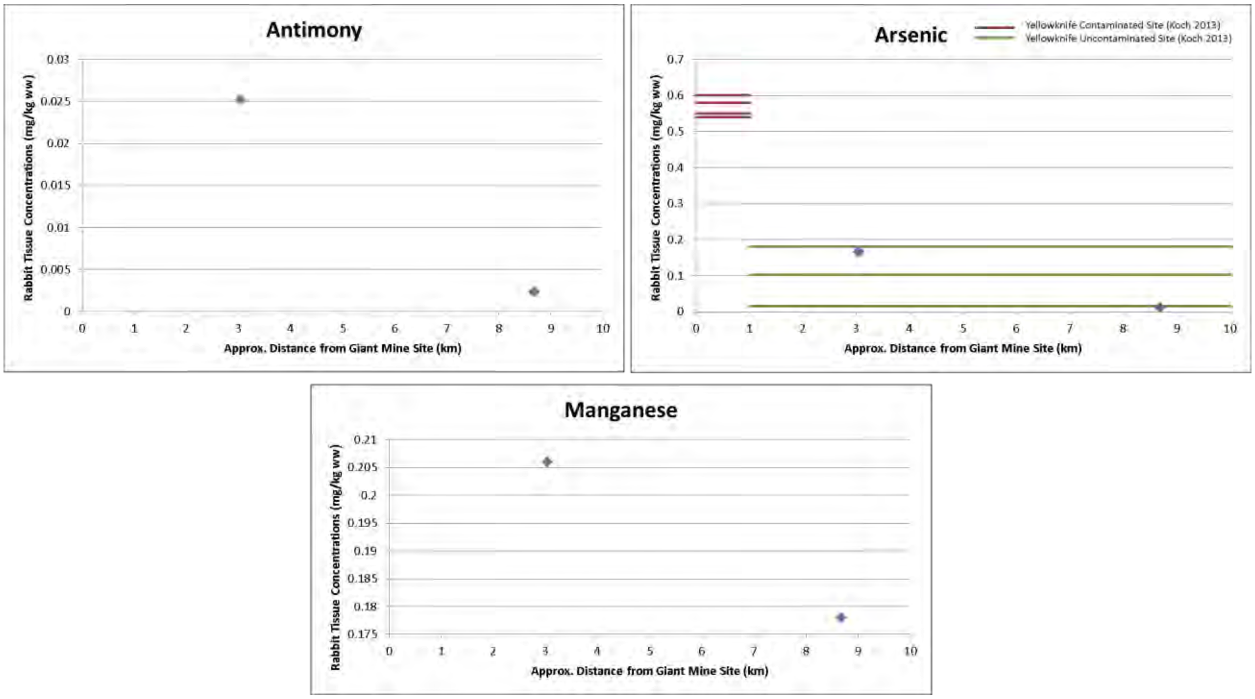


Figure 3.12 shows the two rabbit meat samples collected from the voluntary sampling along with arsenic levels in rabbits studied by Koch et al. (2013), both in contaminated areas of Yellowknife (four rabbits, shown in red) and in uncontaminated areas (three rabbits, shown in green); exact locations of the Koch et al. (2013) samples is not known. While there is a general trend with higher concentrations in the rabbit meat closest to the site, arsenic concentrations for both samples are within the range of rabbit concentrations reported by Koch et al. (2013) for rabbits from the uncontaminated areas in Yellowknife. An additional six rabbit samples were collected in the spring and summer of 2017 from Reid Lake and Prelude Lake, the results of which are provided in Appendix P. The range of arsenic concentrations in these samples was from less than 0.005 mg/kg ww to 0.01 mg/kg ww. These concentrations are similar to concentrations approximately 9 km from the Giant Mine shown on Figure 3.12.

Figure 3.12 Rabbit meat concentrations with distance from Giant Mine



A summary of the duck and goose flesh concentrations is provided in Figure 3.13. These six samples include Lesser scaup, mallard, black duck/white winged scoter, and Canada goose. No clear trend is seen between concentrations and distance from the Giant Mine. The goose concentrations are similar to the duck concentrations so the data are combined.

Figure 3.14 shows concentrations for the four spruce grouse meat samples and the eight ptarmigan meat samples provided by the community. Three of the samples were collected from Vee Lake Road, within the Giant Mine lease boundary; these samples are the three plotted at approximately 3 km from the site. As can be seen in Figure 3.14, the antimony, arsenic, and manganese levels are similar in both the ptarmigan and grouse. Therefore, all the samples are pooled together. In addition, the concentrations in these samples are generally similar to concentrations seen in birds collected further away from the Giant Mine. In addition to these meat samples, samples of ptarmigan hearts and gizzards and spruce grouse gizzard and liver were also submitted for analysis and considered in the risk assessment.

Figure 3.13 Duck and goose meat concentrations with distance from Giant Mine

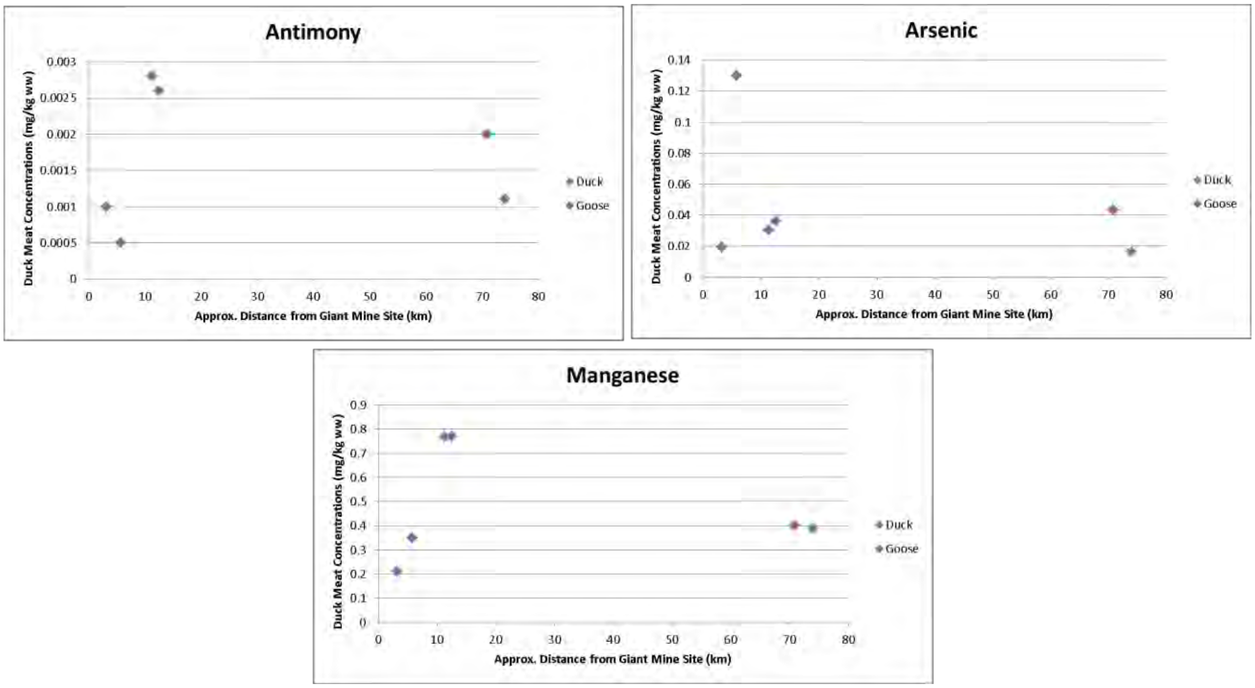
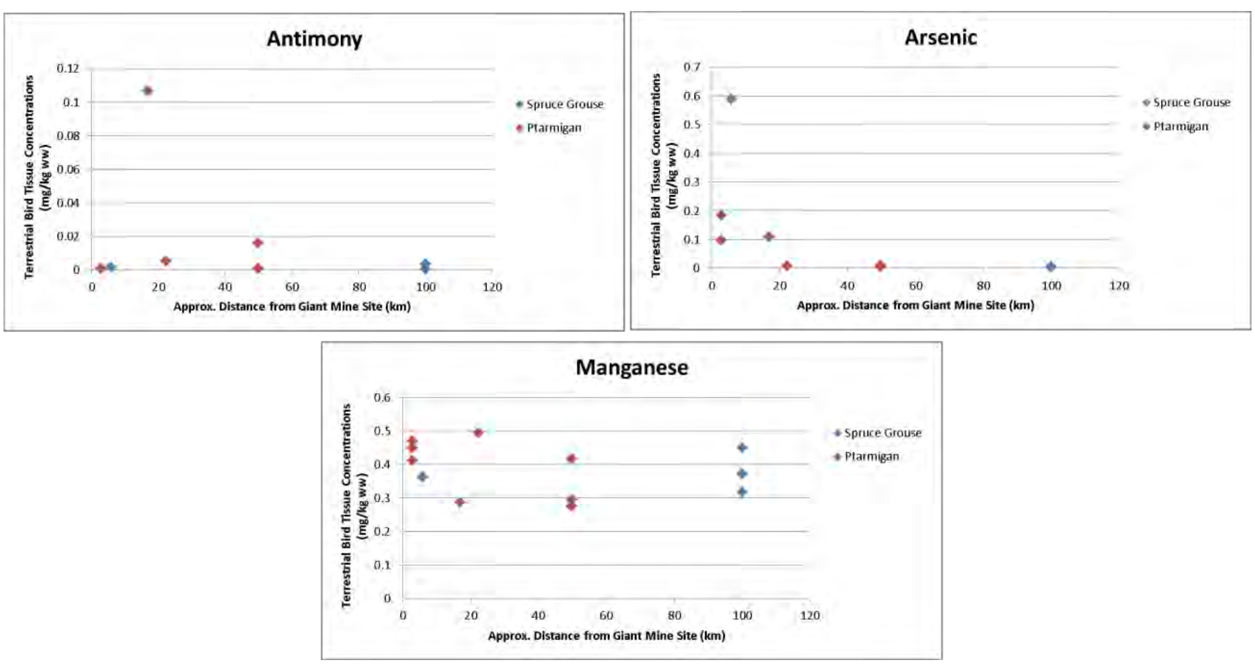


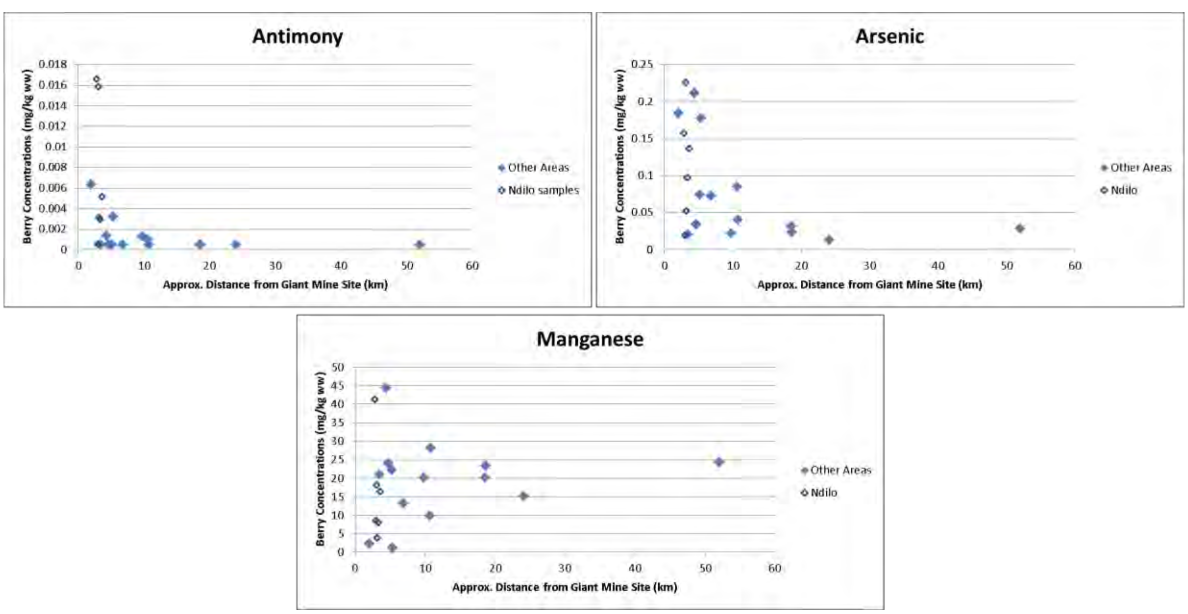
Figure 3.14 Ptarmigan and grouse meat concentrations with distance from Giant Mine



A summary of berry concentrations is shown in Figure 3.15. These 20 berry samples consist of cranberries, raspberries, Saskatoon berries, red bear berries, and rose hips. Six of the samples were collected from Ndilo; these samples are indicated by the open diamonds. As seen from Figure 3.15, there is a trend in antimony and arsenic concentrations with distance from the Giant Mine. There seems to be less of a trend in the manganese samples. The concentrations in samples from Ndilo are generally similar to those collected from other areas that are a comparable distance from the Giant Mine. It was noted that one rosehip sample and one mixed sample of Saskatoon berry/raspberry were grown in compost or mulch; the concentrations measured in these samples are within the range of the samples collected from native soils. Additional berry samples were collected in the spring and summer of 2017 from Ndilo and other areas around Yellowknife and the results are provided in Appendix P. The measured concentrations are similar to the concentrations shown on Figure 3.15.

In the summer of 1998, a study was initiated by the YKDFN to evaluate arsenic concentrations in berries (NCP 1999). Samples were obtained from around Yellowknife and Dettah, as well as the Con Mine, Giant Mine, and Salmita (an abandoned gold mine). A total of 51 samples were analyzed for arsenic. The concentration of arsenic in samples not collected from the three mine sites ranged from 0.01 mg/kg ww to 0.2 mg/kg ww. This range is similar to the arsenic concentrations measured from the voluntary sampling program shown in Figure 3.15.

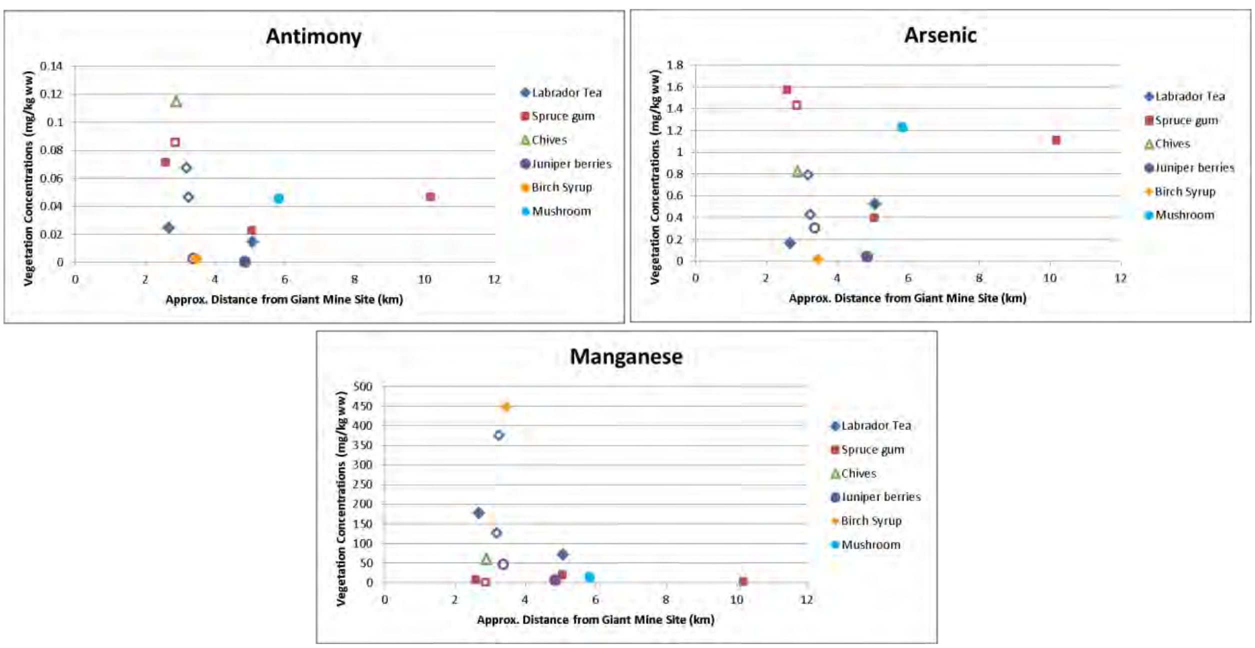
Figure 3.15 Berry concentrations with distance from Giant Mine



Note: Open symbols indicate samples from Ndilo, while filled symbols are from other areas.

Concentrations for other submitted plant and mushroom samples are shown in Figure 3.16. Similar to the comparison for the berries, a wider range of concentrations are seen closer to Giant Mine. There does not seem to be a difference between the samples from Ndilo (open symbols) as compared to samples from other locations (filled symbols) that are a similar distance from Giant Mine. Additional medicinal tea samples were collected in the spring and summer of 2017 from Ndilo and other areas around Yellowknife and the results are provided in Appendix P. The measured concentrations are similar to those shown in Figure 3.16. Rat root samples were collected as part of this program and the data showed that the concentrations were similar to background rat root concentrations (see Appendix P). A large number of mushroom samples were collected in the late summer of 2017 by Velma Sterenberg and the results are provided in Appendix P. These data were considered in the mushroom assessment.

Figure 3.16 Plant and mushroom concentrations with distance from Giant Mine



Note: Open symbols indicate samples from Ndilo, while filled symbols are from other areas.

Nine fish samples from the voluntary program were submitted for analysis. Seven were flesh samples (lake trout [five samples] and whitefish [two samples]), while the other two samples were whitefish eggs. A summary of fish flesh concentrations is shown in Figure 3.17 with approximate distance from the Giant Mine. The two lake trout samples collected from more than 100 km from the Giant Mine were from Lutsel K'e.

As seen from the figure, the concentrations of antimony, arsenic and manganese in lake trout are similar to those in lake whitefish. In addition, the concentrations of antimony, arsenic, and manganese are similar to concentrations in lake whitefish captured in other programs.

Figure 3.17 Fish flesh concentrations with distance from Giant Mine

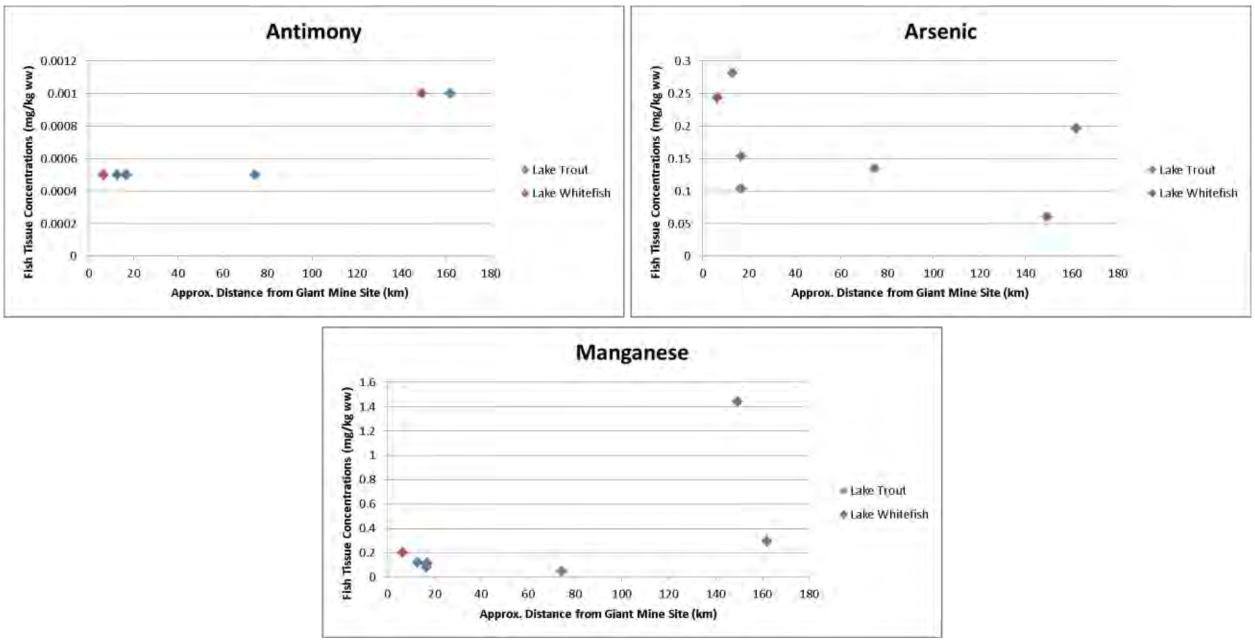


Table 3.9 provides a summary of the EPCs for antimony, arsenic and manganese in country foods that were derived from the voluntary sampling study. Lake trout samples are based on the voluntary samples while northern pike and lake whitefish samples are mainly based on scientific studies carried out in Yellowknife Bay. In determining dietary exposure estimates, the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization [WHO; (FAO and WHO 2008)] indicate that the average concentration of monitoring data is used since the use of maximum concentrations in food substantially overestimates the dietary exposure. Thus, average concentrations of COPCs in country foods were used in the risk assessment. Since people mostly eat fish and there are a large number of fish samples (over 100 samples), a 95% UCLM was used to represent concentrations in fish. Table 3.10 provides a summary of background concentrations of antimony, arsenic, and manganese in country foods. A comparison of the two tables shows that:

- Concentrations of antimony and manganese in five moose samples are similar to two background samples and arsenic concentrations are higher than background.
- Concentrations of antimony, arsenic, and manganese in three beaver/muskrat meat samples caught more than 50 km from the Giant Mine are higher than in the four animals caught closer to the site.
- Concentrations of arsenic in rabbit meat from samples close to the Giant Mine are higher than in five background samples; no data are available for antimony and manganese in background samples.
- Concentrations of antimony in five duck/goose meat samples are similar to those in two background samples; arsenic and manganese in duck/goose meat are slightly higher than background.
- Concentrations of manganese in nine grouse/ptarmigan meat samples are similar to those in three background samples; antimony and arsenic concentrations are higher than background.
- Concentrations of antimony, arsenic, and manganese in 30 lake whitefish in North Yellowknife Bay and South Yellowknife Bay are similar to those in 38 background samples.
- Concentrations of antimony, arsenic, and manganese in 16 inconnu samples in South Yellowknife Bay are similar to those in lake whitefish and in 40 background samples.
- Concentrations of antimony, arsenic, and manganese in three lake trout samples in South Yellowknife Bay are similar those in lake whitefish concentrations and two background samples.
- Concentrations of antimony, arsenic, and manganese in 22 northern pike samples in North Yellowknife Bay are similar to those in 20 samples in South Yellowknife Bay; arsenic and manganese concentrations are higher than those in 41 background samples.
- Arsenic concentrations in berries close to the Giant Mine are higher than concentrations in samples further away.
- Additional mushroom samples have been collected in the late summer of 2017 and are discussed in Appendix P. Appendix P shows that concentrations of antimony and arsenic in mushrooms from 25 km or greater from the Giant Mine are at background values whereas concentrations in mushrooms from within 10 km of the Giant Mine are higher than background.

Table 3.9 Summary of exposure point concentrations in country foods

Country Food	Exposure Point Concentration (mg/kg ww)			Comment
	Antimony	Arsenic	Manganese	
Moose	0.0018	0.04	0.25	Based on an average of five moose samples. EPC is the average value.
Muskrat/Beaver	0.01	0.05	0.21	Based on an average of three beaver and one muskrat samples. Data were combined as concentrations in muskrat sample were similar to those in beaver samples.
Rabbit	0.014	0.095	0.19	Based on an average of two samples collected and combined from three samples from uncontaminated areas in Yellowknife from Koch et al. (2013).
Duck/Goose	0.0017	0.054	0.52	Based on an average of four duck samples and one goose. Data were combined as concentrations in goose sample were similar to those in duck samples.
Ptarmigan/Grouse	0.02	0.12	0.38	Based on an average of eight ptarmigan and one grouse sample. Data was combined as the grouse sample had similar concentrations to the ptarmigan samples and they have a similar diet. Arsenic concentration is based on the geometric mean due to the skewed data set.
Lake whitefish North Yellowknife Bay	0.025	0.21	0.29	Based on 95% UCLM of 30 samples. Antimony concentrations were measured below the detection limit.
Lake whitefish South Yellowknife Bay	0.025	0.18	0.15	Based on 95% UCLM of 20 samples. Antimony concentrations were measured below the detection limit.
Inconnu South Yellowknife Bay	0.025	0.17	0.15	Based on 95% UCLM of 16 samples. Antimony and manganese concentrations were measured below the detection limit.
Lake trout South Yellowknife Bay	0.001	0.18	0.11	Based on average of three samples. Antimony concentrations below the detection limit.
Northern pike North Yellowknife Bay	0.025	0.21	0.3	Based on 95% UCLM of 22 samples. Antimony concentrations were measured below the detection limit. Manganese based on one measured concentration all others below detection limit.
Northern pike South Yellowknife Bay	0.025	0.25	0.35	Based on 95% UCLM of 20 samples. Antimony concentrations were measured below the detection limit.
Berries – Ndilo	0.0073	0.11	16.1	Based on an average of six samples which included three raspberry and three rosehip samples.
Berries – T1 (including Ndilo)	0.0042	0.11	17.5	Based on an average of 14 samples which included three raspberry, three rose hips, six cranberry, one Saskatoon berry, and one bearberry sample.
Berries – Beyond T1	0.0006	0.037	20.2	Based on an average of five samples which includes four cranberry and one raspberry sample.
Labrador tea – Ndilo	0.057	0.61	251.9	Based on an average of two samples. Labrador tea used to represent other medicinal plants (e.g., rat root) as Labrador tea samples had the highest concentrations out of Labrador tea, chives, juniper berry, and spruce gum.
Labrador tea – All areas (including Ndilo)	0.038	0.48	188.1	Based on an average of four samples. Labrador tea used to represent other medicinal plants (e.g., rat root) as Labrador tea samples had the highest concentrations out of Labrador tea, chives, juniper berry, and spruce gum.
Mushroom	See Appendix P			
Organs	0.24	0.02	1.8	Weighted (by ingestion rate) average of moose organs, fish livers, and ptarmigan heart, gizzard, and liver.

Note: T1– location within 10 km of Giant Mine.

Table 3.10 Summary of background concentrations in country foods

Country Food	Background Concentration (mg/kg ww)			Comment
	Antimony	Arsenic	Manganese	
Moose	0.002	0.013	0.28	Based on two moose samples from Behchoko and Francois Bay.
Muskrat/Beaver	0.53	1.1	1.2	Based on one beaver sample from Dry Bones Bay. Two additional background samples result in an arsenic concentration of 0.4 mg/kg ww (see Appendix P).
Rabbit	–	0.01	–	Lowest measured rabbit concentration. No background data for antimony and manganese. Five additional background samples result in an arsenic concentration of 0.008 mg/kg ww (see Appendix P).
Duck/Goose	0.0016	0.03	0.4	Based on one goose and one duck sample.
Ptarmigan/Grouse	0.002	0.004	0.38	Based on an average of three grouse samples.
Lake whitefish	0.025	0.24	0.26	Based on 95% UCLM of 38 samples. Antimony concentrations were measured below the detection limit.
Inconnu	0.025	0.12	0.15	Based on 95% UCLM of 40 samples. Antimony and manganese concentrations were measured below the detection limit.
Lake trout	0.001	0.17	0.17	Based on the average of two samples. Antimony concentrations are below the detection limit.
Northern pike	0.025	0.12	0.15	Based on 95% UCLM of 41 samples. Antimony and manganese concentrations were measured below the detection limit.
Berries	0.0005	0.028	24.4	Based on one cranberry sample from Tibbit Lake. An additional background sample results in an arsenic concentration of 0.021 mg/kg ww (see Appendix P).
Mushroom	0.04	0.13	39	Based on a 95% UCLM of 7 samples reported by Obst (2014). Additional analysis provided in Appendix P.

Note: No background values available for Labrador tea or organs.

The dietary survey indicated that people mainly consume lake whitefish as well as some amounts of inconnu and lake trout. Since the concentrations of antimony, arsenic, and manganese are similar in all three species, it was assumed that the concentrations measured in lake whitefish (the main fish people consume) was representative of all fish.

Appendix P also demonstrates that rat root concentrations are similar to background rat root samples.

3.3.6.2 Locations for Developing Exposure Point Concentrations for Current Scenario

In addition to determining the concentrations in country foods, the risk assessment also needs to consider concentrations in soil, sediment, water, air in the various locations and develop an appropriate exposure concentration. This section discusses the sampling locations and the statistic used to develop the EPCs and Section 3.3.6.4 provides a figure of the EPCS used in the risk assessment.

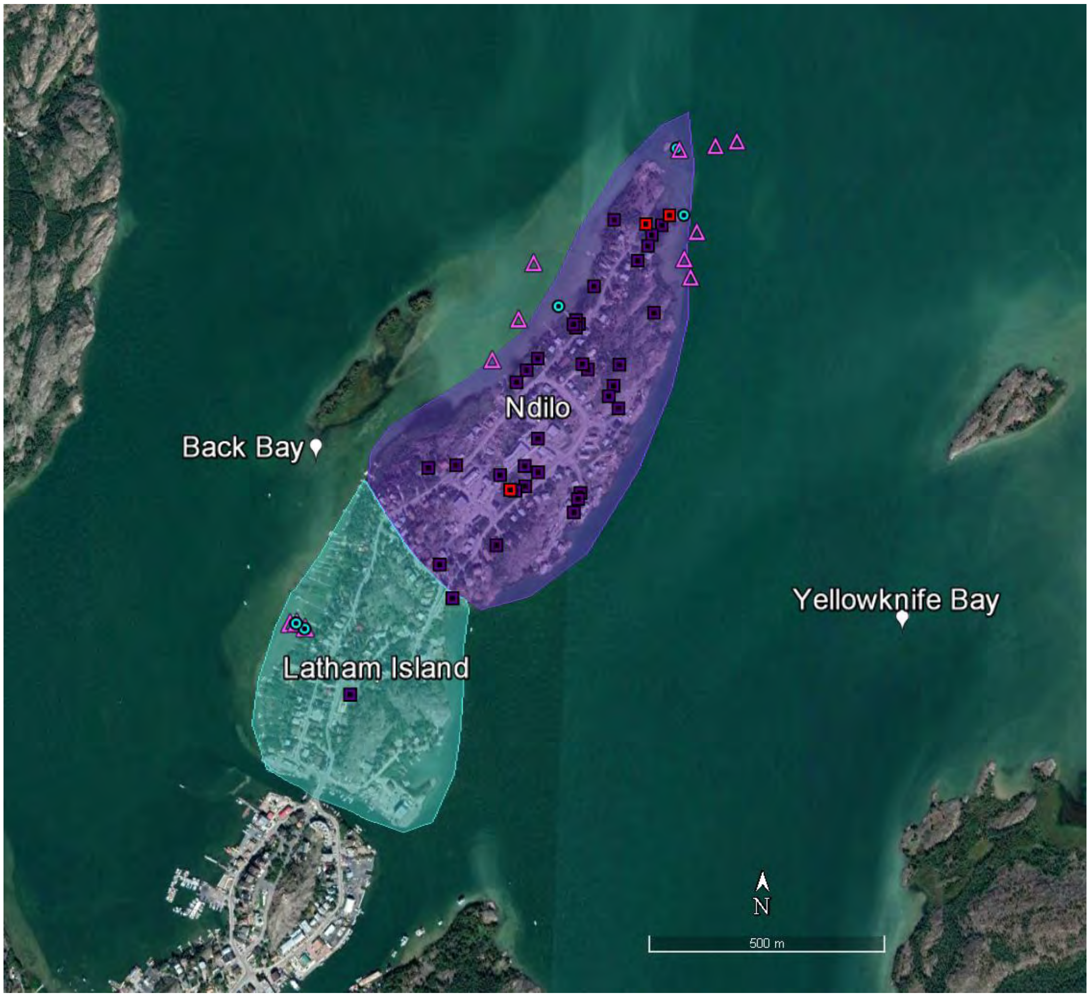
Air quality monitoring in the area has shown that the concentrations in the Yellowknife are similar (see Appendix B) and the values for air concentrations used in the assessment are provided in Appendix F.

Ndilo

The sampling locations for water, soil, and sediments for Ndilo are shown on Figure 3.18. As seen from the figure, there is adequate soil coverage to develop a 95% UCLM to represent exposure. These samples used in the residential scenario include high arsenic concentrations measured in surficial samples to the north end of Ndilo and at the school even though no one lives where these concentrationswere measured. The concentrations of arsenic in the soils are representative of historical contamination from when the Giant Mine was in operation. Similarily, the sediment samples represent a reasonable estimate of the wading scenario. For sediment, the exposure was represented by the maximum concentration. Yellowknife Bay is quite large and the three sampling locations for water are reasonable. It should be noted that the concentrations of arsenic, antimony, and manganese in North Yellowknife Bay are all below Health Canada drinking water guidelines. The scenario that evaluated people drinking from North Yellowknife Bay was represented by a 95% UCLM.

The exposure point concentrations used in the risk assessment are provided in Appendix F.

Figure 3.18 Sampling locations for water, soil, and sediments in Ndilo



There have been several arsenic "hot spots" identified in soils in the community of Ndilo (indicated in red in Figure 3.18 above). A sensitivity analysis was conducted to evaluate the impact of cleaning up the three highest "hot spots" in the Ndilo community.

Latham Island

The sampling locations for water, soil, and sediments for Latham Island are shown on Figure 3.18. As mentioned previously, Latham Island and Ndilo samples were combined to calculate the Latham Island exposure. The sediment samples in Latham Island were specifically collected for the risk assessment to address concerns about children wading at this location. It should be noted that the concentrations of arsenic, antimony, and manganese in Back Bay are all below Health Canada drinking water guidelines. There are enough soil and sediment samples that the 95% UCLM was used to represent exposure.

The scenario that evaluated people drinking from Back Bay was represented by a 95% UCLM. The exposure point concentrations used in the risk assessment are provided in Appendix F.

Dettah

The sampling locations for water, soil, and sediments for Dettah are shown on Figure 3.19. There are only a small number of soil samples available at Dettah, and arsenic was the only COPC measured. The two highest arsenic soil concentrations were from the hill in Dettah and the marina/boat launch. None of these locations are where people live. Thus, a 95% UCLM was developed to represent the residential exposure scenario in Dettah. The water and sediment samples were considered to be adequate to represent the wading scenario and the drinking water scenario. It should be noted that the concentrations of arsenic, antimony, and manganese in South Yellowknife Bay are all below Health Canada drinking water guidelines. The maximum concentration was used to represent the sediment exposure. The exposure point concentrations used in the risk assessment are provided in Appendix F. Two additional soil samples were collected in Dettah as shown in Appendix P.

Figure 3.19 Sampling locations for water, soil, and sediments in Dettah

City of Yellowknife

The sampling locations for soil samples for City of Yellowknife are shown on Figure 3.20. For arsenic, there were a total of 260 soil samples that were used to develop the exposure concentrations. Soil EPCs were represented by the 95% UCLM. The EPCs used in the risk assessment are provided in Appendix F.

In addition to considering the exposure from living in Yellowknife, additional evaluations were carried out related to camping and swimming/wading activities at the Fred Henne Campground and Long Lake. Figure 3.21 shows the location of the soil, water, and sediment locations, and Appendix F provides the exposure concentrations used in the assessment. The arsenic soil concentrations at the Fred Henne Campground are below background and, thus, anyone camping at this location will not experience increased risk. The maximum measured sediment concentration was used to represent the exposure while wading in Long Lake.

Figure 3.20 Soil sampling locations in City of Yellowknife

Figure 3.21 Soil, water, and sediment sampling locations in Fred Henne Campground and Long Lake

Ingraham Trail

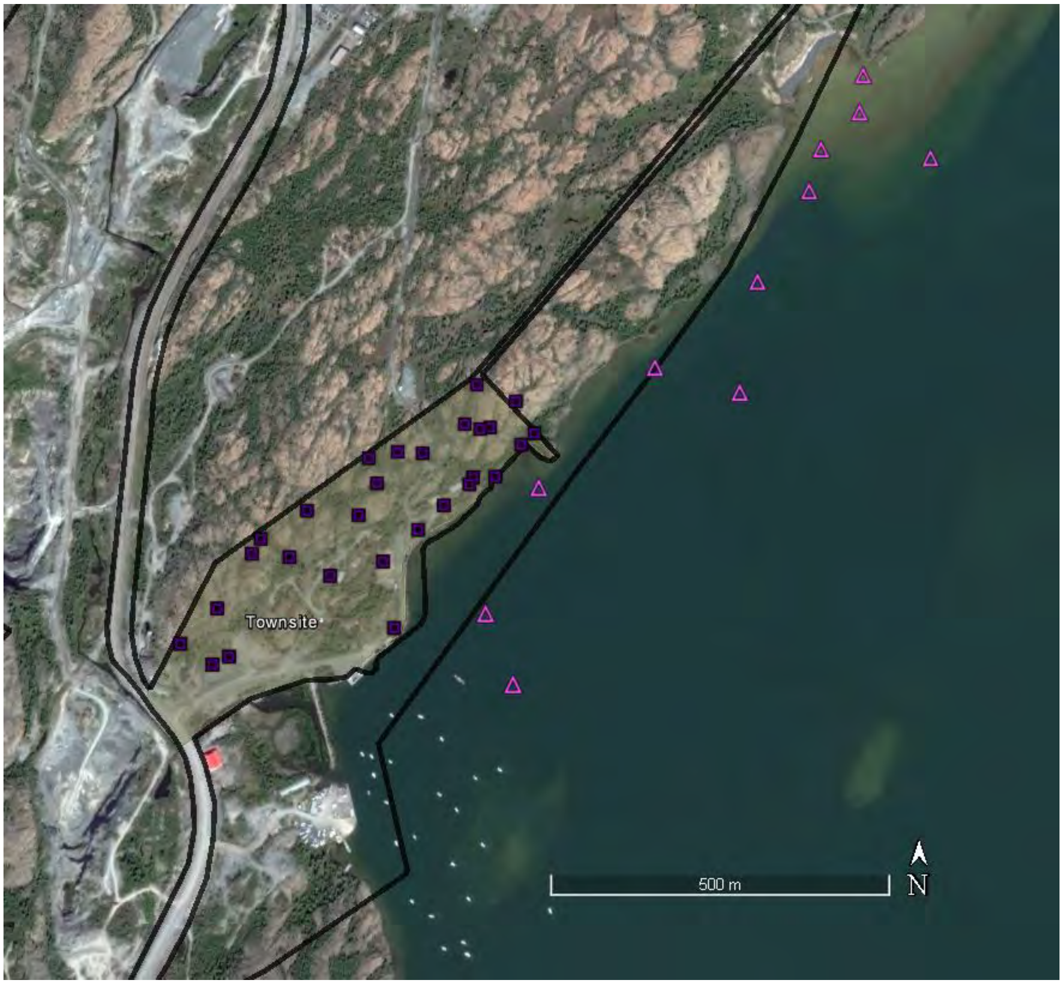
The sampling locations for soil samples for Ingraham Trail near Giant Mine are shown on Figure 3.22. These locations are considered to represent exposures for peopling living along this part of the Trail. The 95th percentile value of the data set was used to represent the residential exposure and represents a conservative estimate. The EPCs for soil used in the risk assessment are provided in Appendix F. Additional soil samples were collected along the Ingraham Trail as part of studies by Queen's University (Jamieson et al. 2017), the locations of which are shown in Appendix P.

Figure 3.22 Soil sampling locations on Ingraham Trail near Giant Mine

Former Townsite

The sampling locations for soil and sediment samples at the former Townsite are shown on Figure 3.23. These samples were used to evaluate the unrealistic scenario that someone would live at this location without any remediation to the soils. The measured sediment samples were used to assess a wading scenario. This wading scenario also accounts for someone currently using the boat launch or the nearby marina, as the sediment concentrations were considered to be representative of conditions in those areas. The 95% UCLM was used to represent exposures at the Townsite.The exposure point concentrations for soil used in the risk assessment are provided in Appendix F.

Figure 3.23 Soil and sediment sampling locations at former Townsite

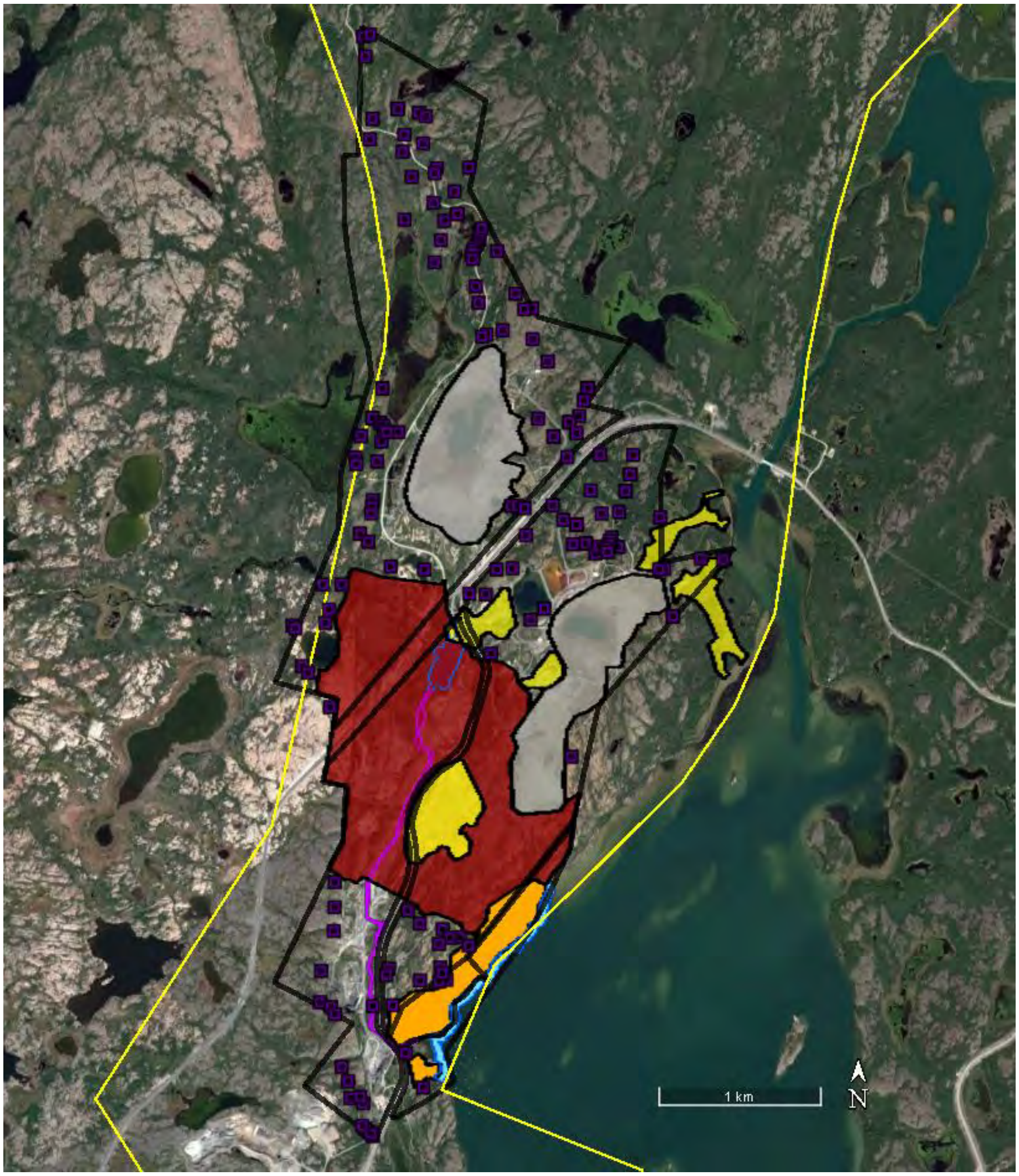


3.3.6.3 Exposure Point Concentrations for Future Scenario

For the former Townsite, the GMRP indicates that arsenic in the soils will be cleaned up to the GNWT residential criterion of 160 mg/kg. Soil remedial objectives have not been established for antimony and manganese and, thus, assumptions were made as to what the future concentrations will be. It is noted that antimony and arsenic concentrations are generally located together. Based on the measured soil data at two locations in the former Townsite where the arsenic concentrations are close to the GNWT residential criterion (YK126 and YK302), the antimony soil concentrations are about 10% of the arsenic soil concentrations, and manganese soil concentrations are approximately 40% higher than arsenic soil concentrations. Therefore, in the future after remediation, the antimony concentrations at the former Townsite are assumed to be 16 mg/kg and the manganese concentrations 220 mg/kg. For sediments, the GMRP indicates that dredging will occur in the shoreline sediments along the Townsite and near the mouth of Baker Creek. Deeper sediments will be covered. It is assumed that arsenic concentrations in this dredged area would be approximately 30 mg/kg based on the post remediation concentrations of arsenic in sediments in Reach 0 of Baker Creek. This concentration was recorded in native sediment/soil at Reach 0.

A recreational scenario was also considered for people going onto the remediated Giant Mine in the future for exercise or other recreational activities. It is recognized that members of the YKDFN community do not want to use the Giant Mine in the future; however, other stakeholders have indicated that they want to use the Giant Mine. In order to determine the future concentrations of arsenic, antimony, and manganese in the soil on Giant Mine, the remedial activities on the site were taken into account. Figure 3.24 shows the samples considered in deriving the concentrations at the Giant Mine in the future. For the future scenario, it was assumed that people will not be able to go into the red area on the map, as this area has arsenic concentrations over 3,000 mg/kg and will be actively managed in the form of excavation and/or fencing. The yellow areas in the figure on the Giant Mine within the lease boundary were assumed to be remediated to an arsenic concentration of 340 mg/kg. The tailings were assumed to be covered with rock and to not represent any potential for exposure. No remedial criteria have been developed for antimony and manganese; thus, the future conditions were based on all of the samples shown on Figure 3.24. The approach is discussed in more detail in Appendix F and the EPCs are provided. The EPCs derived represent an overestimate of potential exposure as there are parts of the site that are heavily forested and have wetlands that cannot easily be easily accessed.

Figure 3.24 Samples considered in deriving future concentrations for HHRA for Giant Mine



Note: Thick black line around coloured areas represent the lease boundary. Yellow lines denote the Yellowknife Greenstone Belt.
Yellow areas inside the lease boundary represent the disturbed areas; arsenic to be remediated to GNWT industrial criterion.
Red area represents area where the arsenic in soils exceeds 3000 mg/kg.
Grey areas represent tailings ponds.
Orange areas at bottom of picture represent the former Townsite and marina; arsenic in Townsite to be remediated to GNWT residential criterion.
Yellow areas outside boundary of East Baker creek are the tailings spills.
Baker creek (shown in purple), Baker Pond (outlined in blue), and the near-shore Townsite sediments (shown in light blue) are areas identified for sediment remediation.

3.3.6.4 Summary of Water, Soil, Sediment, and Indoor Dust EPCs

Figure 3.25 provides a figure showing the EPCs used in the risk assessment for water. For the risk assessment it was assumed that everyone used the municipal water supply. For some of the scenarios, it was assumed that people may get water from different parts of Yellowknife Bay (Back Bay, North Yellowknife Bay and South Yellowknife Bay). Background EPCs are also included. As seen in the figure, the water concentrations in Yellowknife Bay are similar to the municipal supply.

Figure 3.25 Exposure point concentrations for water

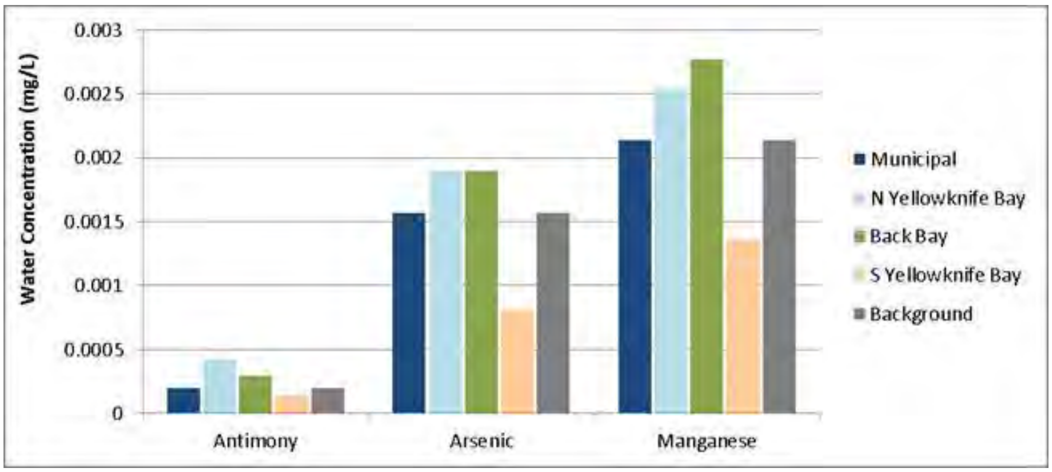
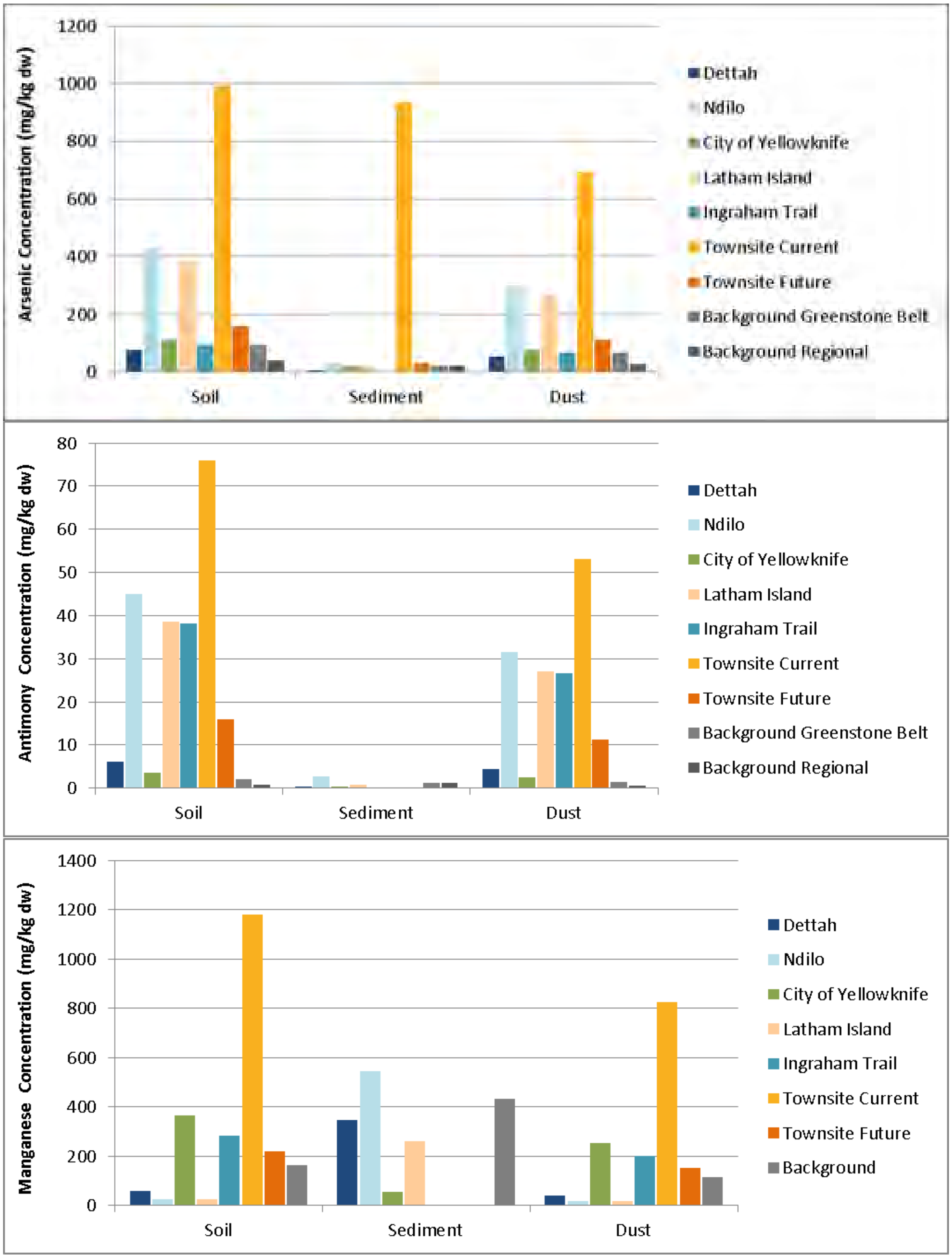


Figure 3.26 provides a figure showing the EPCs used in the risk assessment for soil, sediment, and indoor dust by location. Background EPCs are also included. Appendix P indicates that the two extra soil samples in Dettah result in lower concentrations that those shown in Figure 3.26 and therefore the assessment presented is conservative. Similarly the 16 additional samples along the Ingraham Trail also result in lower concentrations than those shown in Figure 3.26.

Figure 3.26 Selected exposure point concentrations for soil, sediment, and indoor dust



3.3.7 Exposure Estimation

The exposure assessment uses all of the available information collected about people and the measured concentrations of antimony, arsenic, and manganese in air, water, soil, sediments, dust, supermarket foods, and country foods to estimate the total exposure (intake) of antimony, arsenic, and manganese to people (toddlers, children, teens, adults, and elders).

Exposures from air, water, soil, sediments, dust, supermarket foods, and country foods for each route of exposure (eating, breathing, skin contact) were calculated using equations provided by Health Canada (2012a). These equations are provided in Appendix E. The HHRA considers long term exposures; background exposures were taken into account in the exposure estimates. Averaging periods were considered to be consistent with exposure periods; for example, the exposure for someone wading was considered for ten weeks duration and not averaged over an entire year.

3.3.7.1 Sensitivity Assessment

A number of assumptions have gone into the risk assessment in order to evaluate realistic, yet conservative, estimates of exposure. A few sensitivity assessments were carried out to see the effect of some of these assumptions on the results.

The first sensitivity analysis was related to country food concentrations. An average value for the samples was used to reflect what people would eat food from a wide variety of areas. To determine whether this assumption was realistic or not and would result in a substantial change in the results, a sensitivity assessment was completed using the maximum measured concentrations for the country foods.

In the risk assessment, it was assumed that 5% of berries for the people living in Ndilo came from the community, to account for the fact that children have reported eating berries from bushes around Ndilo. Although it is unlikely to occur since there are not enough berry bushes to support this, a sensitivity assessment was completed to evaluate the consumption of 100% of berries from Ndilo.

One moose sample obtained from the voluntary sampling had an arsenic level of 0.7 mg/kg ww and was determined to be an outlier. In addition, the concentration of arsenic in moose liver collected from the area is much lower than this measured concentration. However, since moose represents the most consumed meat from the 2017

Dietary Survey Update and to ensure that potential risks were not being misrepresented, a sensitivity assessment was completed using the arsenic concentration of 0.65 mg/kg ww from this moose sample.

The concentration or arsenic in ptarmigan was an order of magnitude higher than concentrations measured in background (0.02 mg/kg ww vs. 0.004 mg/kg ww). Therefore, the sensitivity analysis considered that ptarmigan/grouse made up all the wild game that people consume.

Although the assumption of indoor dust equal to 70% outdoor soil concentrations is an accepted practice, a sensitivity assessment was completed to address the uncertainty around this assumption. An assessment was completed to illustrate the potential exposures assuming that indoor dust is equal to (or 100% of) outdoor soil concentrations.

An additional uncertainty involved the arsenic bioaccessibility from consumed animal tissues (meat). A value of 50% was used based on the measurements in hare in Yellowknife from a study by Koch et al. (2013). The sensitivity assessment looked at the consideration of 100% bioaccessibility of arsenic in animals even though it is well known that arsenic in food samples are not 100% available.

There have been several “hot spots” identified in soils in the community of Ndilo to the north of the area and at the school. The sensitivity analysis evaluated the impact of cleaning up the three highest “hot spots” in the Ndilo community.

It is very difficult to quantify the effects of climate change in the future. In the DAR (INAC/GNWT 2010), the Canadian Climate Change Scenarios Network (CCCSN) assessment indicated that precipitation may increase by up to 15% over the next 50 years. As the future assessment was evaluating a 100 year scenario, it was assumed the change in precipitation could be as high as 30%. The increased precipitation could lead to increased run-off and soil erosion and thus concentrations in the environment could increase. In an attempt to evaluate this effect, the sensitivity assessment looked at the effect of increasing the water and sediment concentrations and, consequently, fish concentrations by 30%.

3.3.8 Summary of Exposure Assessment

For the HHRA, intakes of arsenic, antimony, and manganese were estimated using the exposure assumptions outlined above. Figure 3.27 presents a summary of the estimated intakes for arsenic for the typical country food diet receptor from Ndilo. This figure illustrates that the toddler is the most highly exposed life stage in the HHRA. Therefore, for presentation purposes, the estimated intakes for toddlers under the base case scenarios are provided in Figure 3.28, Figure 3.30, and Figure 3.31 for total arsenic, antimony, and manganese, respectively. Estimated intakes for all life stages and scenarios are provided in Appendix F.

Figure 3.27 Estimated total arsenic intakes for Ndilo country food scenario

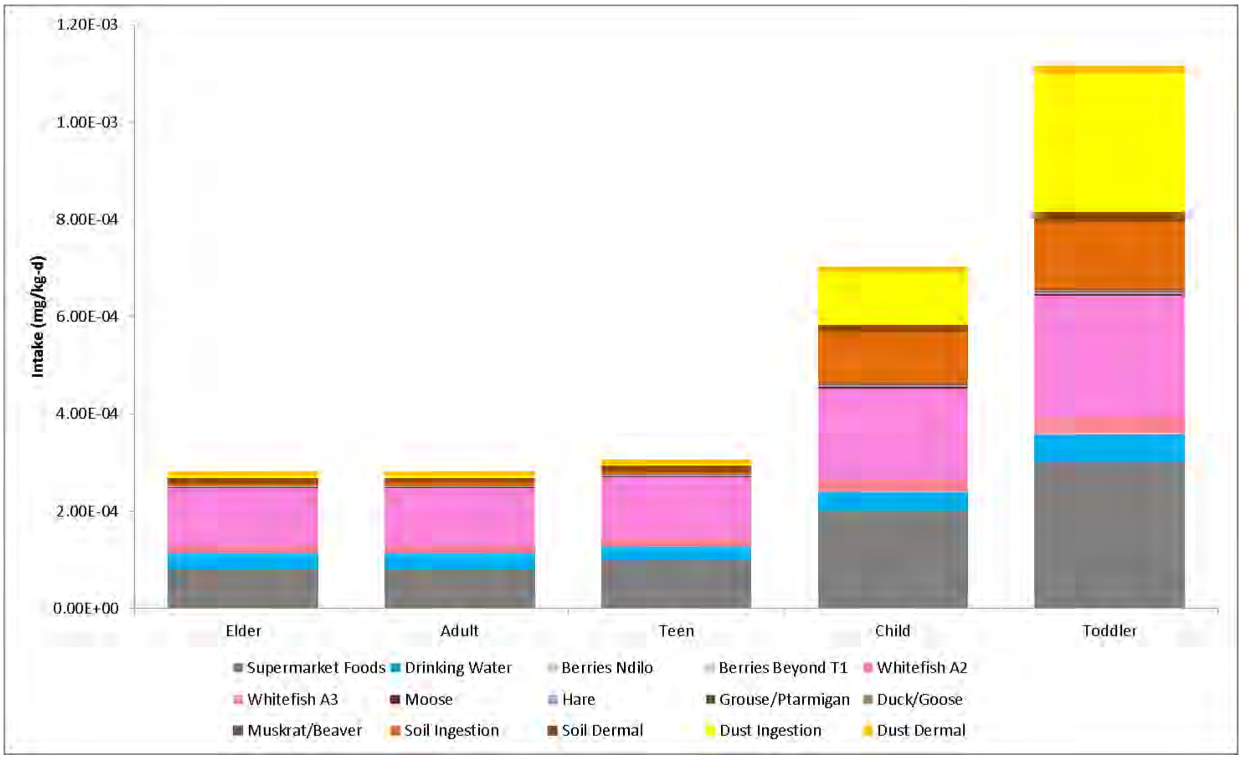
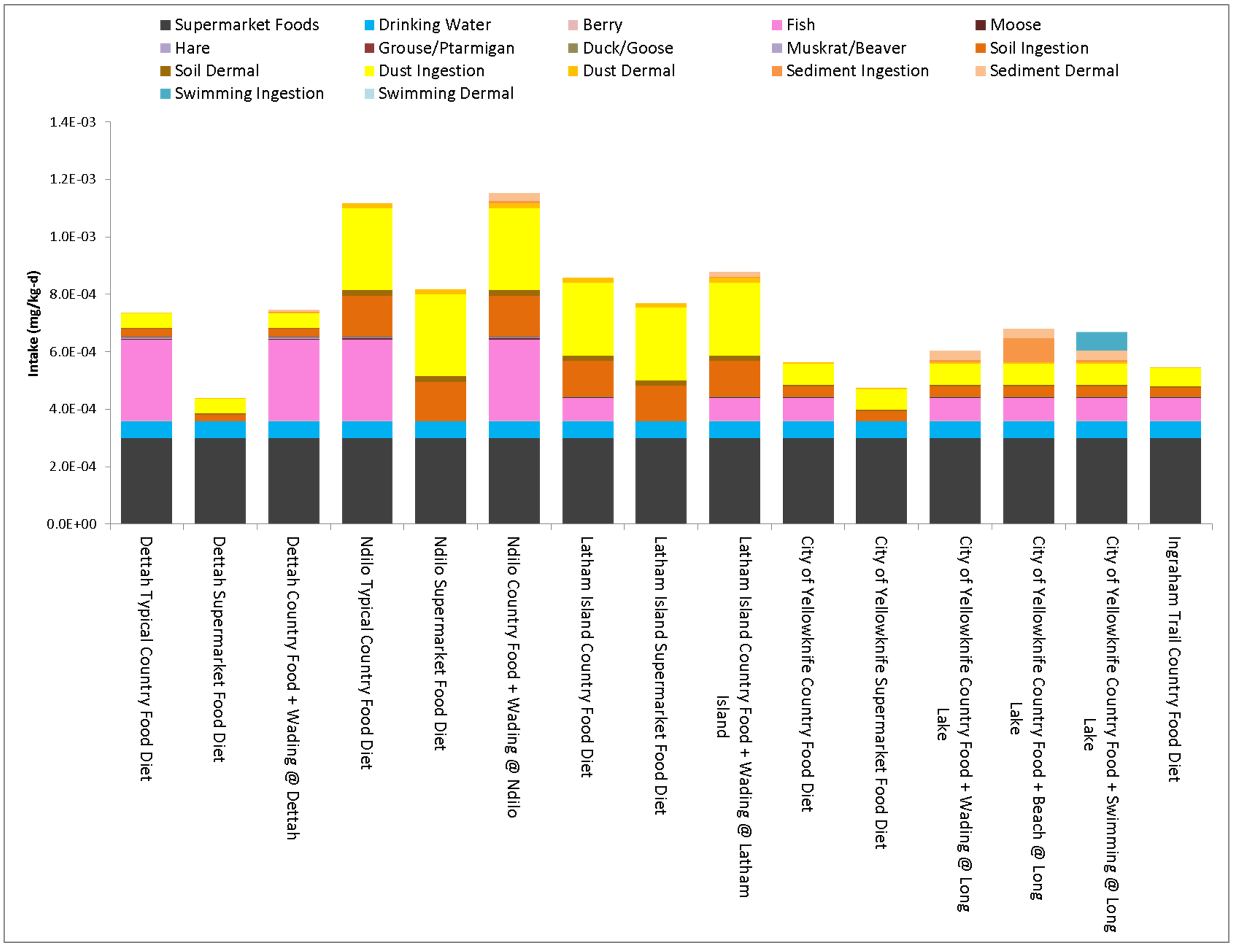


Figure 3.28 shows that, after supermarket foods, toddlers are most exposed to arsenic in fish, with soil, indoor dust, and drinking water also contributing to the total intake for arsenic. Intakes to indoor dust and soil vary depending on the receptor location, as arsenic concentrations in soil vary by location. There is some double-counting for the total arsenic intakes presented in Figure 3.28, since intakes from supermarket foods were not reduced to account for the foods obtained as country foods. Estimated intakes for all life stages and scenarios are provided in Appendix F.

Figure 3.28 Estimated intakes for toddler – total arsenic



Because arsenic is evaluated on an incremental basis, Figure 3.29 is provided to illustrate the relevant pathways of exposure for incremental arsenic exposure. The incremental arsenic exposure is obtained by subtracting estimated intakes for background arsenic exposure (Figure 3.32) from the total arsenic intake (Figure 3.28). Figure 3.29 shows that, since a number of the country foods (such as fish) are at background arsenic concentrations, food pathways contribute marginally to the overall incremental intake of arsenic. Thus, exposures from indoor household dust and soil, through both ingestion and, to a lesser extent, skin contact, dominate the intakes of incremental arsenic by the toddler receptor. These exposures are a result of historical contamination across the Yellowknife area. For the wading or beach scenarios, dermal contact with sediment is shown to contribute to the intake of incremental arsenic, as does swallowing water while swimming at Long Lake. These exposures will not be altered by any of the remedial activities at the Giant Mine.

Figure 3.29 Estimated intakes for toddler – incremental arsenic

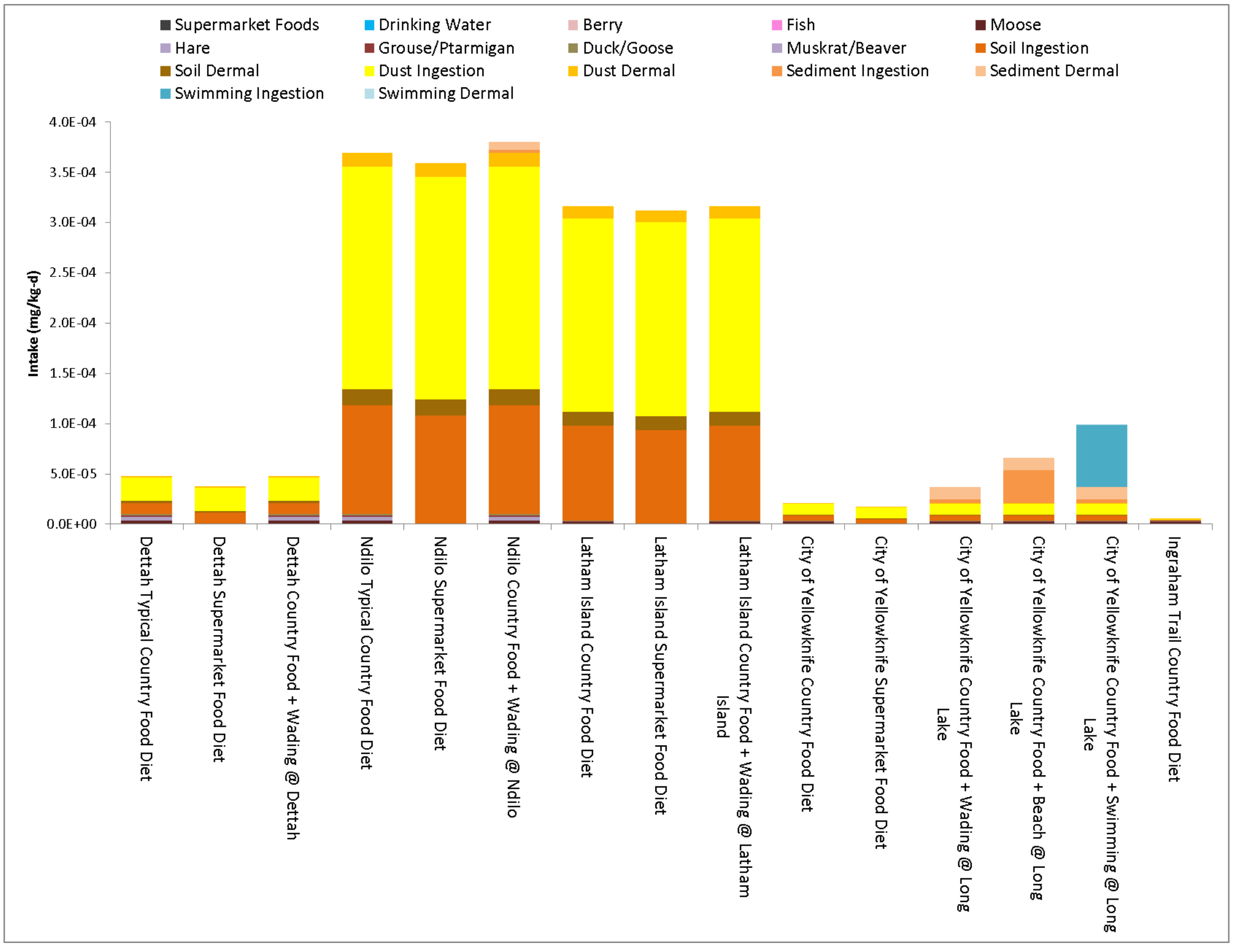


Figure 3.30 shows that, after supermarket foods, fish represents the next largest exposure to antimony for toddlers. For some locations, antimony in soil and indoor dust contributes to the total exposure via the ingestion and skin contact pathways. There is some double-counting for the antimony intakes presented in Figure 3.30, since intakes from supermarket foods were not reduced to account for the foods obtained as country foods. Estimated intakes for all life stages and scenarios are provided in Appendix F.

Figure 3.30 Estimated intakes for toddler – antimony

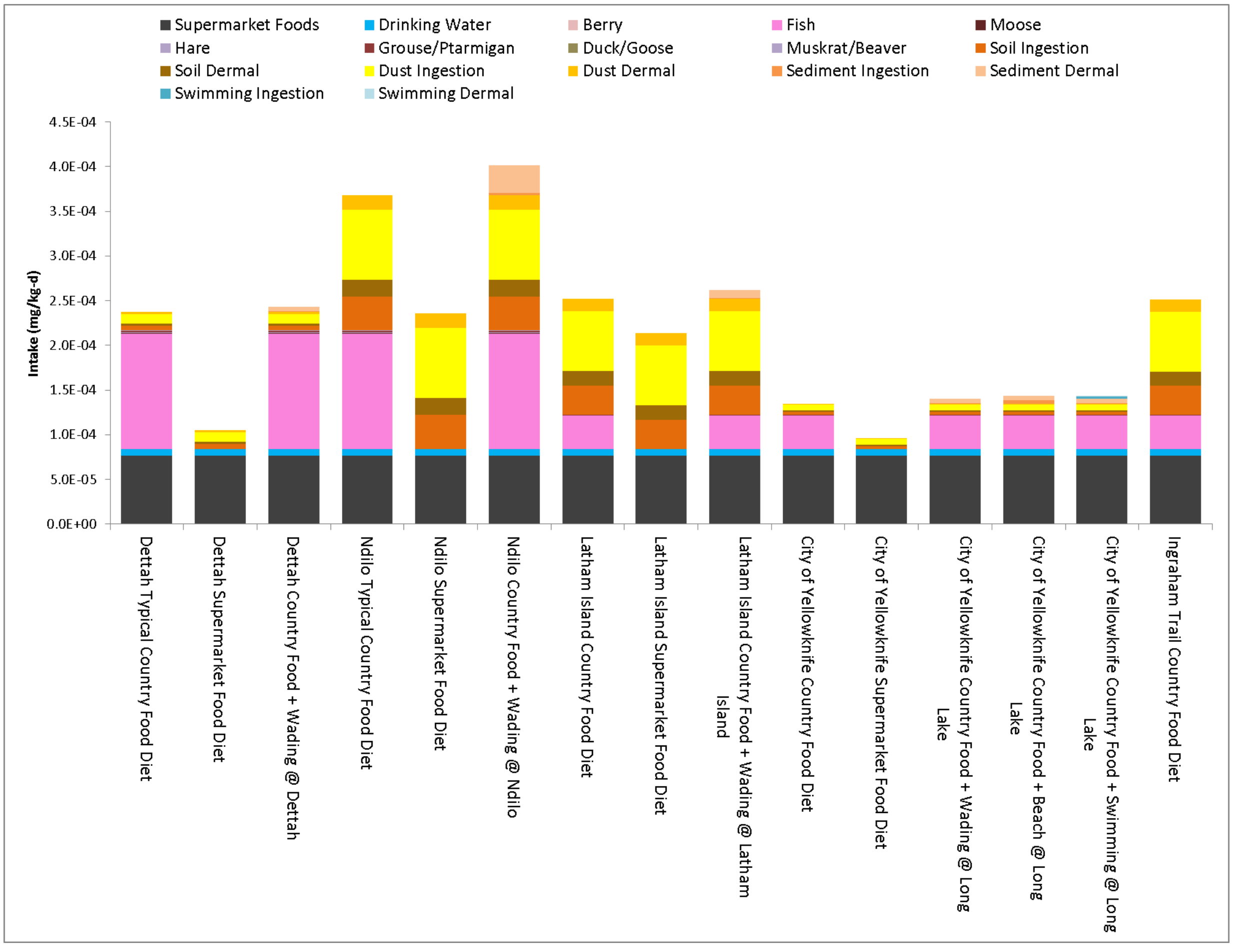


Figure 3.31 shows that supermarket foods contribute almost completely to the total intake of manganese for toddlers. Other pathways such as drinking water, air, country foods, soil, and indoor dust are essentially negligible compared with supermarket food intakes. There is some double-counting for the manganese intakes presented in Figure 3.31, since intakes from supermarket foods were not reduced to account for the foods obtained as country foods. Estimated intakes for all life stages and scenarios are provided in Appendix F.

Figure 3.31 Estimated intakes for toddler – manganese

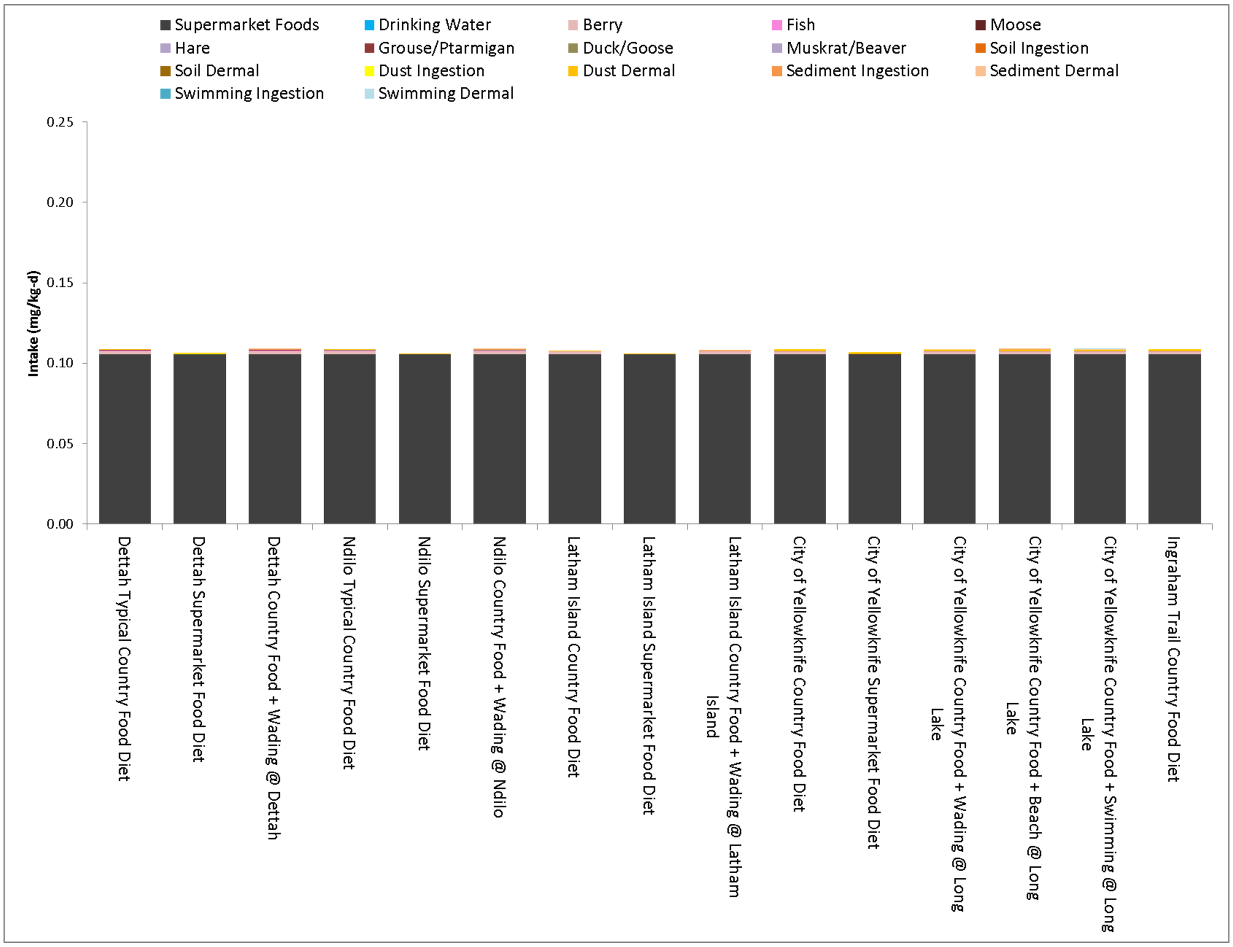
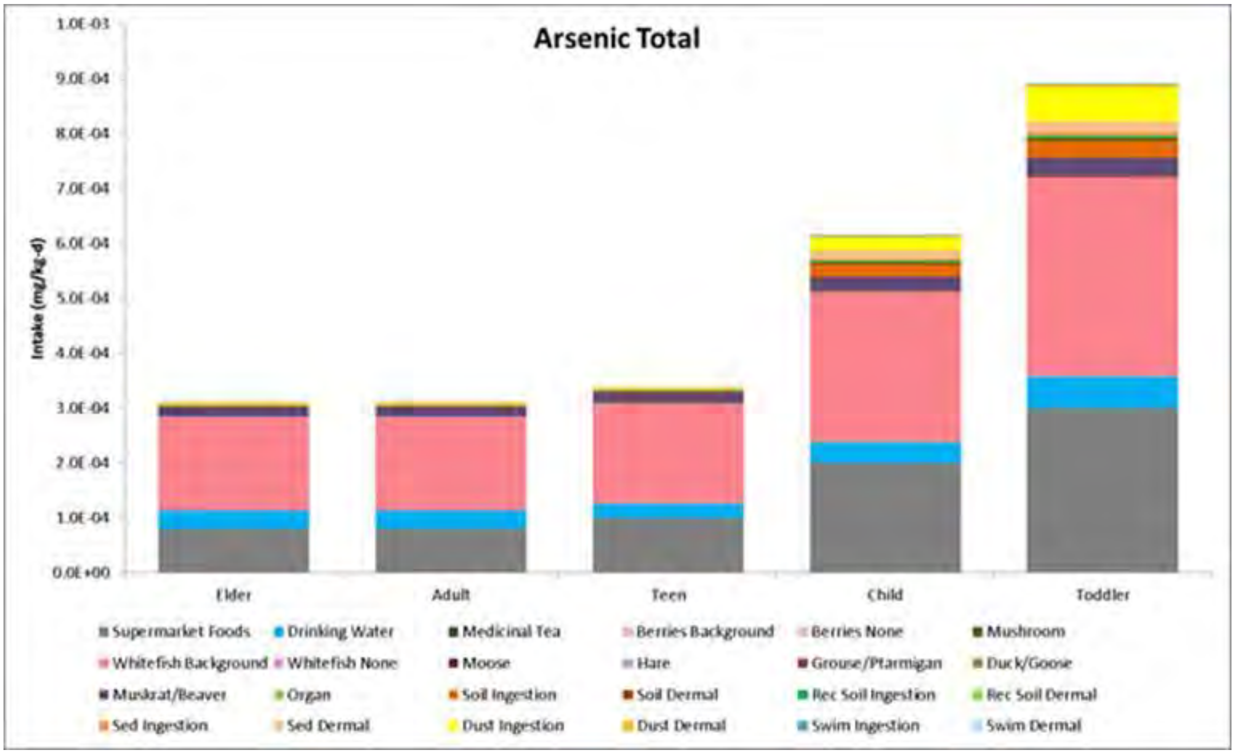
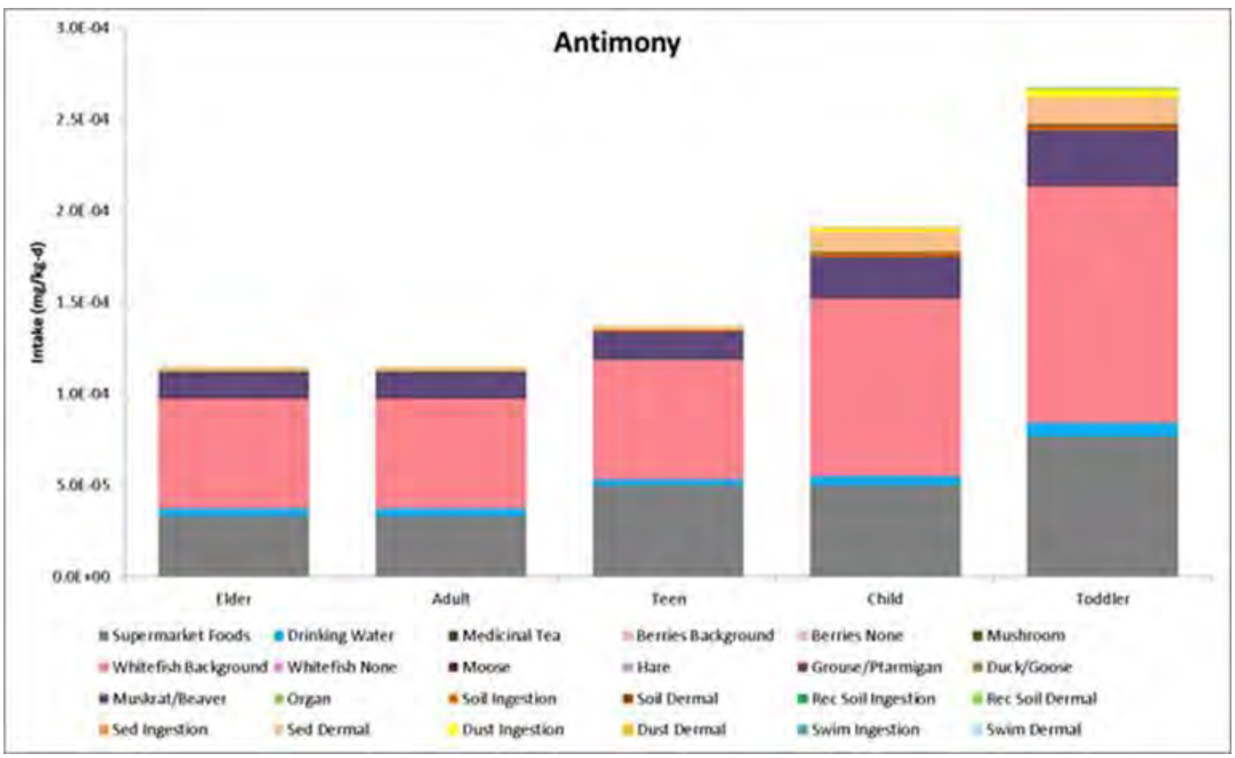


Figure 3.32 shows representative intakes associated with background exposures for all pathways and the five life stages considered in the HHRA for total arsenic, antimony, and manganese. Intakes for total arsenic from background are dominated by the intake of arsenic in fish and supermarket foods, and, to a lesser extent, drinking water. Background exposures to antimony are similarly dominated by intakes from fish and supermarket foods, and, to a lesser extent, muskrat/beaver. Background exposures to manganese are dominated by the intake of manganese in supermarket foods.

Background exposures are, in some cases, underestimated due to a lack of available data. Background air concentrations for antimony and manganese were assumed to be zero in the absence of other information. Similarly, there were no data to determine the background concentrations of antimony and manganese in hare and organs. There are no background arsenic exposures for organs.

Figure 3.32 Estimated intakes for background for all exposure pathways





3.4 Toxicity Assessment

Toxicity refers to the ability of a chemical to cause temporary or permanent adverse effects in the body. Toxicity depends on several factors such as the form of the chemical, the amount of exposure, and the duration of the exposure.

For some chemicals that do not cause cancer, there is a permissible (safe) level or threshold dose below which adverse health effects are not expected to occur. These permissible levels are set by regulatory agencies such as Health Canada and the U.S. EPA based on scientific studies from laboratory animal tests or on human epidemiological studies or workplace exposure investigations. These studies are reviewed by a number of experienced scientists in a wide range of scientific disciplines in order to determine the maximum dose that a human can be exposed to without having an adverse health effect. Permissible doses are usually reported as the amount of chemical per unit body weight per unit time that a person may be exposed to every day of their entire life that will not cause adverse health effects. For example, the oral (eating/swallowing) permissible dose for manganese for a toddler used in this study was 136 micrograms per kilogram of body weight per day. It should be noted that exposure above a permissible level does not mean that an effect will occur, but instead means that there is an increased risk of an adverse effect occurring.

Arsenic is known to cause cancer. For chemicals that cause cancer, the total exposure over an entire lifespan (from birth to death) is calculated using a lifetime receptor, which represents a combination of all life stages (infant, toddler, child, adolescent, and adult). This is because before a cancer occurs, a person needs to be exposed for a very long time to arsenic before an adverse effect is observed. The exposure calculated for the lifetime receptor is known as the lifetime average daily dose. The cancer-causing power of a carcinogen is represented by its cancer slope factor. These are values set by regulatory agencies such as Health Canada and the U.S. EPA based on specially designed cancer studies in humans or laboratory animals. Cancer slope factors are used in combination with the average lifetime exposure estimates for carcinogens to estimate cancer risks.

Toxicity Reference Values (TRVs) are intended to protect the most sensitive individuals (e.g., the elderly, pregnant women, children, etc.) as well as people with compromised health such as asthmatics.

The COPC considered for the human health assessment are arsenic, antimony, and manganese. Antimony and manganese are not considered to cause cancer. Arsenic, however, is considered carcinogenic. Table 3.11 provides a summary of the TRVs selected for use in the assessment for oral exposure. The TRVs are all obtained from Health Canada (2010b) with the exception of antimony where the TRV is obtained from the U.S. EPA Integrated Risk Information System (IRIS) database (U.S. EPA 2017). The TRVs, health effects (toxicological endpoints), and reference sources for each TRV are provided in the table. The following sections provide a brief discussion of the toxicity of the three selected COPC. TRVs for the dermal exposure pathway are not generally available. Therefore dermal exposures are generally added to the ingestion exposures once adjustments are made to account for differences in absorption (see Appendix F and Table 3.6).

A more detailed discussion of the toxicity of these COPC is provided in Appendix G.

Table 3.11 Summary of toxicity reference values for humans

COPC	Oral Toxicity Reference Value					Inhalation Toxicity Reference Value				
	Carcinogenic		Non-Carcinogenic		Endpoint	Carcinogenic		Non-Carcinogenic		Endpoint
	$(mg/(kg\text{-}d))^{-1}$		(mg/(kg-d))			$(mg/m^3)^{-1}$		(mg/m^3)		
Antimony	N/A		$4.0\text{x}10^{-4}$	U.S. EPA (2017; last updated 1991)	Longevity, blood glucose and cholesterol	N/A		N/A	N/A	–
Arsenic	1.8	Health Canada (2010b)	N/A		Internal cancers	6.4	Health Canada (2010b)	N/A		Lung cancer
Manganese	N/A		0.136 (toddler) 0.122 (child) 0.142 (teen) 0.156 (adult)	Health Canada (2010b)	Neuro-toxicity	N/A		$5.0\text{x}10^{-5}$	U.S. EPA (2017; last updated 1996)	Impairment of neuro-behavioural function

N/A: Not applicable.
For antimony, the only inhalation TRV available is for antimony that is not considered the appropriate form of antimony in air in Yellowknife.
There are no TRVs for dermal exposures; dermal exposures are added to oral exposures after adjustments made for absorption.

3.4.1 Cancer-Causing Contaminants

Arsenic is the only COPC identified that is considered to cause cancer. The Agency for Toxic Substances and Disease Registry (ATSDR 2017) provides a detailed discussion of the various toxicity endpoints for arsenic. The focus of this discussion and the discussion in Appendix G is on the endpoints used by regulatory agencies for TRVs.

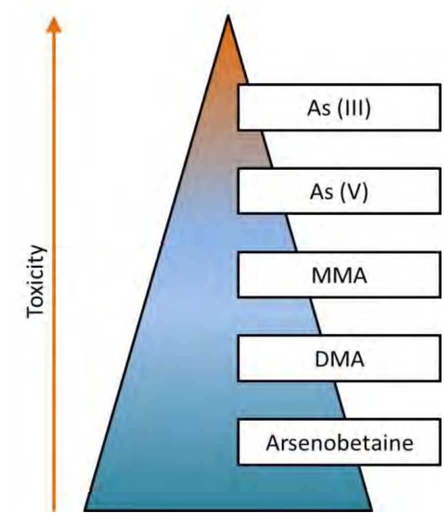
3.4.1.1 Arsenic

Trivalent arsenic (As^{3+}) is generally more toxic than pentavalent arsenic (As^{5+}). The problem with arsenic toxicity is the formation of by-products of oxidation of arsenate, such as arsenite, MMA, and DMA that do not allow for a clear dose-response curve. While the methylation of arsenate helps in the removal of arsenic from the body, it has been shown to increase the levels of these three toxicants.

Research has shown that all four forms of arsenic (As^{3+}, As^{5+}, DMA, MMA) have adverse effects at the cell metabolism level by damaging cell DNA or by reacting with critical sulfhydryl containing enzymes; however, it is unclear how to correlate data obtained from animal studies to actual human effects (Hughes et al. 2011). Organic arsenic compounds such as arsenobetaine are found in fish and shellfish and are considered not to be toxic.

Figure 3.33 shows a schematic of the relative toxicities of the arsenic species. Due to the fact that there are no definitive dose response curves for the various arsenic species As^{3+}, As^{5+}, DMA, MMA, they have all been assumed to have the same toxicity as As^{3+}. Arsenobetaine has been assumed to be non-toxic.

Figure 3.33 Schematic of the relative toxicities of arsenic species



Arsenic is considered to cause cancer in the lung, bladder, and skin as discussed in Appendix G. An oral slope factor of 1.8 $(mg/kg\ d)^{-1}$ and an inhalation unit risk of 6.4 per (mg/m^3) derived by Health Canada (2010b) is used in this assessment. The IRIS database (U.S. EPA 2017) provides an oral slope factor of 1.8 $(mg/kg\ d)^{-1}$ (see Appendix G). The effect of using this oral slope factor is discussed in the Uncertainty section (see Section 3.5.4). No TRVs for non-carcinogenic endpoints are provided in Health Canada (2010b). More details on the selection of these values are provided in Appendix G.

3.4.2 Non-Cancer-Causing Contaminants

Antimony and manganese are not considered to cause cancer.

3.4.2.1 Antimony

Antimony toxicity occurs either from exposure in the workplace or during therapy. Workplace exposure may cause irritation in the respiratory system, lung disease, antimony spots on the skin, and problems with digestion. The critical effects for exposure to antimony include effects on longevity, blood glucose, and cholesterol levels.

Health Canada (2010b) has no published TRVs for antimony. The IRIS database (U.S. EPA 2017) provides an oral TRV of 0.0004 mg/kg-d, which is based on a study in rats. This value includes a safety factor of 1,000. This value was used in the assessment and more details on antimony toxicity and the selection of the TRVs is provided in Appendix G. There are more recent evaluations of the toxicity of antimony by the WHO and other international regulatory agencies, based on their evaluations a TRV of 0.006 mg/kg-d has been derived (see Appendix G). The effect of using this antimony TRV is discussed in the Uncertainty section (see Section 3.5.4). The only TRV for inhalation is based on antimony trioxide, which is not the form or antimony found in the air and thus was not considered.

3.4.2.2 Manganese

Manganese is essential for normal functioning of cells in the body. Several diseases in humans have been associated with either excess or a lack of manganese in the diet. Most toxic effects have been observed in workers and are generally related to breathing in high concentrations of manganese. The toxicity information on oral exposures is related to safe dietary intakes.

Health Canada (2010b) derived oral TRVs for different life stages of 0.136 mg/kg-d, 0.122 mg/kg-d, 0.142 mg/kg-d, and 0.156 mg/kg-d for infants and toddlers, children, teens, and adults, respectively. The IRIS database (U.S. EPA 2017) provides an inhalation TRV of 0.00005 mg/m^3 based on exposure in the workplace using a safety factor of 1,000. These values were used in the assessment and more details on manganese toxicity and the selection of the TRVs is provided in Appendix G.

3.4.3 Evaluation of Potential Toxic Interactions

There are very few methods for combining exposures to multiple COPC at a regulatory level. The simple approach to multiple chemical exposures involves the use of individual toxicities and adding the exposures if the end points are for the same target cell or tissue. As seen from Table 3.11, the various endpoints are very different for exposures of arsenic, antimony, and manganese, and, thus, there is a very low possibility of toxic interactions.

3.5 Risk Characterization

The results of the risk characterization for the HHRA are provided in the following sections; more detailed results are provided in Appendix H, including the sensitivity analyses. Appendix I provides the sample calculations.

3.5.1 Non-Cancer-Causing Chemicals

Antimony and manganese are determined not to cause cancer. The risk for these chemicals is determined by comparing the calculated exposure estimates to the Permissible dose or safe level. When the calculated exposure is below the safe level, adverse health effects are not expected. In this case, risks may be considered to be insignificant or negligible. If the calculated exposure estimate exceeds the safe level, then the risk of an adverse health effect cannot be ruled out.

3.5.1.1 Estimation of Risk – Current Scenario

The toddler is typically the most exposed receptor due to lower body weight and generally higher relative exposures to soil and sediment. Therefore, results for the toddler at all locations are presented in the following sections to represent the highest estimated exposures for antimony and manganese. In addition, results for an elder are provided as they are considered a sensitive life stage. Complete results for all life stages, including a breakdown by exposure pathway, are provided in Appendix H; sample calculations are provided in Appendix I.

Typical Diet Scenarios

Antimony

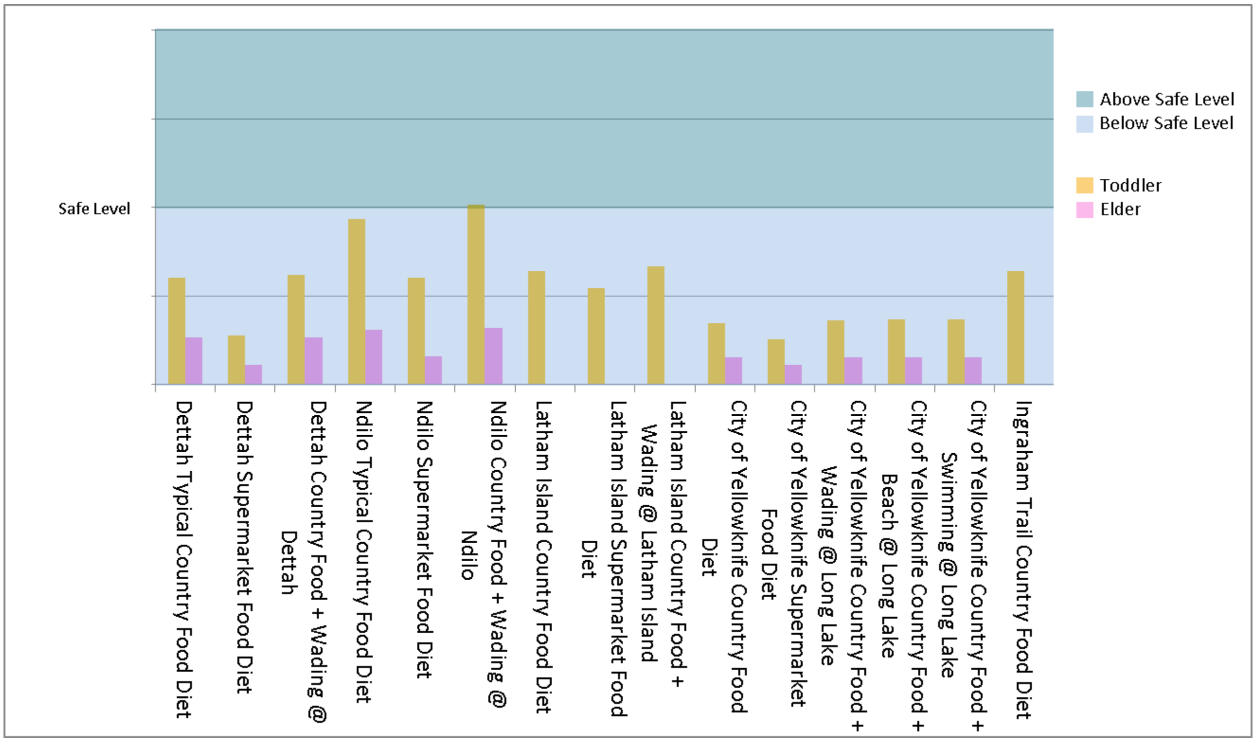
Figure 3.34 provides a summary of the estimated exposures to antimony calculated for the typical diet scenarios (i.e., typical country diet, Yellowknife country diet, and supermarket food diet). The results also include drinking municipal water, eating supermarket foods, exposure to soil and indoor dust (swallowing and skin contact), as well as breathing air. All of these exposures, with the exception of supermarket food, are unique to the location of the resident. Elders are not evaluated at Latham Island and Ingraham Trail. Additional scenarios that consider potential exposures from wading and swimming are also included in Figure 3.34. There is some double-counting for the antimony exposures presented in Figure 3.34 for receptors with country food diets, since intakes from supermarket foods were not reduced to account for the foods obtained as country foods.

Figure 3.34 shows that all the results are at or below the safe level and, therefore, the risk from exposures to antimony in a typical country food diet is considered to be negligible. Antimony exposures are dominated by eating supermarket food and fish, which are considered to be background. The figure also demonstrates that toddlers are more exposed than elders. People who only eat supermarket food have the lowest exposures. While people who eat country foods have higher exposures than those who just eat supermarket foods, the figure shows that these exposures are still below the safe level.

From Figure 3.34, it can be seen that people who live in Ndilo and eat country foods are the highest exposed people. This is not surprising as they live closer to the Giant Mine and the antimony concentrations in soil are higher than at any other location; in addition they eat more country food than people living in the City. Wading in the near-shore sediments in any location increases exposures slightly.

For City of Yellowknife residents, including members of the Metis community, who eat country food, exposures are lower than for the YKDFN community living in Ndilo and Dettah, due to a smaller amount of country food being eaten as well as lower antimony in soil concentrations in the City of Yellowknife than in Ndilo and Dettah. The calculations also assumed that people from the City of Yellowknife would go to Long Lake and wade in the shallow sediments, play on the beach, and swim in the lake. The results show that either wading in the shallow sediments and swimming in Long Lake or spending time on the beach contributes only a slight increase in overall exposure to antimony and remains below the safe level.

Figure 3.34 Estimated potential exposures to antimony – typical diet scenarios

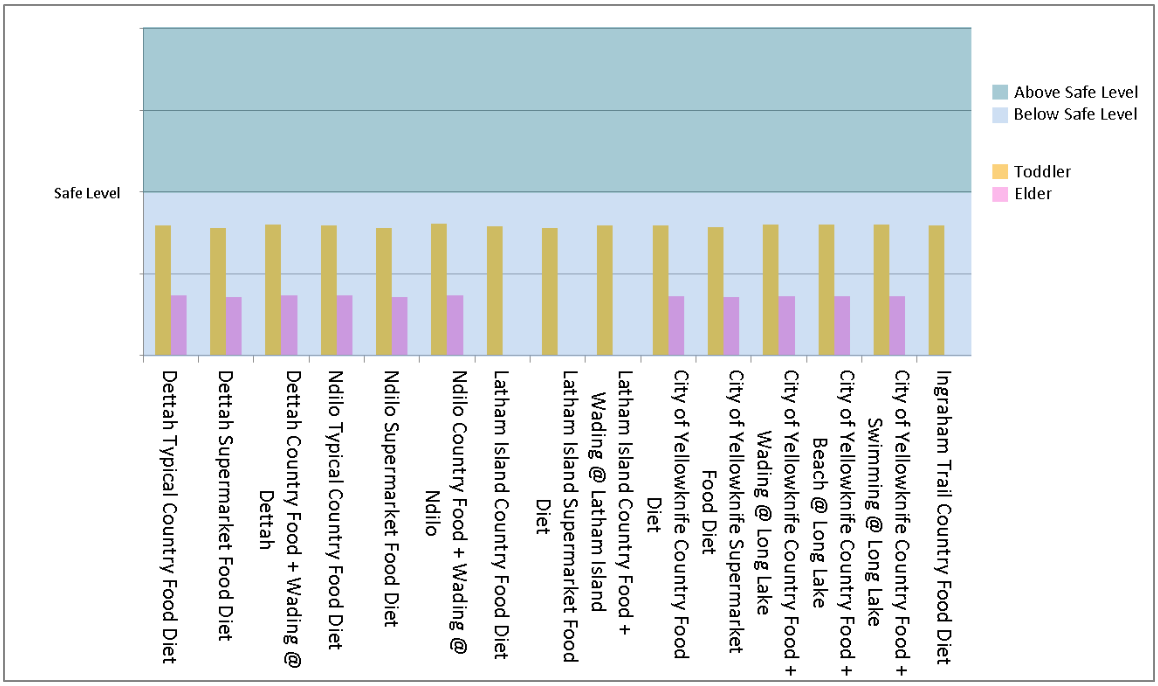


Manganese

Figure 3.35 provides a summary of the estimated exposures to manganese calculated for the typical diet scenarios (i.e., typical country diet, Yellowknife country diet, and supermarket food diet). The results also include drinking municipal water, eating supermarket foods, exposure to soil and indoor dust (swallowing and skin contact), as well as breathing air. All of these exposures, with the exception of supermarket food, are unique to the location of the resident. Elders are not evaluated at Latham Island and Ingraham Trail. There is some double-counting for the manganese exposures presented in Figure 3.35 for receptors with country food diets, since intakes from supermarket foods were not reduced to account for the foods obtained as country foods.

Figure 3.35 shows that all the results are below the safe level and, therefore, the risk from exposures to manganese in a typical country food diet is considered to be negligible. As discussed in the exposure estimates in Section 3.3.8, the contribution of manganese in supermarket foods dominates the exposures and thus differences cannot be seen in the scenarios evaluated. Results for manganese are below safe levels for all other scenarios considered in the risk assessment and, thus, are considered to represent a negligible risk. The detailed results are presented in Appendix H; sample calculations are provided in Appendix I.

Figure 3.35 Estimated potential exposures to manganese – typical diet scenarios



High Diet Scenarios

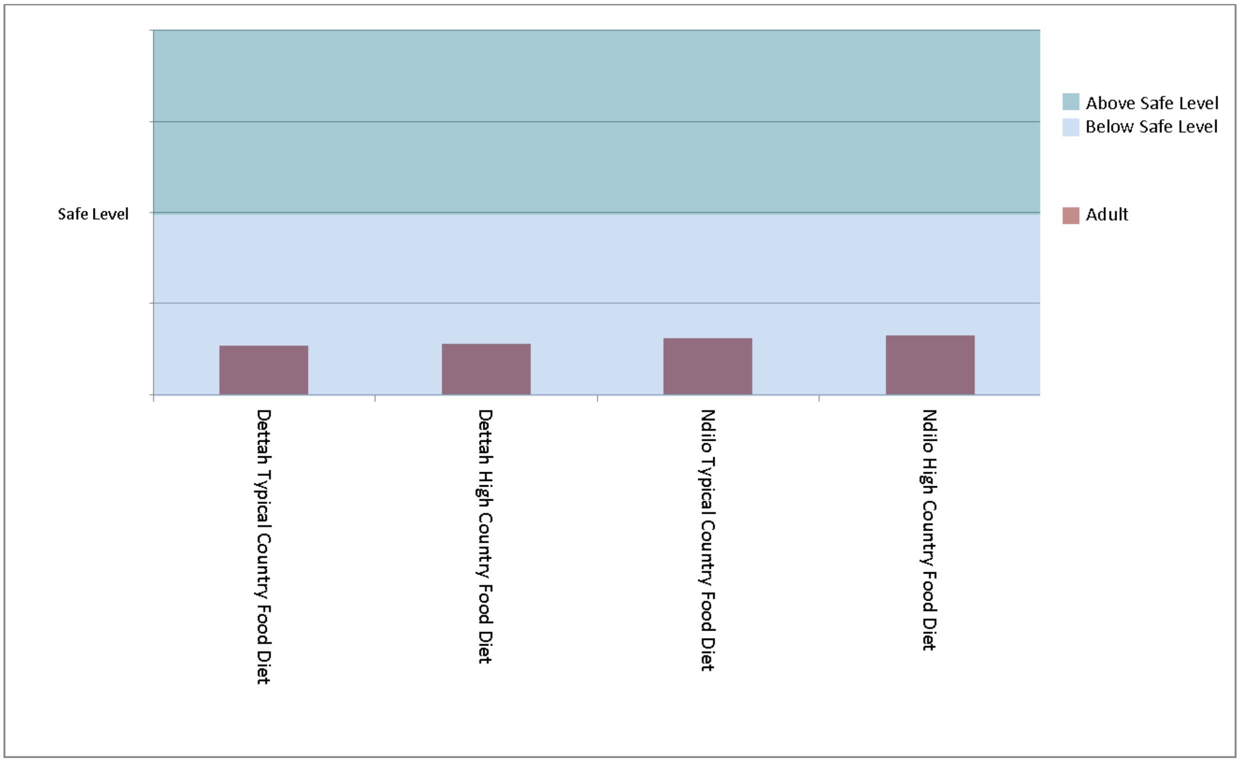
Antimony

The results of the dietary survey indicated that there were some adults in the 40 to 60 age group that ate a diet that was predominantly country foods. This section discusses the results for antimony exposures for people from the YKDFN who predominantly eat country foods.

Figure 3.36 provides a summary of the estimated exposures to antimony for the high country food diet and compares it to the typical country food diet in both Ndilo and Dettah. The results also include drinking municipal water, exposure to soil and indoor dust (swallowing and skin contact), as well as breathing air.

Figure 3.36 shows that high country food diet results in an increase in the antimony exposures; however, the exposures are below the safe level and, thus, are considered to represent negligible risk.

Figure 3.36 Estimated potential exposures to antimony – high diet scenarios



Additional Scenarios

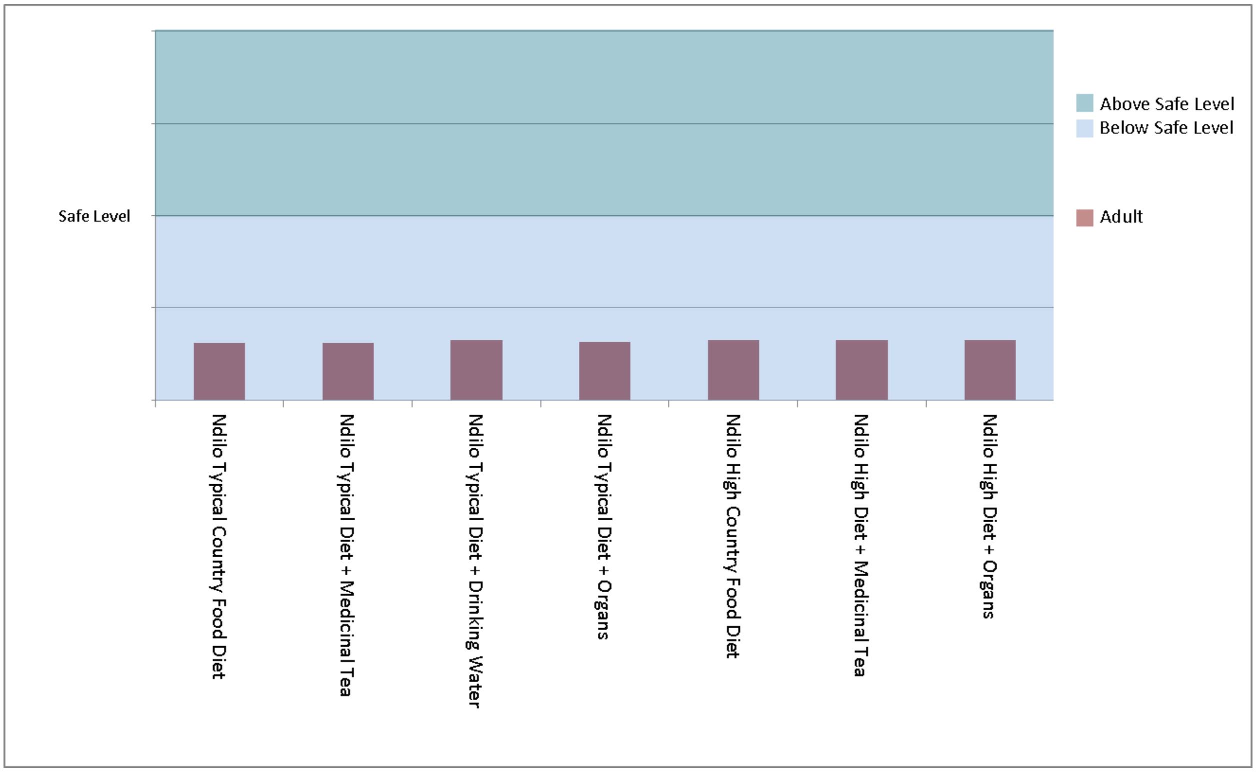
The additional scenarios only focus on antimony exposure, since manganese exposures are dominated by supermarket foods. The results for the antimony exposures are presented by location. People have reported drinking water from Yellowknife Bay, so this was considered as an additional scenario. Drinking medicinal tea and eating organs were considered as an additional scenario as not everyone reported eating them. The results are presented for adults only as they reported eating organs and drinking medicinal tea.

Ndilo

Figure 3.37 provides a summary of the estimated exposures to antimony calculated for the various scenarios considered for members of the Ndilo community. The results also consider the unique exposures in Ndilo. The drinking water scenario considers drinking water every day from North Yellowknife Bay. The ingestion of organs considered moose, fish, and bird organs. The figure shows the results for people with both a typical and a high country diet. There is some double-counting for the antimony exposures presented in Figure 3.37 for receptors with typical country food diets, since intakes from supermarket foods were not reduced to account for the foods obtained as country foods.

Figure 3.37 shows that the results for all the additional scenarios for the Ndilo community are below the level of exposures considered safe for antimony and, thus, are considered to represent negligible risk. Exposures are typically higher for members of the Ndilo community who consume a high diet of country foods. The results show that drinking water from North Yellowknife Bay, drinking medicinal tea, or eating organs does not substantially add to antimony exposures.

Figure 3.37 Estimated potential exposures to antimony – additional scenarios for Ndilo

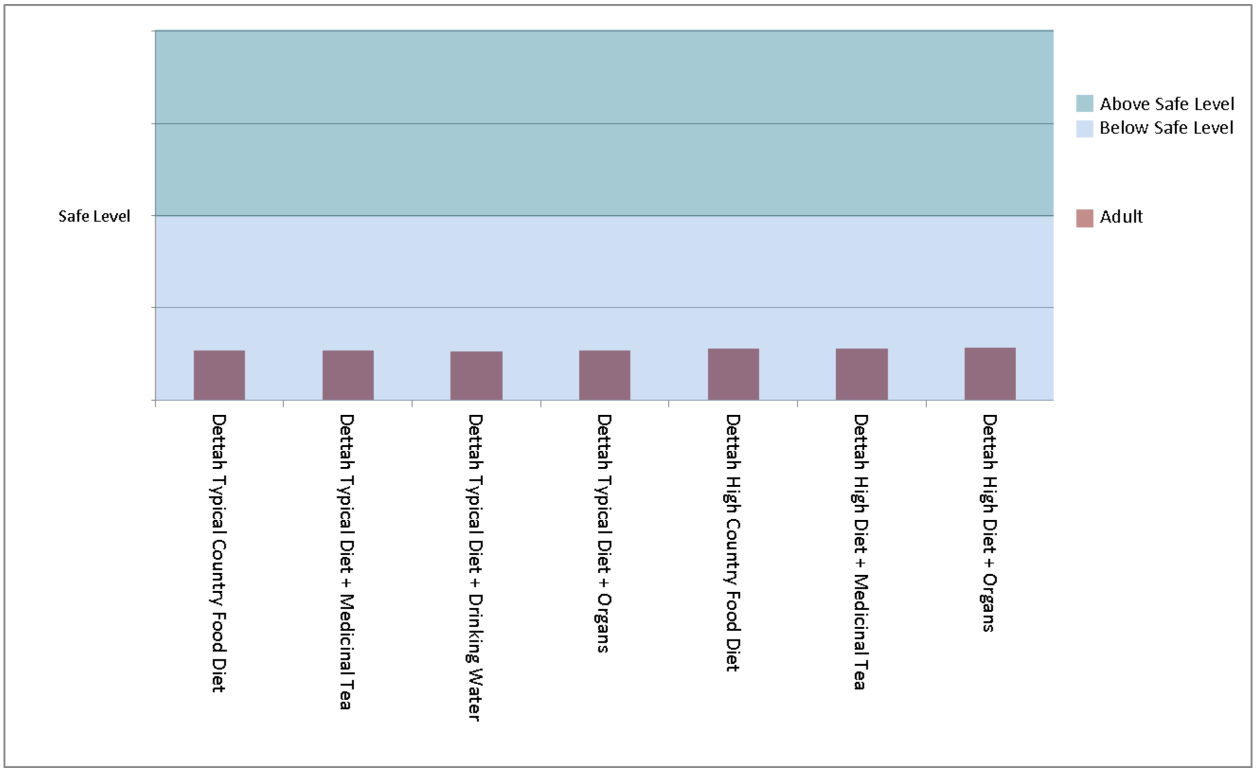


Dettah

Figure 3.38 provides a summary of the estimated exposures to antimony calculated for the various scenarios considered for members of the Dettah community. The results also consider the unique exposures in Dettah. The drinking water scenario considers drinking water every day from South Yellowknife Bay. The ingestion of organs considered moose, fish, and bird organs. The figure shows the results for people with both a typical and a high country diet. There is some double-counting for the antimony exposures presented in Figure 3.38 for receptors with typical country food diets, since intakes from supermarket foods were not reduced to account for the foods obtained as country foods.

Figure 3.38 shows that the results for all the scenarios considered for the Dettah community are below the level of exposures considered safe for antimony and thus are considered to represent negligible risk. Exposures are typically higher for members of the Dettah community who consume a high diet of country foods. The results show that drinking water from South Yellowknife Bay, drinking medicinal tea, or eating organs does not substantially add to antimony exposures.

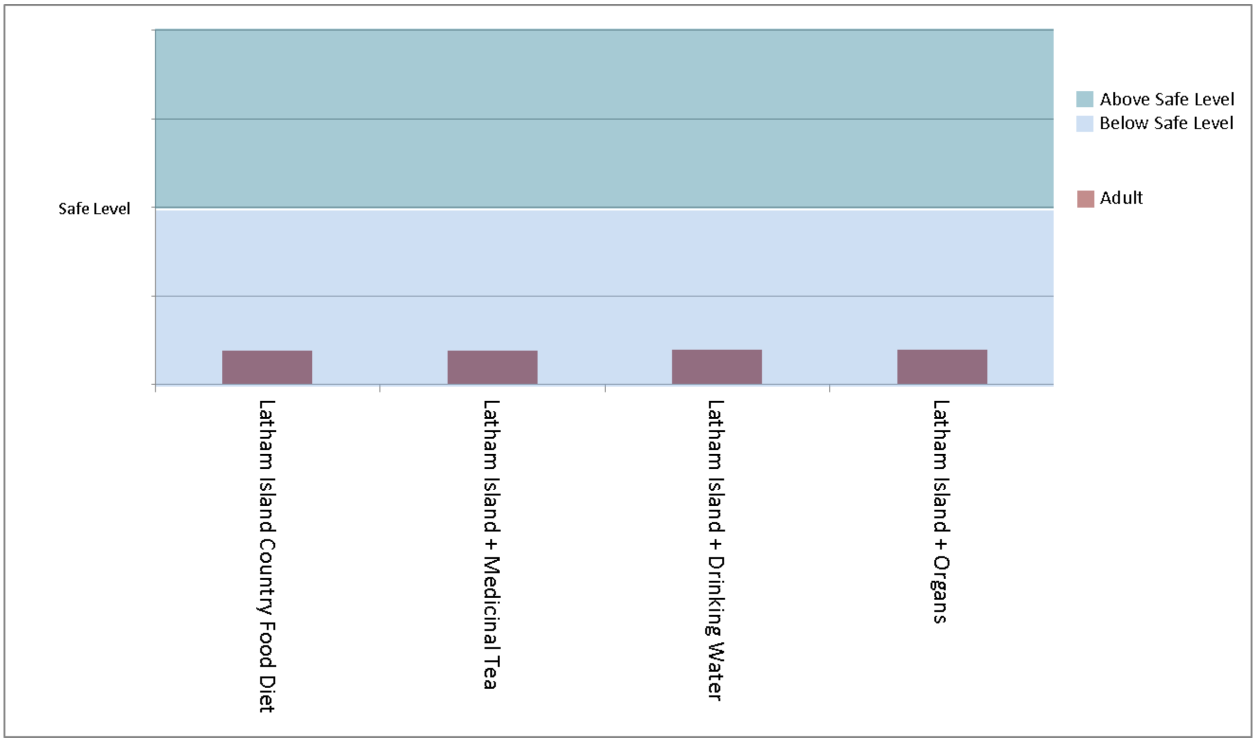
Figure 3.38 Estimated potential exposures to antimony – additional scenarios for Dettah



Latham Island

Figure 3.39 provides a summary of the estimated exposures to antimony calculated for the various scenarios considered for residents of Latham Island. The results also consider the unique exposures in Latham Island. The drinking water scenario considers drinking water every day from Back Bay and, therefore, covers the exposures from people living on houseboats who may get water from Back Bay. The ingestion of organs considered moose, fish, and bird organs. There is some double-counting for the antimony exposures presented in Figure 3.39, since intakes from supermarket foods were not reduced to account for the foods obtained as country foods. Figure 3.39 shows that the results for all the scenarios considered for residents of Latham Island are all below the level of exposures considered safe for antimony and, thus, are considered to represent negligible risk. The results show that drinking water from Back Bay, drinking medicinal tea, or eating organs does not substantially add to antimony exposures.

Figure 3.39 Estimated potential exposures to antimony – additional scenarios for Latham Island

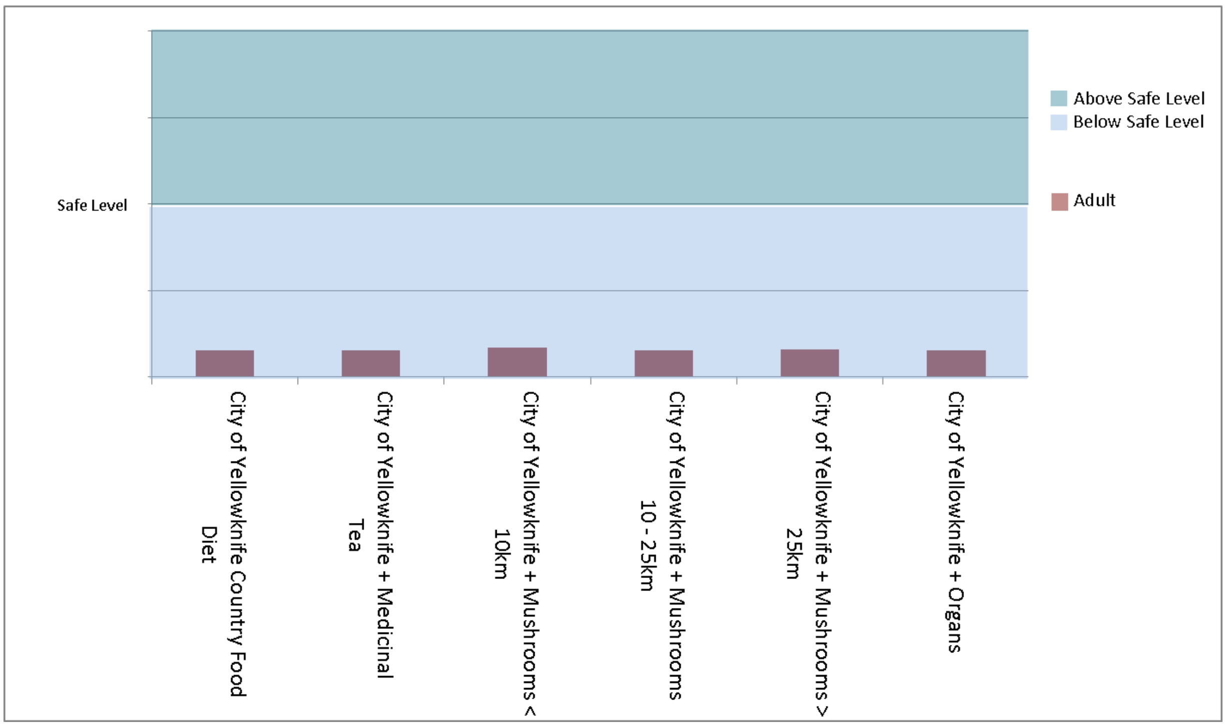


City of Yellowknife

Figure 3.40 provides a summary of the estimated exposures to antimony for the various scenarios considered for residents of the City of Yellowknife, including members of the Metis community. The results also consider the unique exposures in the City of Yellowknife. A drinking water scenario was not considered, as people living in the City of Yellowknife are serviced with municipal water. The Metis indicated in the dietary survey that they consumed mushrooms and, therefore, this scenario was also considered. The ingestion of organs considered moose, fish, and bird organs. There is some double-counting for the antimony exposures presented in Figure 3.40, since intakes from supermarket foods were not reduced to account for the foods obtained as country foods.

Figure 3.40 shows that the results for all the scenarios considered for residents of the City of Yellowknife, including members of the Metis community, are below the safe level of exposure for antimony and, thus, are considered to represent negligible risk. The results show that drinking medicinal tea, eating mushrooms, or eating organs does not substantially add to antimony exposures. The analysis of mushrooms considered consuming 1.5 kg of mushrooms a year for a lifetime, obtained from within 10 km of the Giant Mine, between 10 km and 25 km from the Giant Mine, and greater than 25 km from the Giant Mine. The figure shows that the antimony exposure from mushrooms does not vary much with distance from the Giant Mine. The results for the City of Yellowknife also reflect the results for people living along the Ingraham Trail as their country food diet is the same.

Figure 3.40 Estimated potential exposures to antimony – additional scenarios for City of Yellowknife



3.5.1.2 Estimation of Risk – Future Scenario

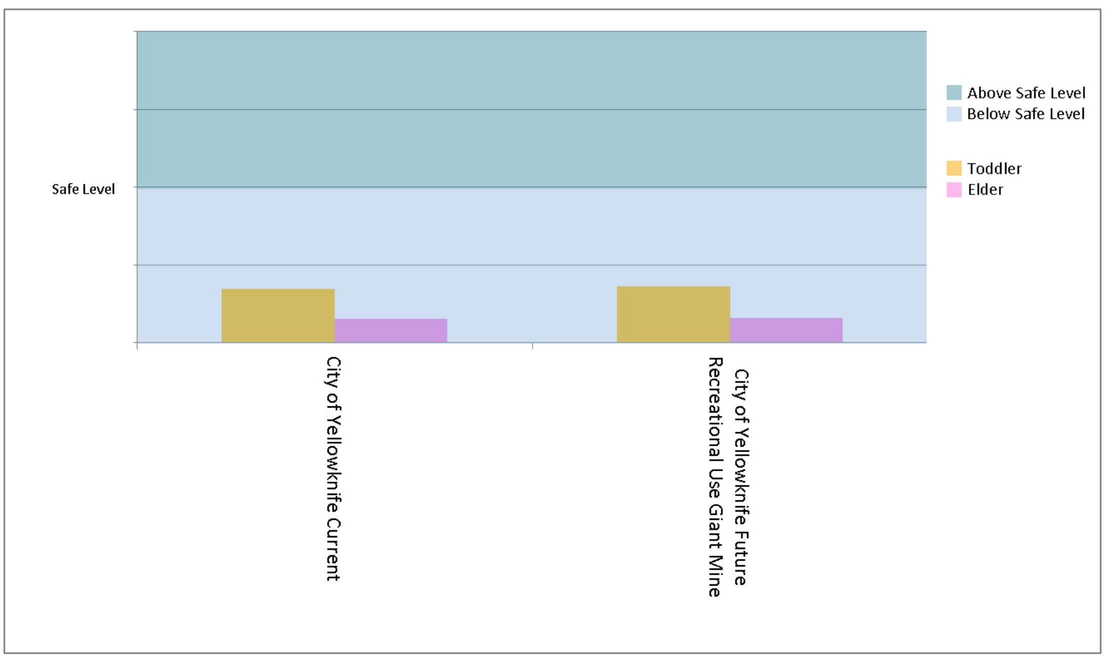
The future scenario examined the effect of post remediation conditions at the Giant Mine on the nearby residents. In the future, some parts of the Giant Mine may be accessible to members of the public for recreational activities, and people may collect berries when they are there. The relocation of the treatment plant outfall may potentially affect concentrations in Yellowknife Bay; however, predicted concentrations were determined to be similar to current conditions and thus were not evaluated for a future scenario. The future scenario considered residents in the City of Yellowknife as they have expressed the desire to use the Giant Mine in the future. The YKDFN have indicated that they do not want to use the site in the future so they were not considered in this scenario.

Antimony

Figure 3.41 provides a summary of the estimated exposures to antimony for future conditions for the City of Yellowknife. Results are provided for a toddler and elder. The results encompass multiple pathways of exposure, including drinking water from the municipal source, eating supermarket food, soil, indoor dust, and skin exposures, as well as exposures from air. The evaluation considered a typical country food diet. In order to provide a perspective, the results for the current base case exposure were also presented in the figure.

Figure 3.41 shows that future recreational use of the remediated Giant Mine, including picking berries and eating them while at the site, will contribute marginally to the total exposure of antimony for the City of Yellowknife residents. It is noted that the future scenario is below the safe level for antimony and, thus, is considered to represent negligible risk.

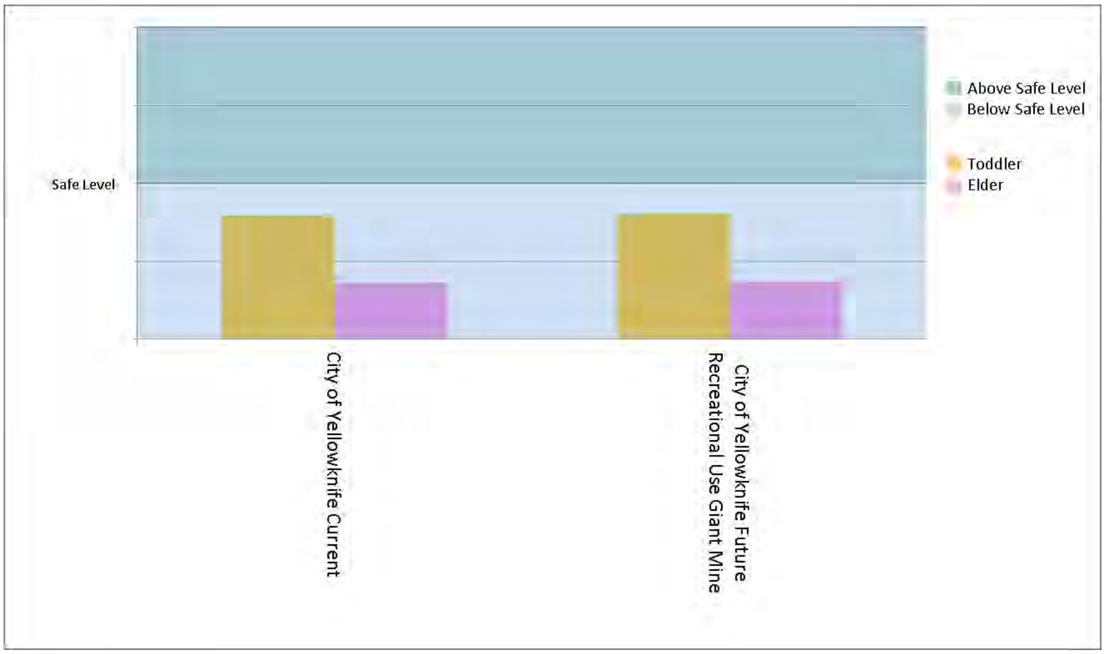
Figure 3.41 Estimated potential exposures to antimony – future conditions



Manganese

The similar scenario was evaluated for exposure to manganese. Figure 3.42 shows the results for the City of Yellowknife residents. Similar to the current scenario, supermarket food dominates the manganese exposure. The manganese exposure is below the safe level and, thus, considered to represent negligible risk.

Figure 3.42 Estimated potential exposures to manganese – future conditions



Former Giant Mine Townsite

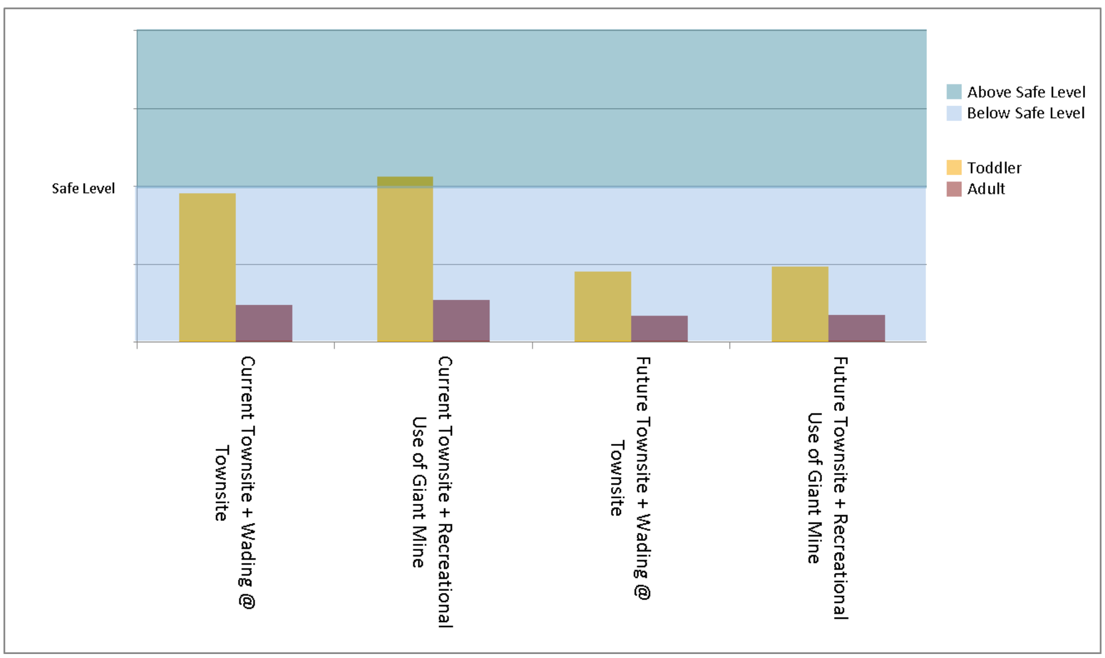
The GMRP has agreed to clean the arsenic in the soils at the marina and former Townsite as well as the shoreline that extends up to the Foreshore tailings to the GNWT residential criterion. When this occurs, antimony in the soils will also be cleaned up. It was assumed that the antimony in the soils will be about ten times lower than arsenic based on measured data. No definite plans have been made for the land use at the former Townsite. Therefore, the assessment considered that the most stringent land use (i.e., residential) would occur and it was assumed that people may live at this location.

Currently, there are no residents at the former Giant Mine Townsite; however, exposures from current levels of antimony at the Townsite were calculated in order to show the reduction in exposures from the soil clean up.

For the purposes of the assessment, it was assumed that the people living at the Townsite would have a country diet similar to the City of Yellowknife and would drink water provided by the municipality. People would also be exposed to soil and indoor dust and skin contact. It was also assumed that people in the Townsite would go on the Giant Mine for recreational activities and pick some berries. The sediments at the Townsite will also be remediated and a scenario was evaluated for wading in the shallow sediments. Figure 3.43 provides a summary of the estimated exposures to antimony for hypothetical residents at the Townsite location.

Figure 3.43 shows that under current conditions, the estimated exposures from antimony for hypothetical residents at the Townsite are below the safe level for antimony, with the exception of the totally unrealistic scenario of a toddler going on to the Giant Mine at current contamination levels. In the future, following planned remediation activities to soils and sediments at the Townsite, the results show that exposure levels in the future will be much lower than for current conditions. This comparison shows that the remediation activities planned for the Townsite and Giant Mine are expected to result in lower exposures and, thus, a positive outcome in this location. This also covers risks and exposures at the marina.

Figure 3.43 Estimated potential exposures to antimony – former Townsite



3.5.1.3 Interpretation of Risk Estimates

The results of the risk assessment for current scenarios for exposure to antimony and manganese indicate that the risks are considered to be negligible.

For the future, after the Giant Mine has been remediated, the risks are also considered to be negligible.

At the former Townsite location and marina, the remedial activities will reduce antimony concentrations and, under a residential scenario (most restrictive land use), the risks are considered to be negligible.

3.5.2 Cancer-Causing COPC

Of the COPC identified for the HHRA, arsenic is known to cause cancer. The evaluation of potential risks from exposure to arsenic is completed on an incremental basis (i.e. Incremental risk = Total risk – Background risk). In many cases, it is difficult to separate incremental risk from total risk. Total cancer risk is calculated by adding all exposures to a particular chemical, including background exposures.

Any level of exposure to a cancer-causing chemical such as arsenic is associated with some level of risk. Thus, an acceptable level of risk must be set for these chemicals. Acceptable risks are provided by regulators in the form of incremental lifetime cancer risks, which are set at risk levels considered to be negligible. Health Canada's negligible incremental lifetime cancer risk level is one-in-one hundred thousand people (1 in 100,000).

For cancer-causing chemicals, risk is calculated by multiplying the average daily dose over a lifetime, which includes all life stages combined (lifetime receptor) by the cancer slope factor (TRV) to estimate the incremental lifetime cancer risk.

In order to provide a context for the incremental risks associated with arsenic exposure in this study, a framework, which has been used by recognized experts in the field of risk communication (Calman 1996; Paling 2003), was adopted. The different levels of risk are described below (Calman 1996):

- High: These risks may be fairly regular events and would occur at a rate greater than 1 in 100. They may also be described as frequent, serious, or significant.

- Moderate: This term relates to a risk of between 1 in 1,000 and 1 in 100. This would apply to a wide range of medical procedures (e.g., whole CT scans nuclear stress tests) and environmental events.
- Low: This relates to a predicted increased risk of between 1 in 10,000 and 1 in 1,000. Again, many risks of clinical procedures (e.g., barium enemas, partial CT scans) and environmental hazards fit into this broad category. Other words that might be used include reasonable, tolerable, and small.
- Very Low: This describes a risk between 1 in 100,000 and 1 in 10,000; many health care interventions (e.g., dental x-rays, chest x-rays, mammograms) have adverse effects that are in this range.
- Negligible: Health Canada describes this as an adverse event occurring in less than 1 per 100,000 people. While still important to identify and monitor, such a risk would be of little concern for normal living. Another word that could be used to describe this risk level is insignificant. Health Canada considers that remedial activities should be implemented to reduce risks to a negligible risk level.

3.5.2.1 Estimation of Risk (Incremental Lifetime Cancer Risks) – Current Scenario

Potential risks are evaluated on a lifetime basis, which is done through the use of a lifetime receptor. As described in Section 3.3.2.10, various durations of exposure for each life stage were considered in order to estimate a lifetime risk to a receptor. A lifetime receptor was calculated assuming 4 years as a toddler, 6 years as a child, 8 years as a teen, 52 years as an adult, and 10 years as an elder, for a total of 80 years of exposure. The results presented below for arsenic are estimated incremental lifetime cancer risks for a lifetime receptor.

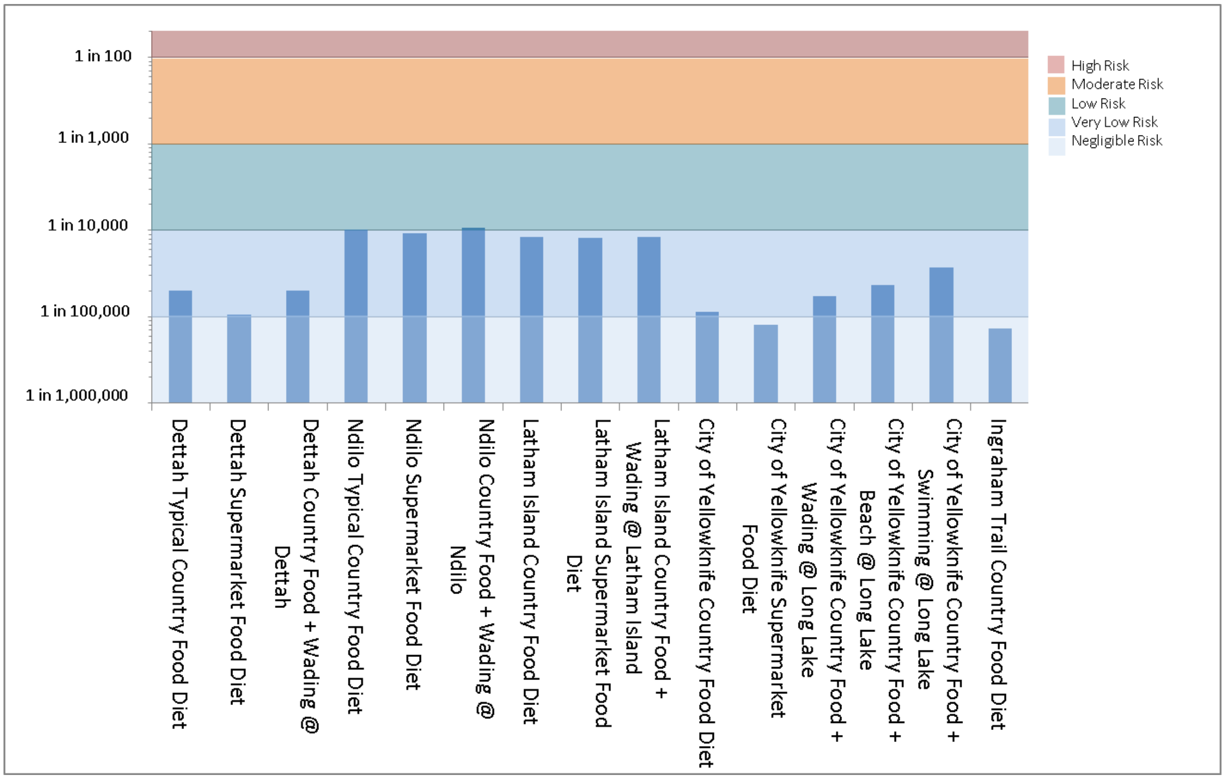
To determine the incremental risks, the background exposure was subtracted from the total exposures to determine the incremental exposure, and then the risk was calculated. For drinking water, the background exposure was based on drinking the municipal water supply, as that source is not deemed to be affected by the Giant Mine. For soils, the background concentrations for all locations, with the exception of Dettah, are based on background derived from samples obtained from within the Greenstone Belt, as these locations are in this same mineralized area. For Dettah, the background was based on regional soil samples. Sediment background was obtained from Horseshoe Island in Yellowknife Bay and the background diet concentrations have been discussed in Section 3.3.6. Appendix C provides the description and values for the background concentrations. The EPCs and background concentrations used in the calculations are provided in Appendix F. Detailed results, including a breakdown by exposure pathway, are provided in Appendix H; sample calculations are provided in Appendix I.

Typical Diet Scenarios

Figure 3.44 provides a summary of the estimated incremental lifetime cancer risks from arsenic calculated for the typical diet scenarios (i.e., typical country diet, Yellowknife resident diet, and supermarket food diet). The results encompass multiple pathways of exposure, including municipal drinking water, country and supermarket foods, soil, indoor dust, and skin exposures as well as exposures to arsenic in air. Background exposures associated with these pathways are not included. Additional scenarios that consider potential exposures from wading and swimming are also included.

Figure 3.44 shows that the results for all locations are within the very low risk or negligible risk category. It should be noted that these very low risks are similar to going to the dentist and having x-rays or having a chest x-ray. As discussed in Section 3.3.8, the incremental arsenic exposures are dominated by soil and indoor dust exposures at the residential locations. People who only eat supermarket foods in the City of Yellowknife have the lowest estimated incremental risk levels, and these levels are considered to be negligible risks. People who eat country foods and live on the Ingraham Trail also have negligible risks. Generally, country food eaters have higher incremental risks, although they are within the range of very low risk levels.

Figure 3.44 Estimated incremental lifetime cancer risk from arsenic – typical diet scenarios



Calculated incremental arsenic risk levels for people living in Ndilo are above the negligible risk level and are generally higher than the other locations but within the very low risk range. The exposures are higher due to exposure to arsenic in soil and indoor dust associated with historical contamination in the soils in Ndilo when the Giant Mine was in operation. Figure 3.44 shows that there is very little difference in estimated risk levels between people who eat a typical diet of country foods and people who eat supermarket foods; additionally, wading in near-shore sediments at Ndilo does not contribute significant additional risk from arsenic exposure. Residents of Latham Island have similar, though slightly lower, estimated incremental arsenic risk levels as Ndilo community members. This is not surprising as soil data from Ndilo was used for Latham Island.

From Figure 3.44, it can be seen that community members of Dettah who eat a typical diet of country foods have a very low incremental lifetime cancer risk from arsenic; additional consideration of wading in the near-shore sediments at Dettah does not add significantly to the arsenic risk since arsenic in the sediments are near background levels.

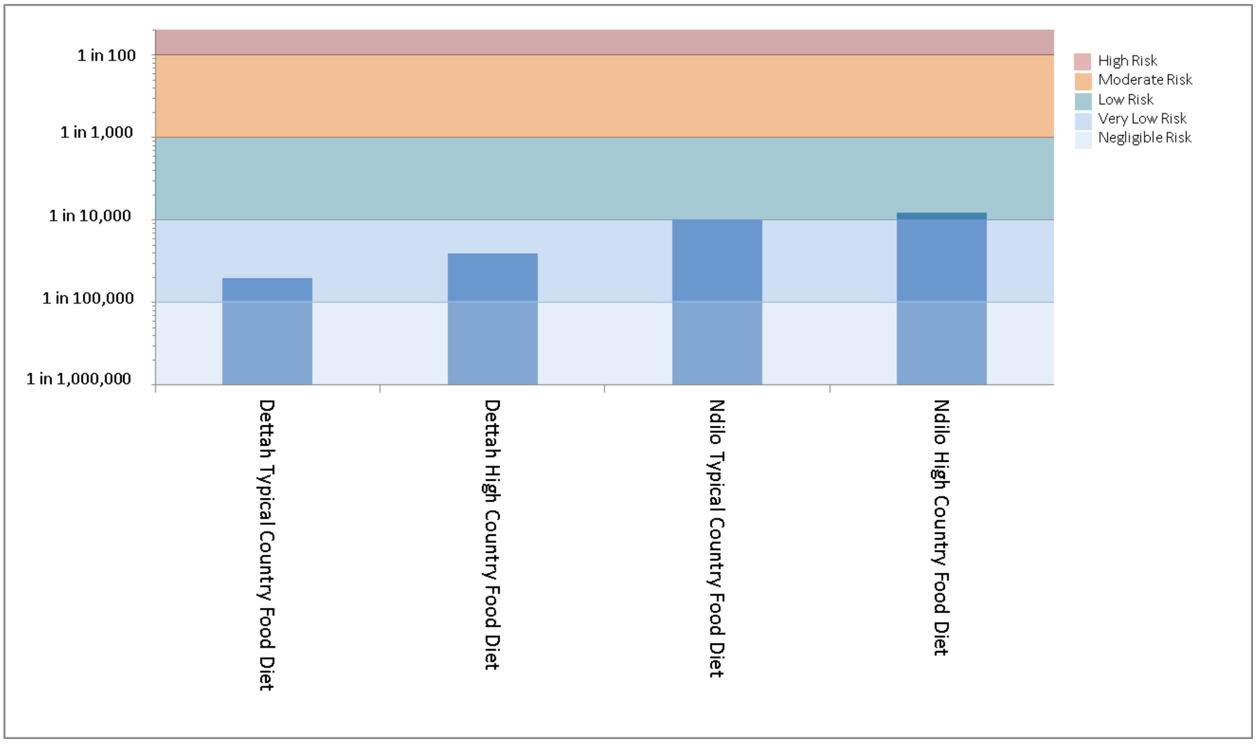
The very low risks for City of Yellowknife residents, including members of the Metis community, with a country food diet increase slightly for exposures to sediment at Long Lake, either through wading or spending time on the beach. Swimming at Long Lake also contributes to exposures, although estimated risks remain in the very low risk level.

High Diet Scenarios

Figure 3.45 provides a summary of the estimated incremental lifetime cancer risks from arsenic calculated for the high country food diet and compares it to the typical country food diet in both Ndilo and Dettah. The results also include drinking municipal water, exposure to soil and indoor dust (swallowing and skin contact), as well as breathing air.

As seen in Figure 3.45, the high diet scenario results in a higher arsenic exposure than for the typical diet. For Dettah residents, the risks are in the very low category. For Ndilo residents, the risks just tip over into the low category. Risks in the low category are similar to having a CT scan. It should be noted here that it is assumed that the high eater eats a high diet of country food for his/her lifetime. Again, it must be emphasized that the incremental risks are dominated by soil and indoor dust exposure at the residential locations.

Figure 3.45 Estimated incremental lifetime cancer risk from arsenic – high diet scenarios



Additional Scenarios

People have reported drinking water from Yellowknife Bay, so this was considered as an additional scenario. Drinking medicinal tea and eating organs were not considered in the typical diets above as not everyone reported eating them. Thus, the additional scenarios considered these exposures.

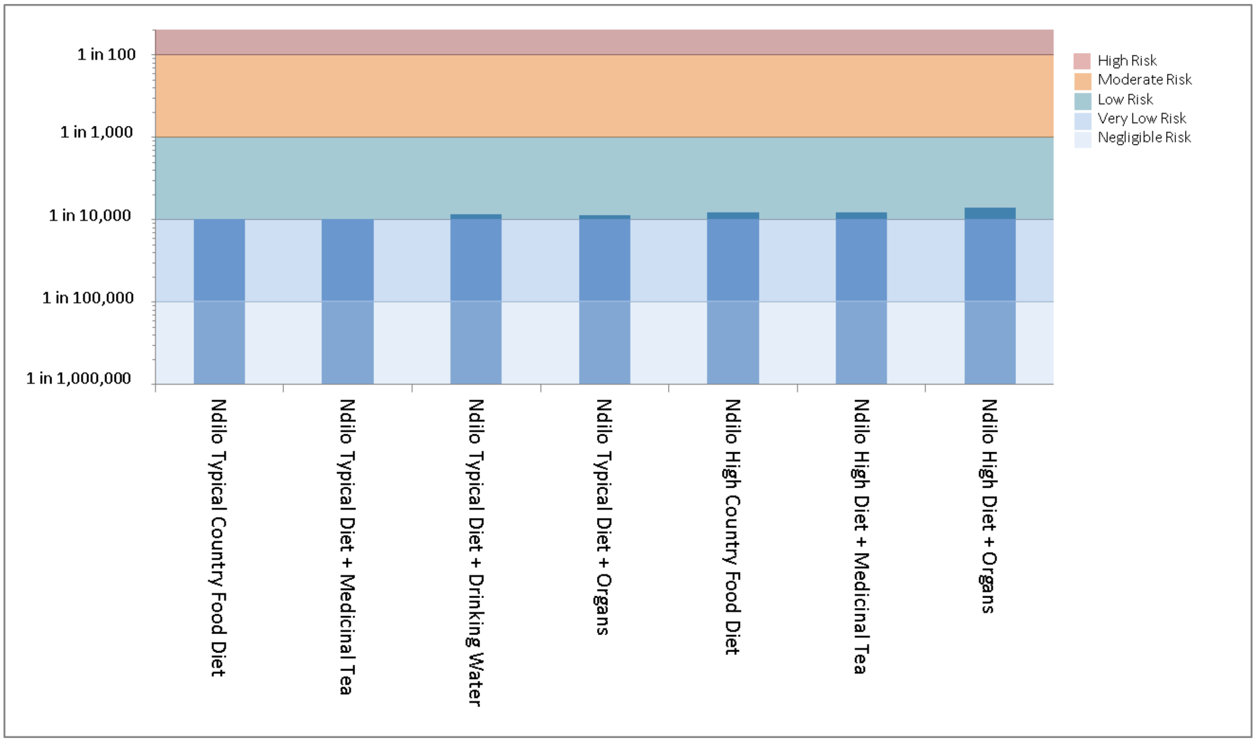
Ndilo

Figure 3.46 provides a summary of the estimated exposures to arsenic for the various scenarios considered for members of the Ndilo community. The results also consider the unique exposures in Ndilo. The drinking water scenario considers drinking water every day from North Yellowknife Bay. The ingestion of organs included eating moose, fish, and bird organs. The figure shows the results for people with both a typical and a high country diet.

Figure 3.46 shows that the results for all the scenarios considered for the Ndilo Community are within the very low risk category with the exception of drinking water every day from North Yellowknife Bay and eating fish where the risks just tip into the low risk category. These risks are similar to having an x-ray or a CT scan. Exposures are typically higher for people with a high diet of country foods, although results do not differ a lot between the scenarios. This is due to the fact that incremental risk levels calculated for arsenic are dominated by exposures to soil and indoor dust at this location which are as a result of historic contamination from activities at the Giant Mine when it was in operation. Therefore, changes to diet assumptions have little effect on the overall risk level.

Drinking water from North Yellowknife Bay every day increases the arsenic risks slightly; however, consumption of medicinal tea and animal organs from moose, fish, and grouse do not contribute significantly to the estimated incremental lifetime cancer risk from arsenic. It is noted that rat root samples were similar to rat root samples from background locations and do not result in any incremental risk.

Figure 3.46 Estimated incremental lifetime cancer risk from arsenic – additional scenarios for Ndilo



Dettah

Figure 3.47 provides a summary of the estimated exposures to arsenic for the various scenarios considered for members of the Dettah community. The results also consider the unique exposures in Dettah. The drinking water scenario considers drinking water every day from South Yellowknife Bay. The ingestion of organs included eating moose, fish, and bird organs. The figure shows the results for people with both a typical and a high country diet.

Figure 3.47 Estimated incremental lifetime cancer risk from arsenic – additional scenarios for Dettah

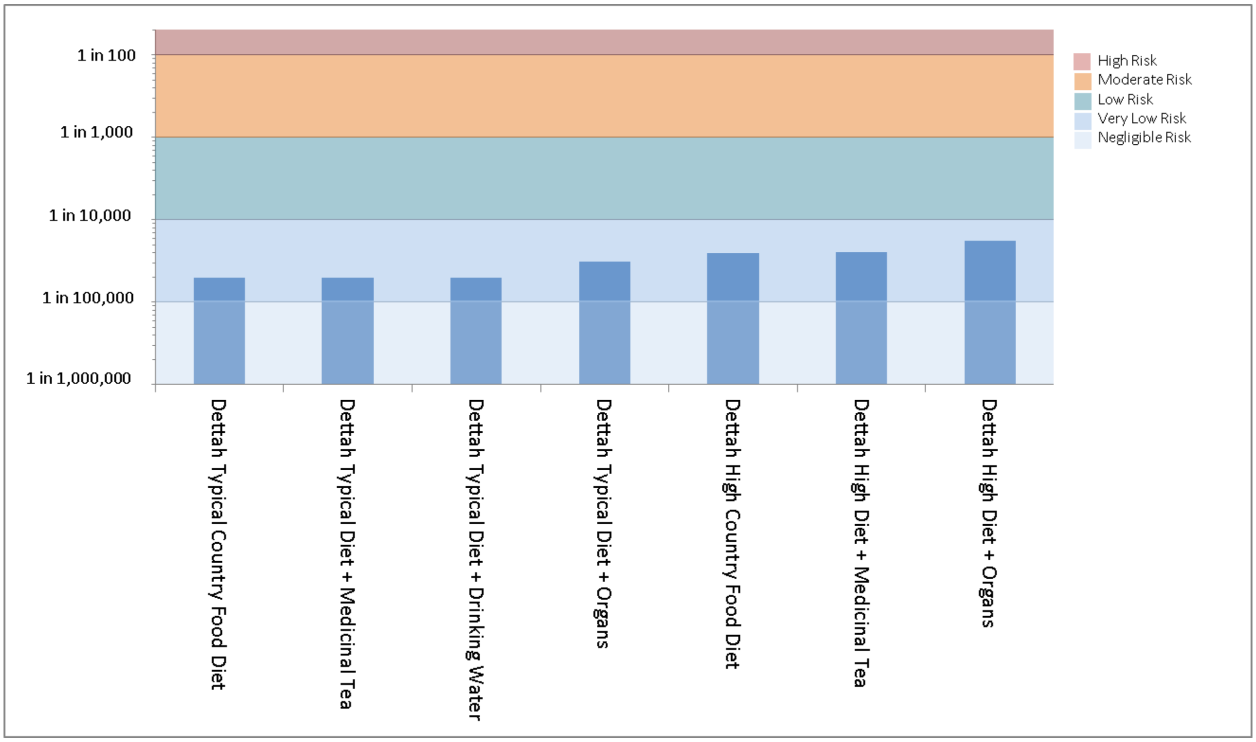


Figure 3.47 shows that the results for all the scenarios considered for the Dettah Community are within the very low risk category. This is similar to going to the dentist and having x-rays or having a chest x-ray. Exposures are typically higher for members of the Dettah Community who consume a high diet of country foods.

For Dettah Community members, additional consideration of drinking medicinal tea, drinking water from South Yellowknife Bay (as opposed to from the municipal water supply), and eating animal and fish organs do not contribute significantly to the estimated incremental lifetime cancer risk from arsenic. It is noted that rat root samples were similar to rat root samples from background locations and do not result in any incremental risk.

Latham Island

Figure 3.48 provides a summary of the estimated exposures to arsenic for the various scenarios considered for residents of Latham Island. The results also consider the unique exposures in Latham Island. The drinking water scenario considers drinking water every day from Back Bay and, therefore, covers the exposures from people living on houseboats who may get water from Back Bay. The ingestion of organs included eating moose, fish, and bird organs.

Figure 3.48 Estimated incremental lifetime cancer risk from arsenic – additional scenarios for Latham Island

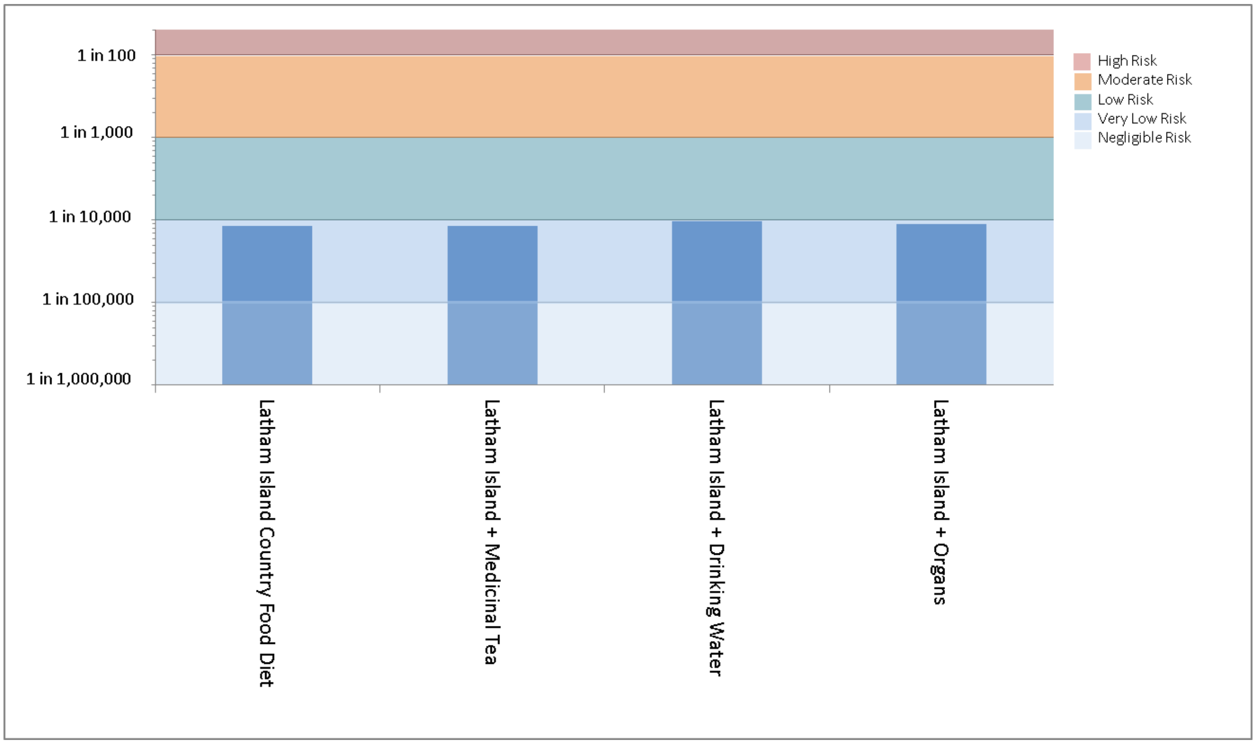


Figure 3.48 shows that the results for all the scenarios considered for residents of Latham Island are within the very low risk category and are similar to having x-rays. It should be noted that soil and dust are the main exposure pathways and it was assumed that the arsenic concentration in soils on Latham Island are similar the arsenic concentration in soils from Ndilo. For residents of Latham Island with a diet of country foods, additional consideration of drinking medicinal tea and eating animal and fish organs do not contribute significantly to the estimated incremental lifetime cancer risk from arsenic. Drinking water from Back Bay (as opposed to from the municipal water supply) every day adds to the arsenic exposure; however, estimated risk levels are still within the very low risk category.

City of Yellowknife

Figure 3.49 provides a summary of the estimated exposures to arsenic for the various scenarios considered for residents of the City of Yellowknife, including members of the

Metis community. The results also consider the unique exposures in the City of Yellowknife. A drinking water scenario was not considered as people living in the City of Yellowknife are serviced with municipal water. The Metis indicated in the dietary survey that they consumed mushrooms and, therefore, this scenario was also considered. The ingestion of organs included eating moose, fish, and bird organs.

Figure 3.49 Estimated incremental lifetime cancer risk from arsenic – additional scenarios for City of Yellowknife

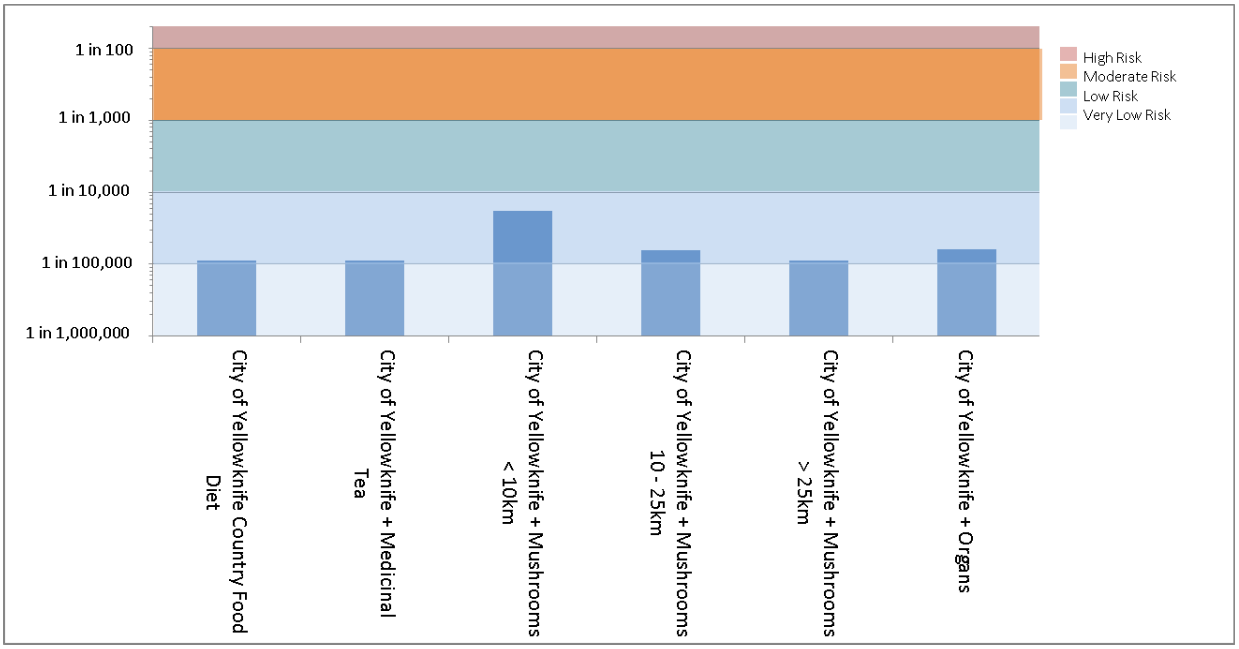


Figure 3.49 shows that the results for all the scenarios, with the exception of eating mushrooms gathered from within 10 km of the Giant Mine, considered for residents of the City of Yellowknife, including members of the Metis community, are considered to be in the low end of the very low risk category. Drinking medicinal tea and eating animal and fish organs do not contribute significantly to the estimated incremental lifetime cancer risk from arsenic. The exposure for the Ingraham Trail resident is captured in this scenario as their diet of country food is the same as for the City of Yellowknife.

Mushrooms were collected from different areas around Yellowknife in the summer and fall of 2017 and the results are presented in Appendix P. The data were summarized into different distances from the Giant Mine. It was assumed that people would consume about 1.5 kg of mushrooms a year for 60 years from the different areas. The results show that eating 1.5 kg of mushrooms a year from areas greater than 25 km from the Giant Mine does not change the incremental risk from arsenic exposure. Eating about 1.5 kg of mushrooms per year from a distance of 10 km to 25 km increases the risk slightly; however the risks are still in the very low risk category. Eating 1.5 kg of mushrooms a year from within 10 km of the Giant Mine (Golf Course, Vee Lake Area and south east part of the City) increases the risk to the upper end of the very low category. As seen in Appendix P, in order to represent a negligible risk, someone should only eat about 300 g per year of mushrooms from within 10 km of the Giant Mine. Mushrooms from the Rat Lake area have about three times the arsenic concentrations as those from the other areas within the 10 km area and the GNWT Health Department has an advisory indicating that mushrooms should not be collected from Rat Lake. It should be noted that this analysis did not included the species *Tricholomatacea* which concentrates arsenic to very high concentrations. Results for eating *Tricholomatacea* are presented in Appendix P.

3.5.2.2 Estimation of Risk (Incremental Lifetime Cancer Risks) – Future Scenario

The future scenario examined the effect of post remediation conditions at the Giant Mine on the nearby residents. In the future, some parts of the Giant Mine may be accessible to members of the public for recreational activities, and people may walk on the site and collect berries. Some stakeholders have indicated that they would like to use the Giant Mine in the future and this scenario captures that exposure. It is noted that members of the YKDFN do not want to use the Giant Mine in the future. A City of Yellowknife resident was evaluated as they indicated that they may want to use the Giant Mine in the future.

Figure 3.50 provides a summary of the estimated incremental lifetime cancer risks from arsenic calculated for future conditions. The results encompass multiple pathways of exposure, including drinking water, country foods, soil, indoor dust from the residential area, and dermal exposures as well as exposures to arsenic in air.

Figure 3.50 Estimated incremental lifetime cancer risk from arsenic – additional scenarios for future conditions

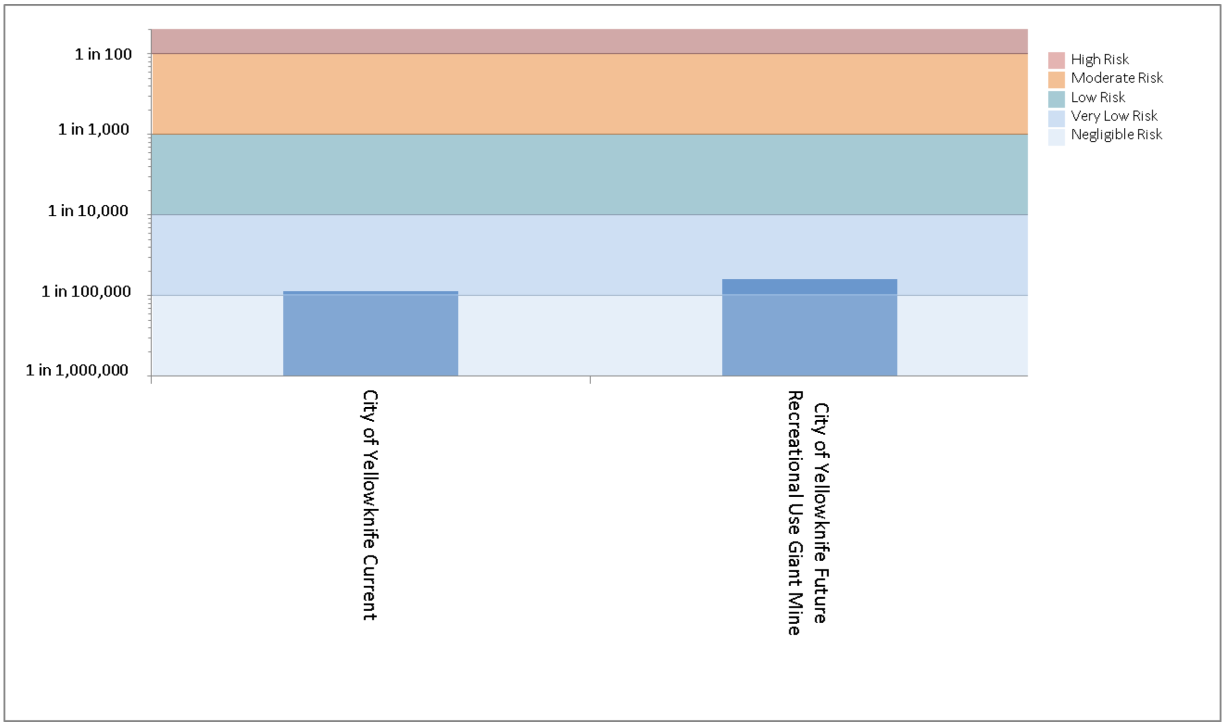


Figure 3.50 shows that for the City of Yellowknife residents using the Giant Mine recreationally in the future, including eating berries, the estimated incremental lifetime cancer risk is slightly above the levels predicted currently but is at the low end of the very low risk category.

Hypothetical Townsite Scenarios

As discussed previously, the GMRP has agreed to clean the arsenic in the soils at the marina and former Townsite as well as the Shorelands up to the Foreshore tailings to the GNWT residential criterion of 160 mg/kg. No definite plans have been made for the land use at the former Townsite or marina; however, the assessment considered that the most stringent land use (i.e., residential) would occur and people would live at this location.

Currently, nobody lives at the former Giant Mine Townsite; however, exposures from current levels of arsenic at the Townsite were calculated in order to illustrate the reduction in exposures from remediation activities planned for the Townsite.

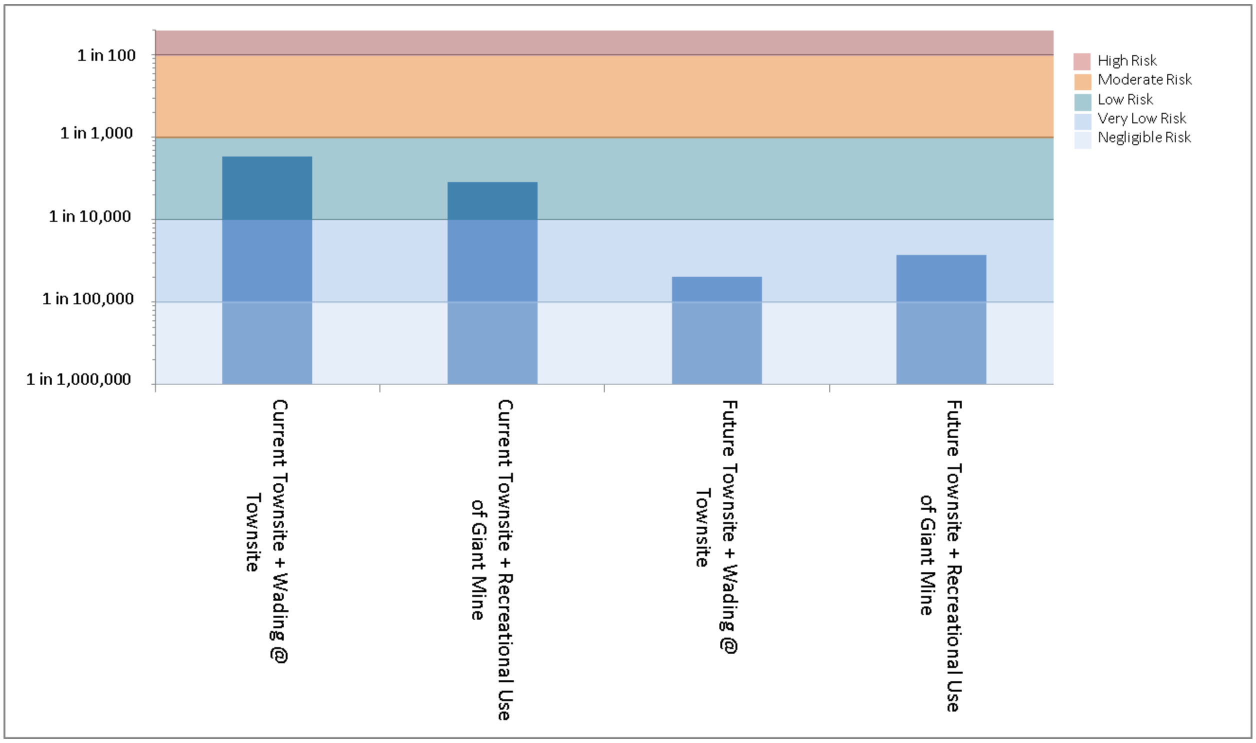
For the purposes of the assessment, it was assumed that the people living at the Townsite would have a country diet similar to the City of Yellowknife and would drink water that was provided by the municipality. People would also be exposed to soil and indoor dust through ingestion as well as skin contact. It was also assumed that people in the Townsite would go on the Giant Mine for recreational activities and pick some berries. The sediments at the Townsite will also be remediated, and a scenario was evaluated for wading in the shallow sediments.

Figure 3.51 provides a summary of the estimated incremental lifetime cancer risks from arsenic calculated for the hypothetical residents at the former Giant Mine Townsite location.

Figure 3.51 shows that in the future, following planned remediation activities to soils and sediments at the Townsite, the estimated lifetime cancer risk levels are within the very low risk category. Since the remediation plan for the Townsite has not been determined, it was assumed that people may live there, as this is the most restrictive potential use of the Townsite. The recreational use exposure scenario considers recreational use of the Giant Mine, including the collection of berries while at the Giant Mine. The results show that while the arsenic exposure increases for this scenario, the risks remain in the very low risk category. These risks are similar to having dental x-rays or a chest x-ray.

A comparison of current and future results in Figure 3.51 shows the remediation activities planned for the Townsite and Giant Mine are expected to reduce the exposure to arsenic at these locations by about 30 times. The results are also similar for the marina location.

Figure 3.51 Estimated incremental lifetime cancer risk from arsenic – additional scenarios for hypothetical Townsite



3.5.2.3 Interpretation of Risk Estimates

The results of the risk assessment for current scenarios of arsenic exposure indicate that the risks are determined to be in the negligible to very low range, with a few scenarios, generally associated with Ndilo being within the low end of the low risk region. The incremental arsenic risks are dominated by soil and indoor dust exposure from soils present at Ndilo, Dettah, Latham Island, City of Yellowknife, and Ingraham Trail locations. For the future, after the Giant Mine has been remediated, the risks will not be changed substantially, as the remediation activities at the Giant Mine will have no influence on the arsenic in soil concentrations measured at the various locations. Elevated arsenic concentrations in soils in Ndilo are a result of historical contamination from when the Giant Mine was in operation. It has been assumed that these elevated concentrations are similar in Latham Island.

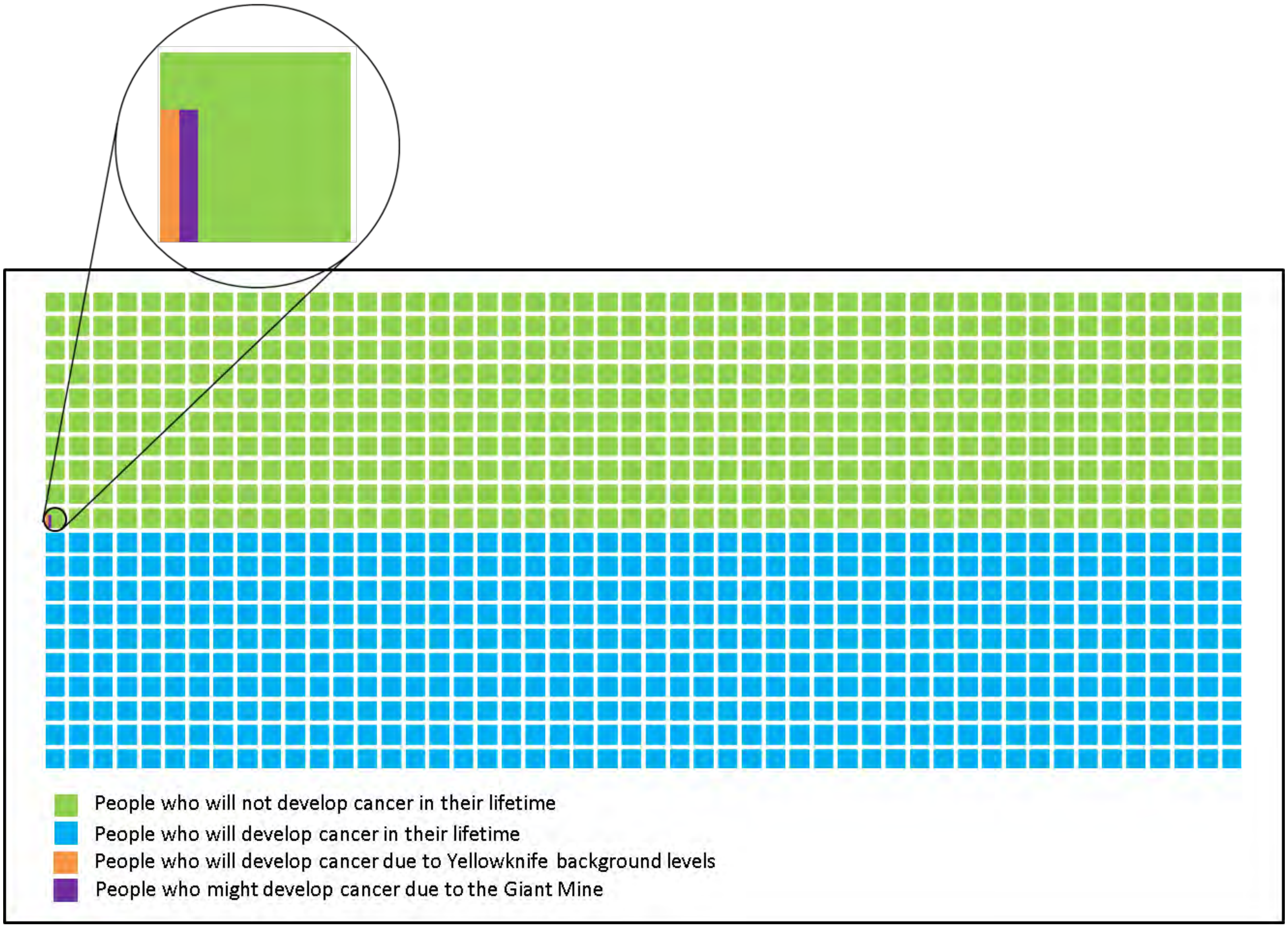
At the former Townsite location, the remedial activities will reduce arsenic concentrations in soil and, under a residential scenario (most restrictive land use), the risks are considered to be in the very low range.

As arsenic is considered to cause cancer, it is important to look at Canadian cancer statistics in order to provide a context to these risk values. The most recent cancer statistics reported by the Canadian Cancer Society (2017) indicates that 1 in 2 Canadians is expected to develop cancer during their lifetime. Figure 3.52 provides a schematic representation of the Canadian cancer risk and shows the incremental risk from the Giant Mine. Due to the small number of people in the various areas, only the risk from the entire Yellowknife area can be provided on the figure as an appropriate statistical representation.

The figure provides 1000 squares, each representing 1000 people in the Yellowknife area. Based on the Canadian cancer statistics, one half of these people will develop cancer (shown in light blue). Background risks are shown by the orange line and represent 7 in 100,000 people. The incremental risk for the entire area as a result of activities at the Giant Mine is shown by the dark purple line in the figure, and represents less than 1 person in 10,000 people developing cancer. This is the average risk across the entire Yellowknife area. In terms of the population of the City of Yellowknife, which by the 2016 census was 19,569 people, about 1 additional person in the population may develop cancer associated with arsenic exposure mostly associated with historical contamination across the Yellowknife area. Remedial actions at the Giant Mine will not alter the arsenic exposure across the Yellowknife area.

It should be noted that the nature of risk assessment is to generally over-estimate actual exposures. Therefore, actual cancer incidence associated with the Giant Mine may be less than indicated in Figure 3.52.

Figure 3.52 Schematic representing incremental cancer risks from Giant Mine



3.5.3 Sensitivity Analyses

The effect of a number of the assumptions made in the risk assessment was tested within the sensitivity analysis to determine the effect on the results. The results of all the analyses showed that the Ndilo resident was the most exposed person; therefore, the sensitivity analysis was carried out for the Ndilo resident with a typical country food diet, which represents the majority of the people in this community. The results of the assessment also showed that the risks from exposure to antimony and manganese were negligible. Therefore, the sensitivity analysis focused on arsenic exposure.

The assumptions that were tested were as follows:

- Country food – Average concentrations of arsenic were used in county foods as it was unlikely that people would eat all their country foods at the maximum concentration. Nonetheless, the sensitivity analysis examined the effect of people eating all their country foods at the maximum measured concentrations.
- Ptarmigan/Grouse – The concentration or arsenic in ptarmigan was an order of magnitude higher than concentrations measured in background (0.02 mg/kg ww vs. 0.004 mg/kg ww). Therefore, the sensitivity analysis considered that ptarmigan/grouse made up all the wild game that people ate.
- Berries – The assessment assumed that only 5% of berries would be obtained from Ndilo, as there were not enough berry bushes to supply the amount of berries that people indicated that they ate. The sensitivity analysis considered that people would get 100% of their berries from Ndilo.
- Moose – One moose sample obtained from the voluntary sampling had an arsenic level of 0.7 mg/kg ww and was found to be an outlier. Nonetheless, the sensitivity analysis examined the effect of consuming moose meat at this maximum arsenic concentration.
- "Hot spot" Remediation – There have been several "hot spots" identified in soils in the community of Ndilo particularly to the north of the community and at the school. The sensitivity analysis evaluated the impact of cleaning up the three highest "hot spots" in the Ndilo community.
- Indoor Dust – There were no indoor dust samples, and the assessment assumed that the indoor dust concentration was 70% of the outdoor soil concentration. This was the upper end of the range reported in the literature. Nonetheless, the

sensitivity examined the assumption that the indoor dust concentration was equal to the outdoor soil concentration.

- Bioaccessibility – For wild game, it was assumed that the bioaccessibility of arsenic from ingested game was 50% based on some studies on hare from the Yellowknife area. This is not an unreasonable value to use as not all the arsenic in meat is available. The sensitivity analysis examined the effect of using 100% arsenic bioaccessibility.

Figure 3.53 provides a summary of the results of the various sensitivity analyses for the Ndilo resident. Details and results are provided in Appendix I. The figure shows that the assumptions related to berries, ptarmigan, indoor dust, and bioaccessibility of arsenic in wild game have little effect on the results. For indoor dust, a number of assumptions were also made with respect to skin contact. These assumptions were not tested in the sensitivity analysis, as the testing of a dust assumption had no substantial effect on the results.

The assumptions related to the use of the maximum arsenic concentrations in wild food resulted in an increase in arsenic exposure, which is not surprising; however, the results were still within the low risk range. The consideration of the eating all moose meat at the high arsenic concentration also results in the risks just moving into the low risk range. The clean up of “hot spots” in the Ndilo community reduces the estimated risk levels.

Figure 3.54 shows the result of assuming that 100% of the arsenic in mushrooms was bioaccessible. As seen from the figure, the estimated risk levels do not change very much.

Figure 3.53 Estimated incremental lifetime cancer risk from arsenic – sensitivity assessments

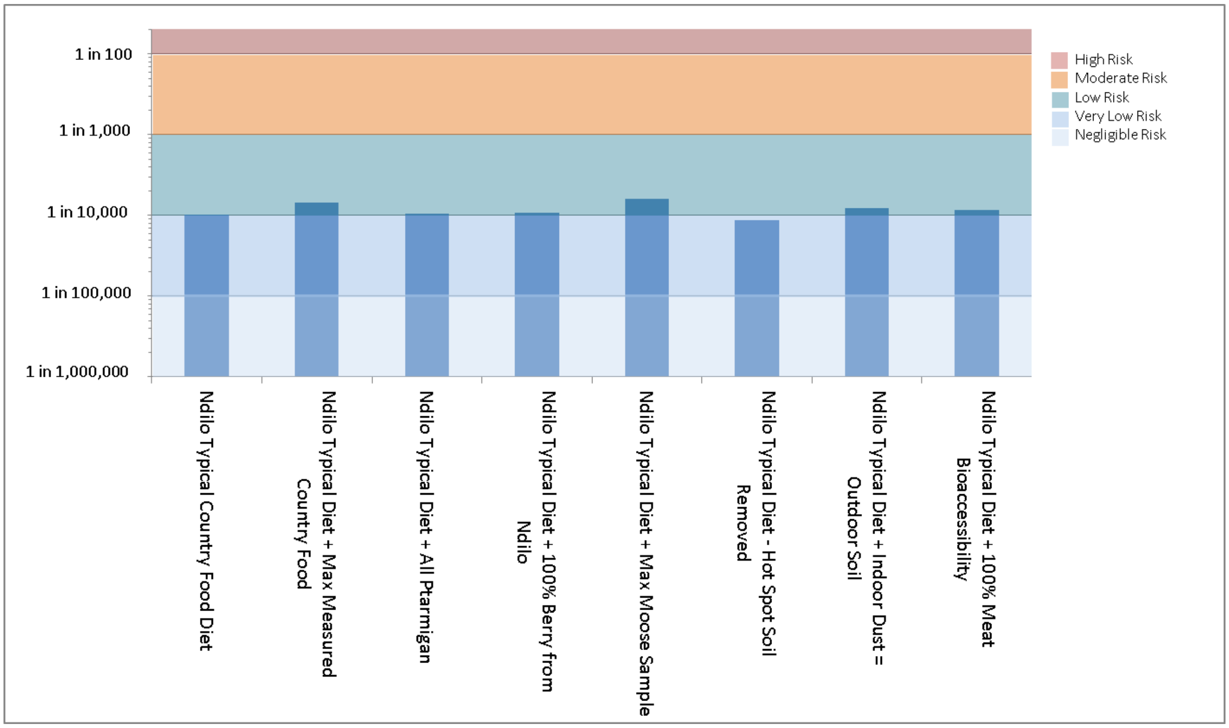
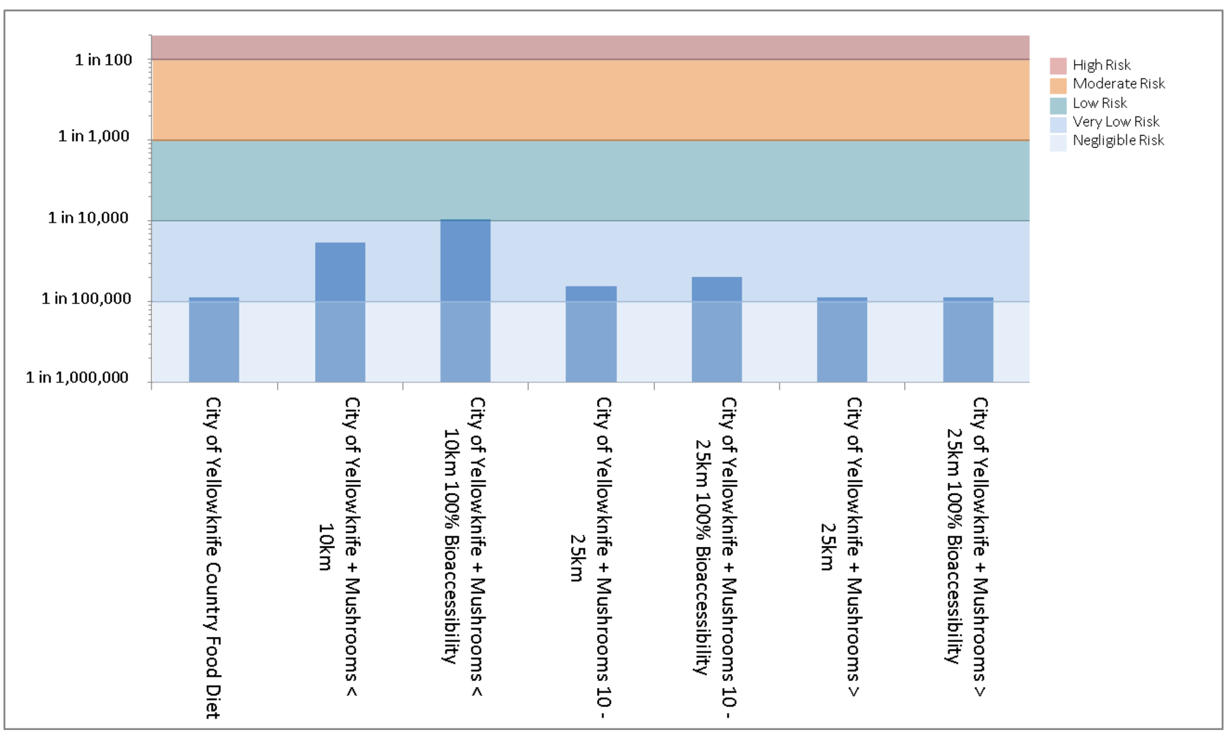


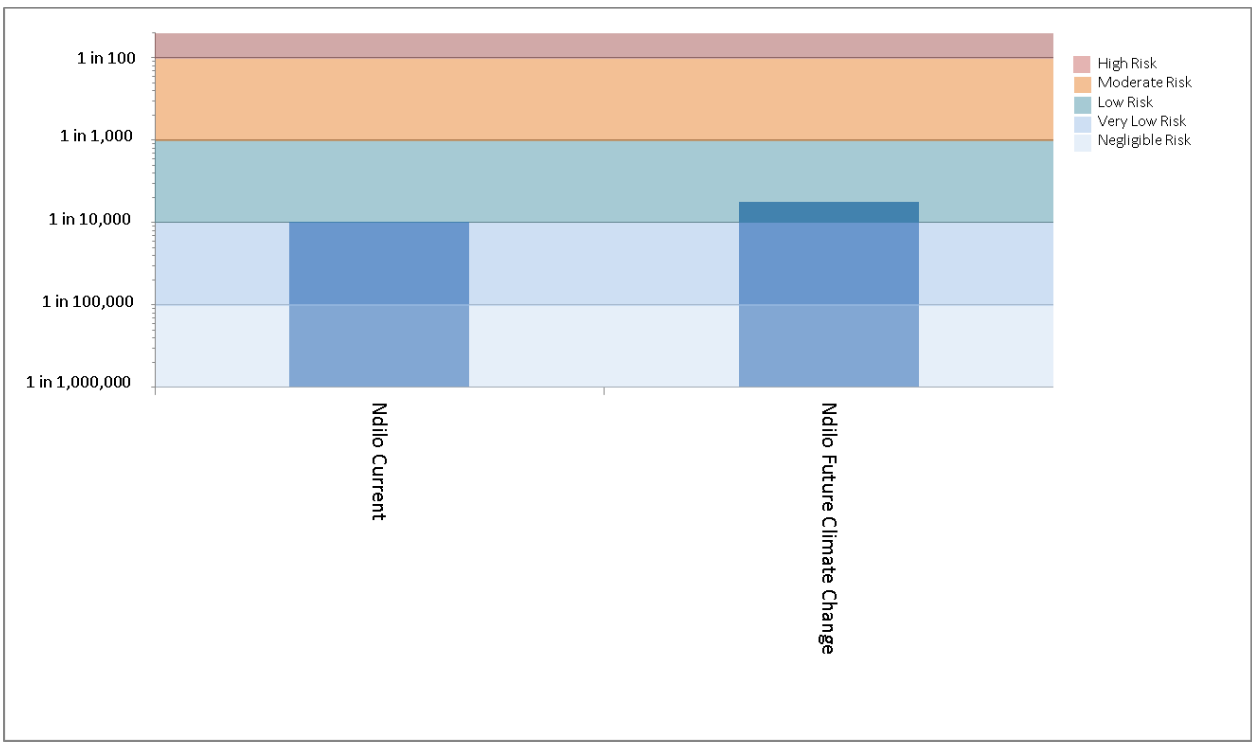
Figure 3.54 Estimated incremental lifetime cancer risk from arsenic – sensitivity assessment mushrooms



The effect of climate change on the future conditions at the Giant Mine is difficult to quantify. In general, the long-term meteorological data set for Yellowknife shows trends toward milder temperatures and more precipitation (INAC/GNWT 2010). The CCCSN assessment indicated that precipitation may increase by up to 15% over the next 50 years. For the purposes of the risk assessment, it was assumed that precipitation may increase by as much as 30% in 100 years. This could result in increased run-off and erosion. Therefore, in an effort to address climate change, the sensitivity assessment looked at the effect on the results if the water and sediment concentrations and, consequently, fish concentrations increased by 30% over the 100 year assessment period.

Figure 3.55 shows the results for the climate change scenario. The scenario looked at drinking water from Yellowknife Bay every day as well as eating fish and wading in the shallow sediments. The base case result for Ndilo is shown for comparison. The results show that with a consideration of climate change, the risks from exposure to arsenic following remedial activities at the Giant Mine are in the low end of the low risk range.

Figure 3.55 Estimated incremental lifetime cancer risk from arsenic – climate change



In summary, the sensitivity analyses show that the results of the risk assessment do not seem to change much when extreme (maximum) values are used for exposure calculations, rather than the average or typical values that more accurately reflect population exposures. This is because soil and indoor dust are the major sources of exposure within the various communities evaluated, and climate change or remediation activities at the Giant Mine will have no influence on levels of arsenic in soil and indoor dust.

3.5.4 Uncertainties

There are several areas of uncertainty in conducting a risk assessment due to the fact that assumptions have to be made throughout the assessment either due to data gaps, environmental fate complexities, generalizations of characteristics related to diet, and other human characteristics. An accounting of the uncertainty is provided to be able to place a level of confidence in the results. The magnitude and type of uncertainty are important in determining the significance of results. In recognition of these uncertainties, conservative assumptions were used throughout the assessment to ensure that the potential for exposure and risks would not be underestimated. The major assumptions are outlined below.

The COPC concentrations used in the assessment were based on measured data, when available, from the aquatic and terrestrial environments from a variety of sampling programs. The number of data points was limited for soils in Dettah and for the foods collected in the dietary program, which adds some uncertainty. Additional data collected in 2017 increased the data set for Dettah and for a number of foods and resulted in lower concentrations than those used in the assessment. This demonstrates the conservative nature of the assessment.

The use of reasonable maximum exposure concentrations, which were generally an upper estimate (95% UCLM) values of measured data, and within the sensitivity analysis some maximum measured concentrations were used, result in conservative estimates of exposure. Average concentrations of COPC were used for the country foods based on the measured data from the voluntary sampling. As shown in the Sensitivity Analysis in Section 3.5.3, the maximum concentrations were used to evaluate the influence of variations of concentration assumptions on exposure and risk calculations. Although maximum values did result in some increase in estimated arsenic exposure, few variables were overly influential besides soil an indoor dust concentrations and, therefore, the overall conclusion of low risk from arsenic exposure is considered valid.

Sediment COPC are somewhat mobile, as sediment moves within waterbodies, and, over time, sediment concentrations may decrease through sediment processes such as burial. Thus, the sediment concentrations as represented by an upper estimate of the mean (95% UCLM) may not represent the concentration of the COPC over the long term. Arsenic is known to be released from the sediments when there is not a lot of oxygen present, and, in these cases, the arsenic becomes mobile and the concentrations in the sediment may increase. The assumption of long-term exposures to the upper estimate concentration for antimony and manganese is likely to have overestimated actual exposures. However, in the case of arsenic, it is difficult to determine whether it is an overestimate or an underestimate. Nonetheless, the sediment pathway is a minor pathway of exposure and the overall conclusions of the risk assessment would not be changed.

There were no measurements for indoor dust and, thus, the assessment assumed based on literature studies that the indoor dust concentration was 70% of the outdoor soil concentration. Literature studies indicate that dust levels range from 30% to 80% of outdoor soil concentrations and, thus, the use of 70% is at an upper end of the studies. A sensitivity assessment was done in Section 3.3.7.1 assuming that the indoor dust concentration was equal to the outdoor soil concentration. This did not significantly affect the results. Thus, the evaluation of potential variation of concentrations in the indoor dust pathway does not substantially add to the exposure risk.

Site-specific bioaccessibility and speciation data were not available for antimony and manganese and, therefore, it was assumed that they were 100% bioaccessible. In addition, the oral bioavailabilities of antimony and manganese in soil, sediment, and water were generally assumed to be equivalent to the highly bioavailable forms used in the toxicity studies upon which TRVs were based. This would lead to an overestimate of exposure. For arsenic, assumptions were made for the bioaccessibility in soil and sediments based on measured data for soils and sediments. In addition, for wild game, it was assumed that the bioaccessibility from consumed meat was the same as the bioaccessibility measured in hare from the Yellowknife area based on a literature study (Koch et al. 2013). The assumption of 50% seemed reasonable; however as shown in Section 3.3.7.1, an assumption of 100% bioaccessibility from wild game meat was evaluated. This resulted in an increase in arsenic exposure; however, the risk from arsenic exposure was still low.

It was assumed that people in Ndilo would get 5% of their berries from around Ndilo and 95% of their berries from areas greater than 10 km from Giant Mine, as this is the current practice. A sensitivity analysis was conducted assuming 100% of berries were obtained from Ndilo. This is an unrealistic assumption, as there were not enough berry bushes to support the amount of berries people reported eating. Nonetheless, the results show that this assumption does not substantially change the results.

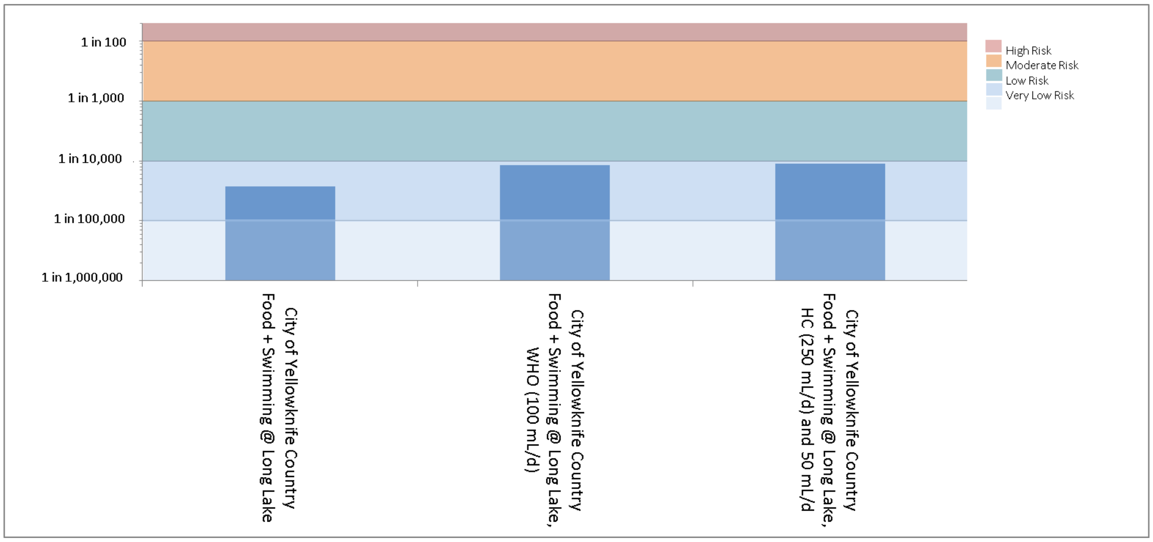
There were no background arsenic samples for organs and, therefore, the risks calculated from organ consumption represented the total risk and not the incremental risk, which is an overestimate. Additionally, there is double-counting in the consideration of the supermarket intakes, which were not reduced for the typical country food diet scenarios to account for the portion of the diet obtained from country foods. This leads to an overestimate of exposure for typical country food diet scenarios.

For the future conditions at the Giant Mine, all the soil samples were used to develop the concentrations. A number of these samples are in highly forested areas and wetlands that are difficult to access. Thus, the exposure point concentrations were overestimates of areas of the Giant Mine that would be accessible for recreational activities.

The human receptor characteristics are also a source of uncertainty. The use of single values for various characteristics to evaluate exposure may overestimate exposure. For example, it has been assumed that an adult weighs 70.7 kg, when in reality an adult is likely to weigh more, thereby reducing the daily intake on a body weight basis (Richardson and Stantec 2013).

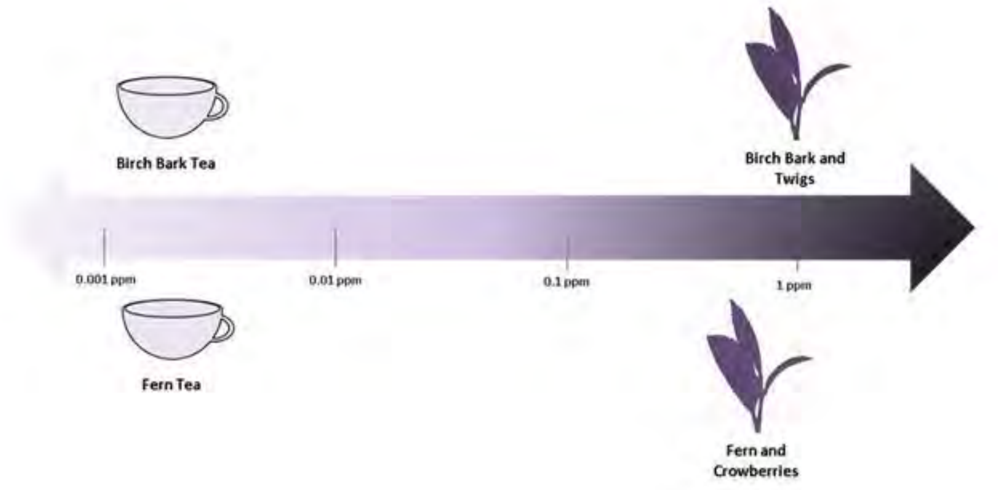
In evaluating swimming exposure in Long Lake, the assessment used incidental water ingestion intakes provided by the U.S. EPA (2011) of 21 mL/hr for and adult and 49 mL/hr for toddlers and children. Health Canada (2012b) in their guidelines for *Canadian Recreational Water Quality* use a value of 250 mL/d for a child swallowing water while swimming and the WHO (2006) uses a value of 100 mL/d. The uncertainty analysis considered these different amounts of water being swallowed and the results are presented in Figure 3.56. As seen from the figure, the increased amount of water swallowed while swimming increases the risk but it is still in the very low risk range.

Figure 3.56 Estimated potential exposures for different amounts of water swallowed while swimming



The amount of Labrador tea (leaves and stems) used to brew medicinal tea was assumed based on the interpretation from the dietary study. As the consumption of Labrador tea only represented a small fraction (generally less than 1%) of the intake for most of the COPC, it is unlikely that the uncertainty in the consumption of Labrador tea would change the results of the assessment. The concentration in the leaves and stems was used in the assessment. McAuley et al. (2016) analyzed samples of Labrador tea leaves and mint tea leaves as well as teas made from the leaves and found that concentrations of chemicals in the teas were orders of magnitude lower than in the vegetation. Thus the approach in the risk assessment is most likely an overestimate. In the summer of 2017, additional medicinal tea samples were collected and four samples were brewed into tea. Figure 3.57 shows a summary of the analytical concentrations. As seen from the figure, the measured leaf and twig samples had higher concentrations than the brewed tea samples. This is the same as the findings of McAuley et al. (2016) and indicates that the concentrations used in the evaluation of medicinal teas have been overestimated.

Figure 3.57 Comparison of arsenic concentrations in brewed tea samples with measured leaf and twig samples

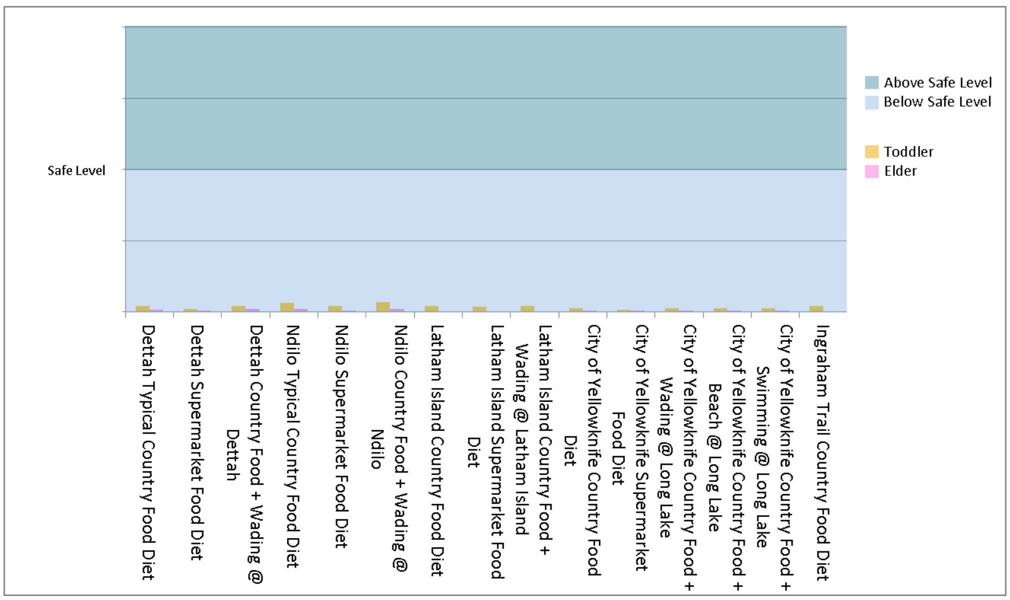


Exposure is averaged over a specified period, which is representative of the exposure frequency and duration. For soil and sediment exposures averaging was done over a shorter time period equal to the exposure duration. However, residents in the communities surrounding Giant Mine are exposed every day to COPC in indoor dust, drinking water and supermarket and country foods and shorter term exposures to soil and sediment outdoors during the summer are not isolated but are in addition to the on-going daily exposures. Therefore, these shorter term exposures increase the daily exposures during the summer period. Given that exposures occur every day it may be more appropriate to average the exposure over 365 days rather than use the shorter times that were used in the risk assessment. Thus, the approach used in the risk assessment results in overestimates of exposures via the soil and sediment pathways.

The TRVs are obtained from authoritative sources (e.g., Health Canada, U.S. EPA); nonetheless, they are always associated with uncertainty due to the extrapolation of testing on lab species (e.g., rats, mice, etc.) to field conditions as well as a range of receptors. Additionally, toxicity information for antimony, arsenic, and manganese was used regardless of its form in the test procedure, even though this may not be the same form in the environment (i.e., an oxide form compared to a more soluble form). In the derivation of cancer TRVs for arsenic, the linear extrapolation of data in the low-dose region of the dose-response curve is assumed to be sufficiently conservative to account for uncertainties related to the TRV. The use of an upper bound for the toxicity values ensures that the risk to humans is not underestimated. Currently, it is not possible or practical to develop approaches to evaluate the validity of the TRV assumptions on the overall assessment. As improvements occur in toxicological/human health research and assessments, the uncertainties may be reduced.

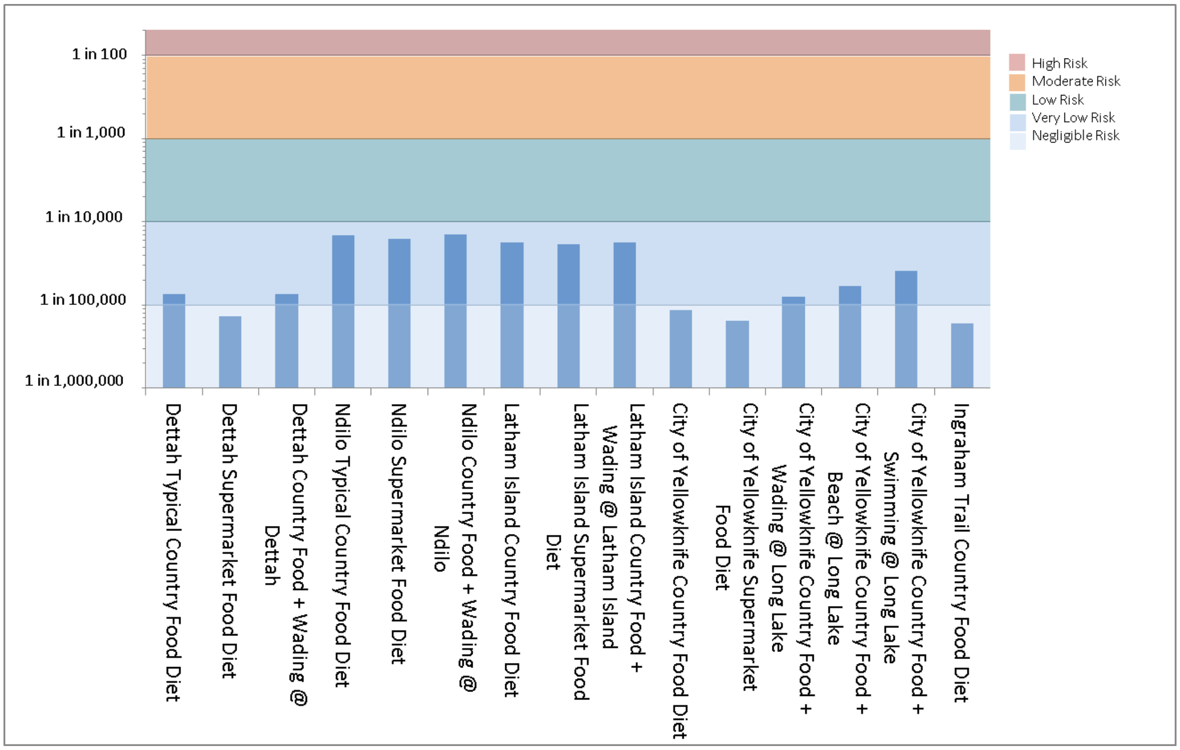
The antimony TRV of 4 x 10^{-4} mg/kg-d that was used in the risk assessment was obtained from the IRIS database (U.S. EPA 2017). Other international authoritative sources have suggested an alternate TRV of 6 x 10^{-3} mg/kg-d. The results associated with the alternate TRV are provided in Figure 3.58. It can be seen that these results are much lower than the results provided in Figure 3.34 of the risk assessment; however both figures indicate that the risks are below the safe level. Thus, the potential risks from exposure to antimony may have been over-estimated

Figure 3.58 Estimated potential exposures to antimony – alternate TRV



The arsenic TRV of 1.8 $(mg/kg\text{-}d)^{-1}$ for oral exposure used in the document was obtained from Health Canada (2010b), based on liver, lung and bladder cancers. As indicated in Appendix G, the IRIS database (U.S. EPA 2017) provides a TRV of 1.5 $(mg/kg\text{-}d)^{-1}$ based on skin cancer. The results associated with the alternate TRV for arsenic are provided in Figure 3.59 for the typical diet scenario. It can be seen that these results are much lower than the results provided in Figure 3.44 of the risk assessment and risks are in the negligible to low risk range. It should be noted that the endpoints are different for the two TRVs; however, the results of the arsenic evaluation remain more or less unchanged.

Figure 3.59 Estimated potential exposures to arsenic – alternate TRV



The effect cumulative of multiple COPC on risk was not evaluated in this assessment. When dealing with toxic chemicals, there is potential interaction with other chemicals that may be found at the same location. From a human health perspective, it has been established that synergism, potentiation, antagonism or additivity of toxic effects may occurs in the environment. A quantitative assessment of these interactions is outside the scope of this study and would be constrained, as there is not an adequate base of toxicological evidence to quantify these interactions. A simple qualitative assessment looking at the non-carcinogenic endpoints for humans indicates that there are no similar endpoints and, thus, risks are not considered to be additive. Therefore, the effects of multiple COPC on the assessment are anticipated to be negligible.

Table 3.12 provides a summary of the uncertainties and tries to assign a value to the uncertainty. It must be noted that these are approximations; however, in general it is accepted in the risk assessment community that the conservative assumptions used in the assessment generally result in overestimates of the risks by a factor of two to five. It can be seen from the table that, in general, the uncertainties used in the assessment lead either to an overestimate of exposures. Since soil and dust and food are the biggest contributors of exposure, overestimates in the assumptions for these components make the biggest effect on the results. Based on Table 3.12, the conclusions of the assessment are considered valid and reliable for the intended purpose.

Table 3.12 Summary of uncertainties in the HHRA

Uncertainty	Overestimate	Possible Underestimate or Neutral Effect	Comment
Limited data sets for soil at Dettah and Ingraham Trail.			Additional soil samples at Dettah and Ingraham Trail presented in Appendix P showed that the EPC concentrations in the assessment were higher than the EPC with the new data. The data indicates that concentrations may be overestimated by a factor up to 2.
Development of future EPCs on Giant Mine.			Soil is one of the biggest contributors to exposure. The future soil EPCs at the Giant Mine may be overestimated by a factor of two to five as they were based on some of the disturbed soil areas.
Use of reasonable maximum exposure concentrations to characterize exposures.			The use of the 95% UCLM to represent exposures for most media with the exception of food may overestimate exposures by a factor up to two.
Use of average concentrations in country food samples.			The use of the average concentration in country foods is an appropriate value to be used; however if the maximum concentration was used the exposure may be underestimated by a factor of two.
Use of upper bound concentrations of in sediments.			Sediments represent a minor exposure pathway and thus the values used for sediment exposures do not change the results.
Use of Labrador tea leaves and twigs to represent concentrations in tea.			Measured data from twigs and leaves in comparison to tea presented in Appendix P indicate that medicinal tea concentrations used in the assessment may be overestimated by a factor of two to four. However medicinal tea is not a main exposure pathway.
No background concentrations for arsenic in organs.			Organs do not represent a major exposure pathway and thus this overestimate does not affect the results.
No adjustment in supermarket food intakes for typical country food diet scenarios			This results in an overestimate of exposure for antimony and manganese in particular. All risks from exposure to antimony and manganese are below the safe level therefore results will not be changed.
Assumption of 100% bioaccessibility for antimony and manganese.			It is known that metals are not fully absorbed in the digestive system. This may overestimate exposure by a factor of two to 10. All risks from exposure to antimony

Uncertainty	Overestimate	Possible Underestimate or Neutral Effect	Comment
			and manganese are below the safe level therefore results will not be changed.
Use of single values for human receptor characteristics such as body weight of 70.7kg.			People are different and weigh different amounts and drink various amounts of water etc. This may result in an overestimate of exposure by a factor up to two.
Food consumption rates for humans based on data from dietary survey.			Studies have shown that people indicate that they eat more in dietary surveys. This may result in an overestimate of exposure by a factor up to two.
Averaging of soil and sediment exposures over exposure duration			As people in Yellowknife are chronically exposed to arsenic, the approach to averaging the soil and sediment exposures tends to overestimate exposures by a factor of two to three.
Safety factors used by agencies in developing toxicity values.			Regulatory agencies use safety factors when they develop toxicity values to try to make sure that sensitive people such as toddlers and elderly are protected. This tends to overestimate risks by a factor of three to 10.
Synergism, potentiation, antagonism, additivity of toxic effects.			Toxicity endpoints were not the same and therefore this may be a neutral effect.

4.0 ECOLOGICAL RISK ASSESSMENT

The ERA considers both the aquatic and terrestrial environments at the Giant Mine. For the aquatic environment the focus is on the on-site environment with consideration also given to the off-site environment immediately downstream of Baker Creek (i.e., Back Bay). North Yellowknife Bay and South Yellowknife Bay were also considered as appropriate in the assessment; however, it should be noted that CCME aquatic quality guidelines are met in these locations. For the terrestrial environment, only exposure on the Giant Mine is included in the assessment.

4.1 Summary of Previous Studies

There are two different ecological assessments that were considered as the foundation for the development of the Problem Formulation:

- Ecological Risk Assessment for Giant Mine (SENES 2006)
- Assessment of Aquatic Resources in Baker Creek (Golder 2013a)

These studies were used to select the receptors and exposure pathways used in the assessment and are discussed in Appendix A. There are also a number of biological studies that have been conducted at the Giant Mine that provide analytical data in various media and biota that were considered in the ERA.

The SENES (2006) study concluded that, for current conditions, there was some potential for fish to be impacted within Baker Creek, but more biological sampling was recommended to allow for a Weight of Evidence (WOE) approach. Further studies of Baker Creek sediments were also recommended to examine effects on benthic invertebrates. The diversity of benthic communities in parts of Back Bay and North Yellowknife Bay may also be affected by existing levels of arsenic, but it was noted that this situation will gradually improve as sediments with elevated arsenic levels are buried over time and covered with cleaner material. In the terrestrial environment, no adverse effects were expected on wildlife such as bear, caribou, grouse, and wolf. Potential adverse effects on hare were identified and terrestrial vegetation was the primary source of exposure. Potential effects were also identified for muskrat and mink, primarily from arsenic in water, sediment, and aquatic plants. A field investigation for muskrat was undertaken on Baker Creek to support the risk assessment. The measured tissue levels and field evidence from the biological survey indicated that there are active dens that support a substantial population of muskrat on Baker Creek, and it is unlikely that the presence of arsenic in the sediments of Baker Creek was causing serious adverse effects on populations of small terrestrial mammals with a significant aquatic based diet.

Golder completed an assessment of the aquatic community in Baker Creek (Golder 2013a). The overall objective of the report was to support decision-making activities with respect to the remediation options for Baker Creek. It was found that approximately 30% of the locations examined were classified as having significant adverse effects, 45% of the locations had potential adverse effects, and 25% of the locations had negligible adverse effects. There was no gradient of potential effects and toxicity "hot spots" were located throughout Baker Creek. Benthic invertebrates were found at all locations, even locations with elevated concentrations; thus, recolonization of sediments by benthic invertebrates is occurring. The elevated concentrations in the sediment are also accessible to fish and other organisms in Baker Creek.

4.2 Description of the Environment

4.2.1 Terrestrial Environment

As discussed in the Environmental Assessment document (INAC/GNWT 2010), the terrestrial environment is broadly defined as being the Taiga Shield. A chief defining ecological characteristic of the Taiga Shield is the heterogeneous distribution of trees, which ranges from clumps of forest in areas with deeper soil to widely spaced stunted trees near the northern treeline. The extreme climate with long, cold winters, little precipitation, and few nutrients results in limited tree growth. Large areas of permafrost restrict root growth for trees and shrubs. Another key feature of the Taiga Shield is the large number of small to large lakes distributed across the ecoregion. While many lakes are isolated or connected to local drainage systems, major drainage systems drain to Great Slave Lake and ultimately to the Arctic Ocean or to Hudson Bay through the Thelon River system.

The Giant Mine consists of largely discontinuous permafrost and the forests consist primarily of jack pine and black spruce stands on nutrient-poor soils. The physical topography consists predominantly of exposed bedrock with discontinuous till and thin soils over bedrock. Mixed stands of jack pine, aspen, white spruce, and birch are also common forest types within the region. Wetlands are a dominant feature.

Bird habitats at the Giant Mine were categorized into four types: uplands, wetlands, riparian areas, and disturbed areas (Golder 2015d):

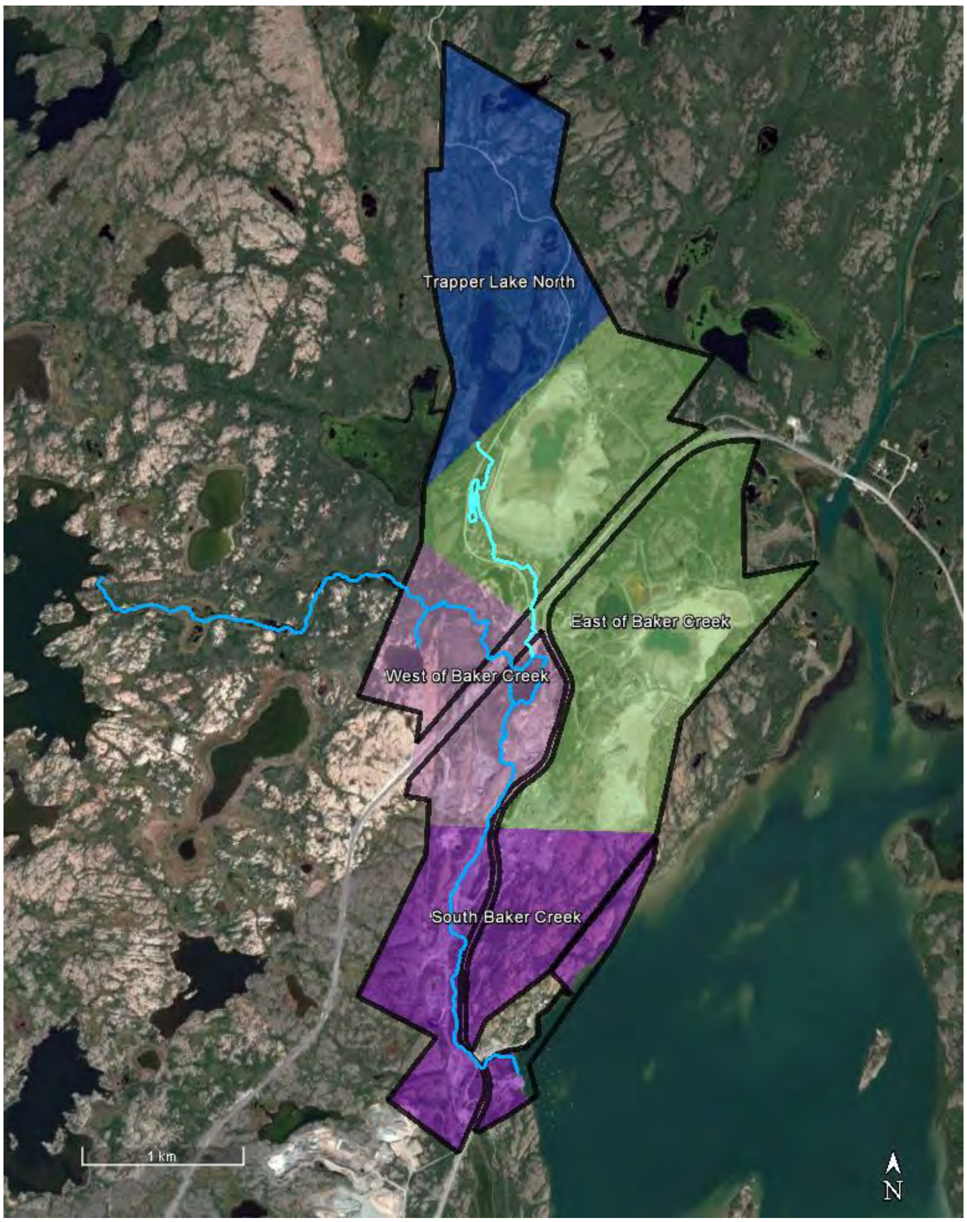
- Uplands: Comprises mesic forest (white spruce, paper birch, willow, and Labrador tea), scrub forest (paper birch, juniper) and rock outcrops (sparsely vegetated with bearberry, common juniper, and various grasses). Provides habitat for songbirds, raptors, owls, grouse, raven, magpie, gray jay, and finches.
- Wetlands: Characterized by cattail and sedge vegetation. Water sedge makes up 75% of the sedge community. Had the greatest diversity in birds including grebes, loons, waterfowl, water birds, shorebirds, gulls, terns, and passerines. The largest area of wetlands is around the perimeter of Trapper Lake, which has also been reported to have high abundance and diversity of wetland birds.
- Riparian Areas: Restricted to the seasonally flooded banks of the northern end of Baker Creek. This area is non-forested and has willow and bog birch shrubs as well as horsetail, dwarf raspberry, and Canada blue-joint. Representative species from all bird groups may use riparian areas, but they are especially important for songbirds.
- Disturbed Areas: These areas include meadow, vegetated, and un-vegetated areas. Previous studies showed that gulls and terns preferred disturbed sites over undisturbed sites, but the use of disturbed sites by other birds was low.

In 2016, Golder conducted a survey of the wildlife use of the Giant Mine and surrounding area using winter track counts, remote cameras, and site surveillance surveys (Golder 2016k). The survey targeted disturbed areas of the site, undisturbed areas of the site, and off-site areas.

Tracks from eleven wildlife species, or groups, were observed during the track counts. The most common wildlife tracks observed were coyote, red fox, snowshoe hare, red squirrel, ptarmigan, and other small mammal species. Other small mammal species include mice, voles, or shrews. Ptarmigan species were most likely willow ptarmigan (*Lagopus lagopus*) but may also have included rock ptarmigan (*Lagopus muta*). Wildlife incidentally observed during the counts included ptarmigan and raven. The most common animal photographed on the remote cameras was red fox. The camera, which was set up on an undisturbed area of the Giant Mine, photographed red fox, snowshoe hare, ptarmigan, and lynx. The site surveillance surveys were conducted on targeted site facilities. The highest frequency of wildlife observed was the Akaitcho Shaft; observations of wildlife were relatively rare at all other locations.

For the ERA, the Giant Mine was subdivided into four quadrants as shown on Figure 4.1. The majority of the disturbed areas are in the East of Baker Creek area (mill, roaster, North, Central, South Tailings ponds and water management ponds). Trapper Lake North area is relatively undisturbed and is expected to have the highest occurrence of waterfowl due to the presence of wetlands around the perimeter of Trapper Lake (Cygnus Environmental 2005). West of Baker Creek is mostly undisturbed regions, including natural wetlands or ponded water. In addition, there are several pits in close proximity to Baker Creek. Baker Creek is discussed as part of the aquatic environment.

Figure 4.1 Terrestrial on-site quadrants considered for ERA



4.2.2 Aquatic Environment

The aquatic environment evaluated in the ERA is Baker Creek on the Giant Mine lease area and immediately downstream of the site in Yellowknife Bay (Back Bay/North Yellowknife Bay).

4.2.2.1 Baker Creek

As discussed in Section 1.0, the lower portion of Baker Creek (approximately 3.5 km in length) that flows through the Giant Mine lease area has been divided into seven reaches (Reach 0 to 6) based on major changes in creek hydraulics or channel conditions (INAC/GNWT 2010). Reach 0 is located at the mouth of Baker Creek, where it flows into Yellowknife Bay (Back Bay) behind a constructed breakwater. Reach 6 includes Baker Creek Pond, where mine effluent was discharged during mine operations and where treated effluent is currently discharged seasonally (typically during open water between July and September).

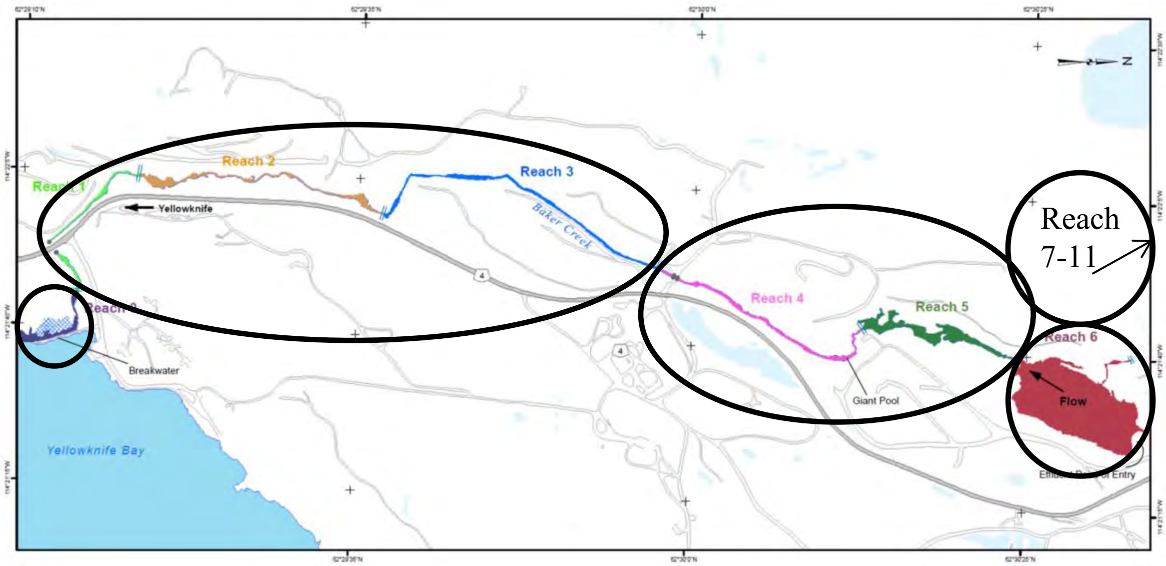
For the purposes of the ERA, Baker Creek was sub-divided into five different segments as shown in Figure 4.2:

- Reach 0;
- Reach 1-3;
- Reach 4-5;
- Reach 6; and,
- Reach 7-11.

There have been a number of studies documenting the presence of fish in Baker Creek, but it is not known whether they overwinter in the creek as there have been no formal winter studies conducted.

As an emergency flood prevention measure, Reach 4 was realigned into a new channel in the summer of 2006 to mitigate against the possibility of surface water flow reaching the underground mine workings in the area around Mill Pond (INAC/GNWT 2010). Studies conducted since the realignment of Reach 4 have shown that the modifications markedly improved the spawning success of arctic grayling within Baker Creek in the spring. The large gravel present in the creek bed is well-suited for concealing eggs until they hatch, and Baker Creek is the only identified grayling spawning habitat in the Yellowknife area. Baker Creek has been deemed a “closed fishery” by the Department of Fisheries and Oceans in the hopes of restoring the arctic grayling population.

Figure 4.2 Segments of Baker Creek



In August 2014, a preliminary assessment of the plant community structure along Baker Creek was initiated (Stevens et al. 2015). The goals were to identify patterns in plant community composition. Six sites were sampled along Baker Creek and two sites outside of the creek, Pocket Lake and a reference site on the Yellowknife River (although limitations in the use of Yellowknife River as a reference location were discussed). Species richness, density, and diversity were determined for each site. Principal Components Analysis (PCA) was employed to identify relationships between plant community structure and site abiotic characteristics.

A total of 32 plant taxa were identified, including 19 native taxa, 3 introduced taxa, 8 taxa of unknown origin, and 2 sensitive species (*Potamogeton pecitnatus* and *Alisma triviale)*. There were no clear patterns in species diversity and evenness; however, both tended to decrease moving from Reach 6 to Reach 0. The PCA suggested a correlation between water quality and plant community structure. Reach 4 was unique among the sites, with several species found only in this reach which was likely due to realignment and revegetation efforts (Stevens et al. 2015).

Pocket Lake, the small headwater lake (4.8 ha) located in the southern portion of the Baker Creek watershed, and Trapper Lake, in the northern part of the site, are not considered within the ERA, as the mandate of this ERA is to evaluate the potential impact of the GMRP, which will not impact these lakes.

4.2.2.2 Tailings Ponds and Water Treatment Facility

There are some other areas of water at the Giant Mine. It should be noted that the tailings ponds on the site are dry with the exception of a small area in the North Tailings Pond and the Northwest Tailings Pond, which is used as part of the water management system.

The Northwest Tailings Pond, as well as the Settling and Polishing ponds, are part of the active engineered water treatment system and, thus, are not considered in the ERA. The tailings ponds will be remediated and are not explicitly considered within the ERA. Additionally, bird surveys conducted at the Giant Mine indicated that disturbed tailings areas and associated water bodies were not used extensively by waterfowl, likely due to the ample selection of undisturbed water bodies adjacent to the site (Golder 2016l).

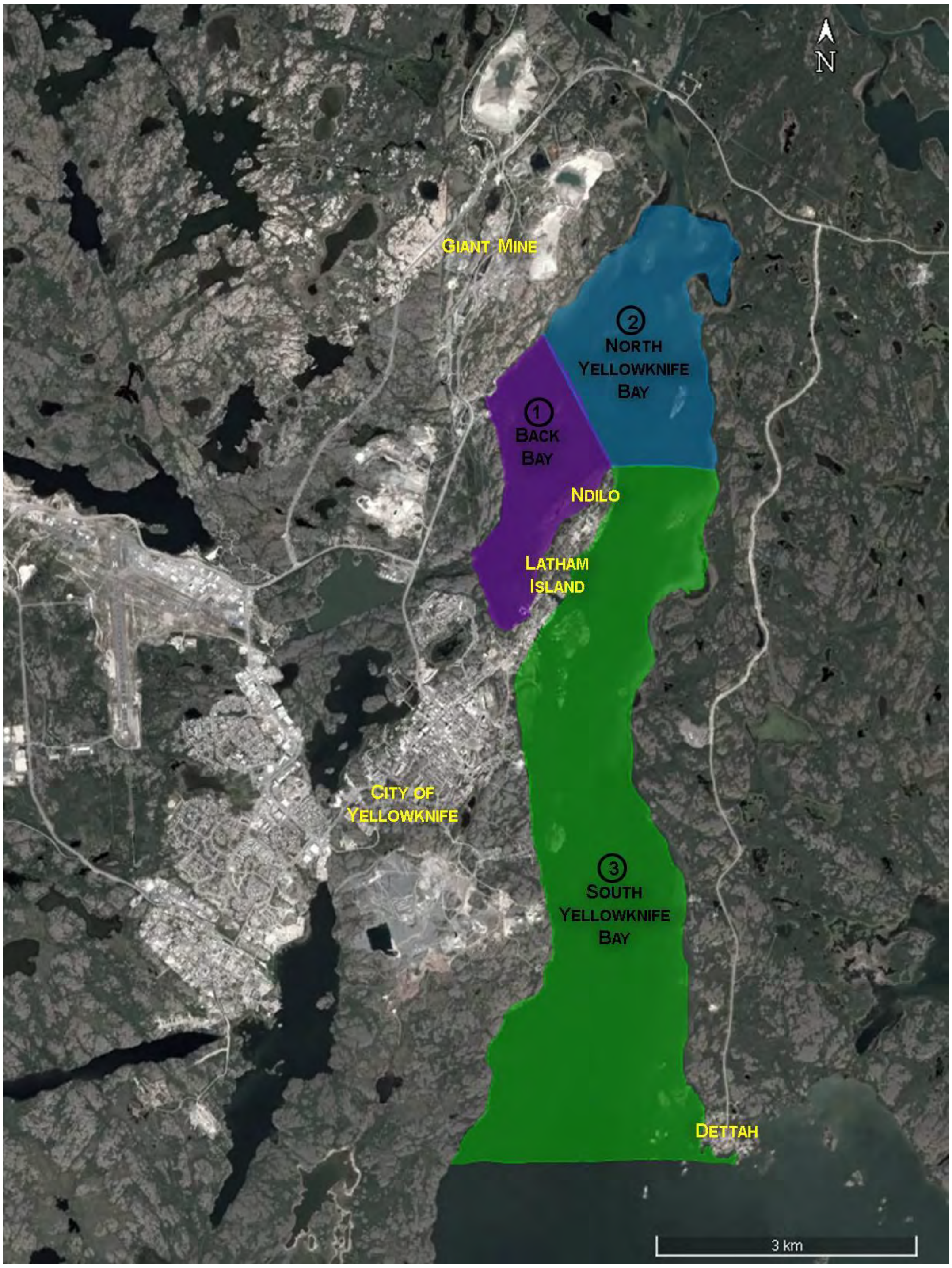
4.2.2.3 Yellowknife Bay on Great Slave Lake

Yellowknife Bay on Great Slave Lake is located directly adjacent to the Giant Mine and receives runoff from the site and treated water indirectly from Baker Creek.. For the ERA, Yellowknife Bay was been divided into three large segments as shown in Figure 4.3. The ERA focuses on the Back Bay section of Yellowknife Bay. This location is immediately downstream of Baker Creek and will receive the treatment plant effluent once the discharge is relocated.

The DAR (INAC/GNWT 2010) summarized some early studies conducted on Yellowknife Bay. It was reported that a spring bloom of phytoplankton in Yellowknife Bay occurred with the onset of light in the spring and continued growth until the end of October. The standing crop of phytoplankton in summer was related to surface water temperature and nutrient levels. Benthic and phytoplankton species were more abundant in the littoral zone than in deeper areas and were dominated by oligochaetes, molluscs, chironomids, and amphipods. The differences in composition, structure, and density of the benthic populations were related to the abundance of the algae attached to the bottom substrate.

A study on the benthic invertebrates showed the continuing effects of arsenic-contaminated sediments on the benthic community in North Yellowknife Bay (Golder 2005). The invertebrate communities were dominated by amphipods, clams, midges, and oligochaetes. Invertebrate abundance, richness, and metal-sensitive invertebrate abundance were negatively correlated with arsenic levels in sediments.

Figure 4.3 Segments of Yellowknife Bay



Stantec (2015c) conducted a habitat assessment of the foreshore tailings area (FTA) of Yellowknife Bay. They found sandy substrates nearest to the shore (depths 0.5 to 3 metres) that were associated with tailings deposits. Due to the low organic carbon and high metal concentrations, there is likely poor habitat for benthic invertebrates. Between two and eight metres, the habitat was bare, with fine substrates (primarily silt and clay) and very patching macrophytes. In part of the study area (between 3 m and 6 m), there were dense standing macrophytes. There are expected to be bivalves and other benthic invertebrates in these two habitats.

As reported in the DAR (INAC/GNWT 2010), studies of fish communities in the lakes around Yellowknife show that the species present are typical of cold, northern lakes with low productivity. The DAR (INAC/GNWT 2010) summarized the results of a survey of fisheries in the North Slave region of the NWT which reported 24 fish species in Great Slave Lake (Table 4.1). The fish species represent several trophic levels and a wide array of benthic and pelagic niches. For example, northern pike utilize the shallow shoreline areas for spawning and rearing. Young-of-the-year walleye also migrate into the nearshore areas for rearing. These areas contain an abundance of food for northern pike and walleye (e.g., other small fish), while aquatic vegetation provides protective cover.

Table 4.1 Inventory of fish species present in Great Slave Lake

Common Name	Scientific Name
Arctic Grayling	*Thymallus arcticus*
Arctic Lamprey	*Lampetra japonica*
Burbot	*Lota lota*
Chum Salmon	*Onchorhynchus keta*
Deepwater Sculpin	*Myoxocephalus quadricornis thompsoni*
Emerald Shiner	*Notropis atherinoides*
Flathead Chub	*Platygobio gracilis*
Goldeye	*Hiodon alosoides*
Inconnu	*Stenodus leucichthys*
Lake Chub	*Couesius plumbeus*
Lake Cisco	*Coregonus artedi*
Lake Trout	*Salvelinus namaycush*
Lake Whitefish	*Coregonus clupeaformis*
Longnose Sucker	*Catostomus catostomus*
Ninespine Stickleback	*Pungitius pungitius*
Northern Pike	*Esox lucius*
Round Whitefish	*Prosopium cylindraceum*
Slimy Sculpin	*Cottus cognatus*
Spoonhead Sculpin	*Cottus ricei*
Spottail Shiner	*Notropis hudsonius*
Trout Perch	*Percopsis omiscomaycus*
Walleye	*Stizostedion vitreum vitreum*
White Sucker	*Catastomus commersoni*
Yellow Perch	*Perca fluviatilis*

Adapted from (INAC/GNWT 2010).

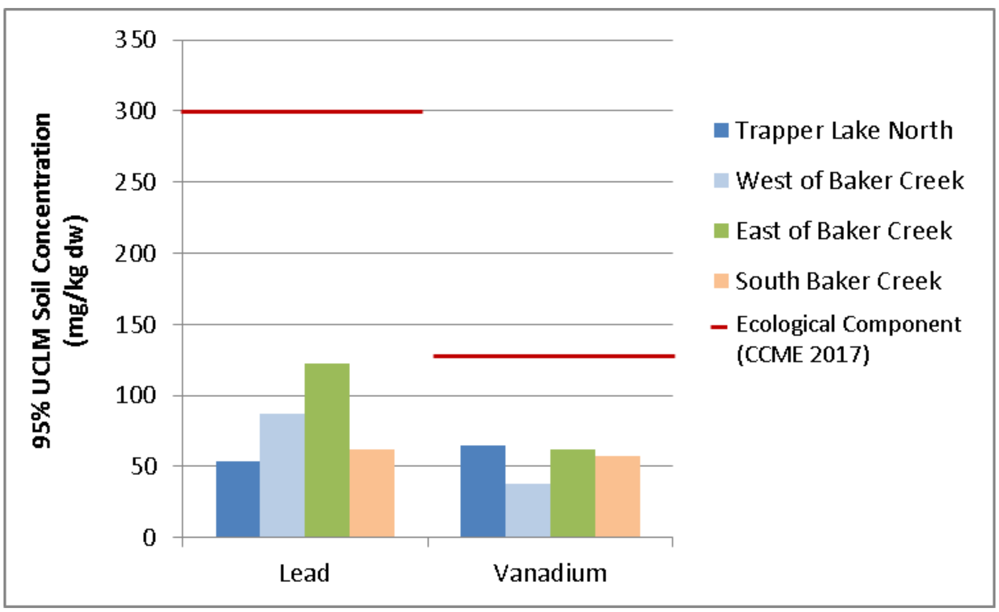
4.3 Problem Formulation

4.3.1 Hazard Identification

The initial COPC screen to identify COPC for the ERA was described in detail in Appendix D and summarized in Section 2.2.

A qualitative assessment was carried out for the concentrations of the COPC in the terrestrial and aquatic environments that need to be considered in more detail in the ERA. This qualitative assessment involved the comparison of concentrations in soil and water to ecological guidelines and/or background. The details of the qualitative assessment are provided in Appendix K. Figure 3.2 provides a representation of the soil screening process. As seen from the figure, the lead and vanadium concentrations in soil are below the ecological component of the applicable guidelines in all quadrants of the Giant Mine site. This represents a qualitative assessment and therefore lead and vanadium are not quantitatively evaluated in the risk assessment for soil.

Figure 4.4 Summary of qualitative analysis for lead and vanadium in soil



Further investigation was also undertaken for barium, potassium, and strontium in surface water. No guidelines are available for these COPC during the initial screening process; however, other toxicity values exist and were used to determine if they should be considered further (see Appendix K). Maximum measured concentrations of barium, potassium and strontium were compared to these toxicity values and all measured levels were below the identified toxicity values in Baker Creek and Yellowknife Bay, therefore these COPC were not quantitatively evaluated in the risk assessment for surface water.

Additional investigation of cadmium, cobalt, cyanide, and iron involved a review of the surface water data in Baker Creek to compare concentrations measured upstream (Reach 8 to 11, representative of baseline conditions) as compared to the rest of Baker Creek which have inputs from the effluent treatment plant as well as runoff from the site. Statistical tests indicated that the concentrations of cadmium, cobalt, cyanide, and iron in the upper reaches of Baker Creek are the same as those in the lower reaches. For this reason, cadmium, cobalt, cyanide, and iron are not considered further in the risk assessment for surface water in Baker Creek. Similarly, the copper concentrations in the lower reaches of Baker Creek are below baseline conditions. For this reason, copper is not discussed further with respect to surface water in Baker Creek. For further details, see Appendix K.

Therefore, the final list of COPC for the Giant Mine ERA is provided in Table 4.2. Chloride and sulphate are considered in the future in Yellowknife Bay due to the relocation of the water treatment plant effluent via outfall directly into Yellowknife Bay near Baker Creek outlet.

Table 4.2 Summary of final list of constituents of potential concern for the ecological risk assessment

Soil	Surface Water/Sediment	
ERA	**Yellowknife Bay – ERA**	**Baker Creek - ERA**
Antimony Arsenic Copper Manganese Zinc	Antimony Arsenic Chromium (*sed) Copper (*sed) Chloride (future only) Sulphate (future only)	Antimony Arsenic Cadmium (*sed) Chloride Chromium (*sed) Copper (*sed) Lead (*sed) Mercury (*sed) Sulphate Zinc (*sed)

Note: Arsenic in Yellowknife Bay was measured below the guidelines for protection of aquatic life but was retained due to community concerns; *sed – identified based on the sediment screen only.

4.3.2 Receptor Identification

4.3.2.1 Selected Receptors

It is neither practical, nor necessary, to individually assess each wildlife species that may potentially occupy, visit, or live near areas impacted by Giant Mine. Instead, a subset of terrestrial and aquatic wildlife receptors of concern that may be exposed to COPCs from Giant Mine were selected by focusing on receptors that are:

- indigenous to the area and would be potentially exposed to COPCs at the Giant Mine;
- most likely to receive the greatest exposure to COPCs due to their habitat, behavioural traits, and home range;
- representative of various levels in the trophic web (e.g., carnivore, herbivore, insectivore);
- potentially at risk because they have been classified as being rare or endangered (i.e., species of conservation concern); and
- culturally important.

The following section discusses the receptors that were selected to represent the biota that use the Giant Mine. These receptors represent a range of different diet types and trophic levels. For lower trophic levels, the receptor is defined at the community level. The selection of the receptors to be included in the aquatic and terrestrial environments was based on an understanding of the Giant Mine, as well as consideration of the previous assessments and discussions with stakeholders (WG members and GMAC).

Aquatic Receptors

Table 4.3 provides the ecological receptors selected in the aquatic environment. Further details on the selection of these receptors can be found in Appendix J.

Table 4.3 Ecological receptors selected for the aquatic environment

Aquatic Receptor Group	Aquatic Receptor Type	Selected Receptor
Water column organisms	Phytoplankton	Phytoplankton Community
	Zooplankton	Zooplankton Community
Benthic Invertebrates	Benthos Community	Benthic Invertebrate Infaunal Community
Fish	Benthivorous Planktivorous Piscivorous	Stickleback; Sculpin Arctic Grayling Northern Pike
Mammal	Herbivorous Insectivorous Piscivorous	Muskrat Bat (Little Brown Myotis) Mink
Bird	Herbivorous Insectivorous Piscivorous	Mallard Barn Swallow Horned Grebe, Osprey, Merganser

Terrestrial Receptors

The results of the previous ERA determined that large mammals were not at levels of unacceptable risk from exposure at the Giant Mine due to their wide home range. Therefore, the focus of this ERA is on mammals and birds with small home ranges. Based on feedback received from stakeholders (ECCC), the shrew and great horned owl were added to the assessment. There was also a suggestion to include an American robin, but it was determined that the ptarmigan and swallow would encompass the exposure by this receptor. Further details on the selection of these receptors can be found in Appendix J.

Table 4.4 provides the ecological receptors selected for the terrestrial environment. Further details on the selection of these receptors can be found in Appendix J.

Table 4.4 Ecological receptors selected for the terrestrial environment

Terrestrial Receptor Group	Terrestrial Receptor Type	Selected Receptor
Vegetation	Vegetation Community	Vegetation Community
Mammal	Herbivorous Insectivorous Carnivorous Omnivorous	Snowshoe Hare Bat (Little Brown Myotis), Masked Shrew Lynx Deer Mouse, Fox
Bird	Herbivorous Insectivorous Carnivorous	Willow Ptarmigan Barn Swallow Peregrine Falcon, Great Horned Owl

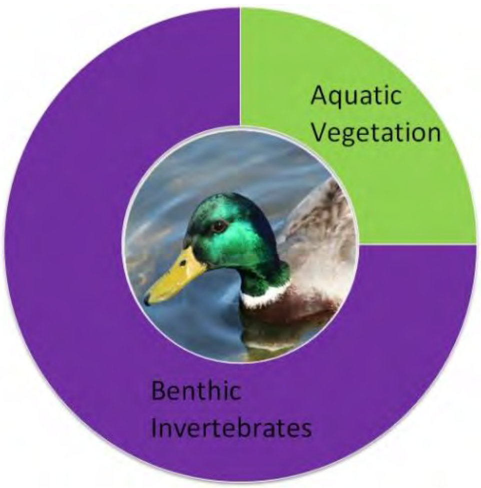
4.3.3 Receptor Exposure Pathways and Characteristics

The receptors selected for the risk assessment cover a range of diets and trophic levels. The diet composition for the mammals and birds are shown schematically in Figure 4.5 (birds in the aquatic environment), Figure 4.6 (mammals in the aquatic environment), Figure 4.7 (birds in the terrestrial environment), and Figure 4.8 (mammals in the terrestrial environment).

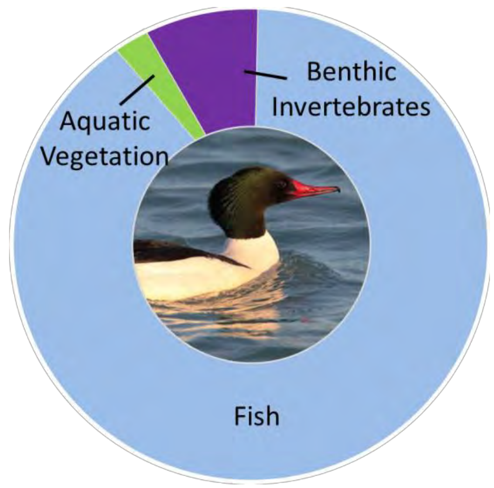
Appendix J provides further details on receptor exposure pathways, as well as a summary of the detailed receptor characteristics, including, for example, body weight, amount of food consumed, and diet composition. These were taken from FCSAP guidance where available and augmented by other literature as needed.

Figure 4.5 Summary of receptor characteristics – birds in aquatic environment

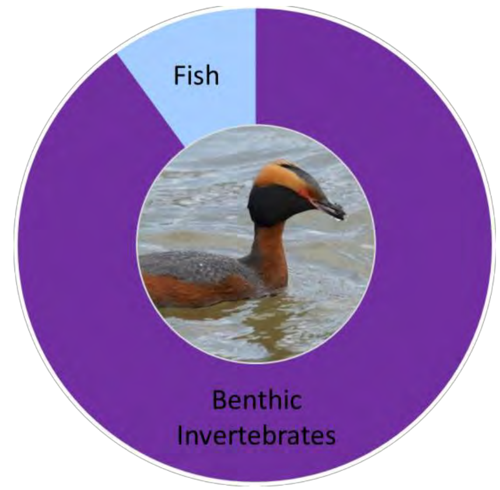
Mallard



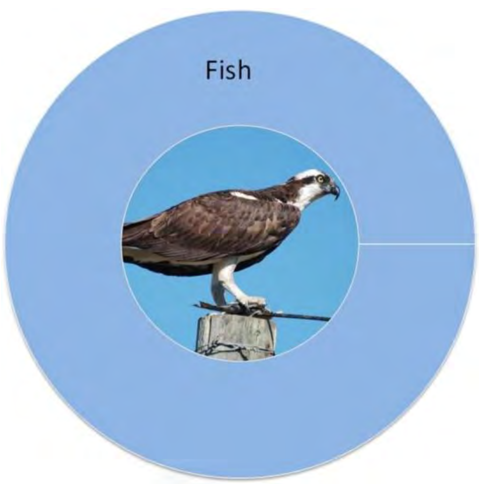
Merganser



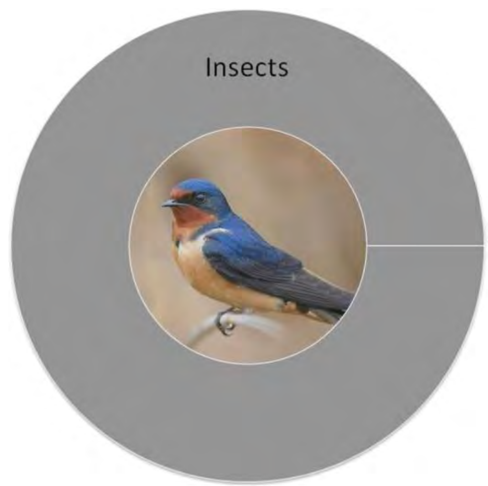
Horned Grebe



Osprey

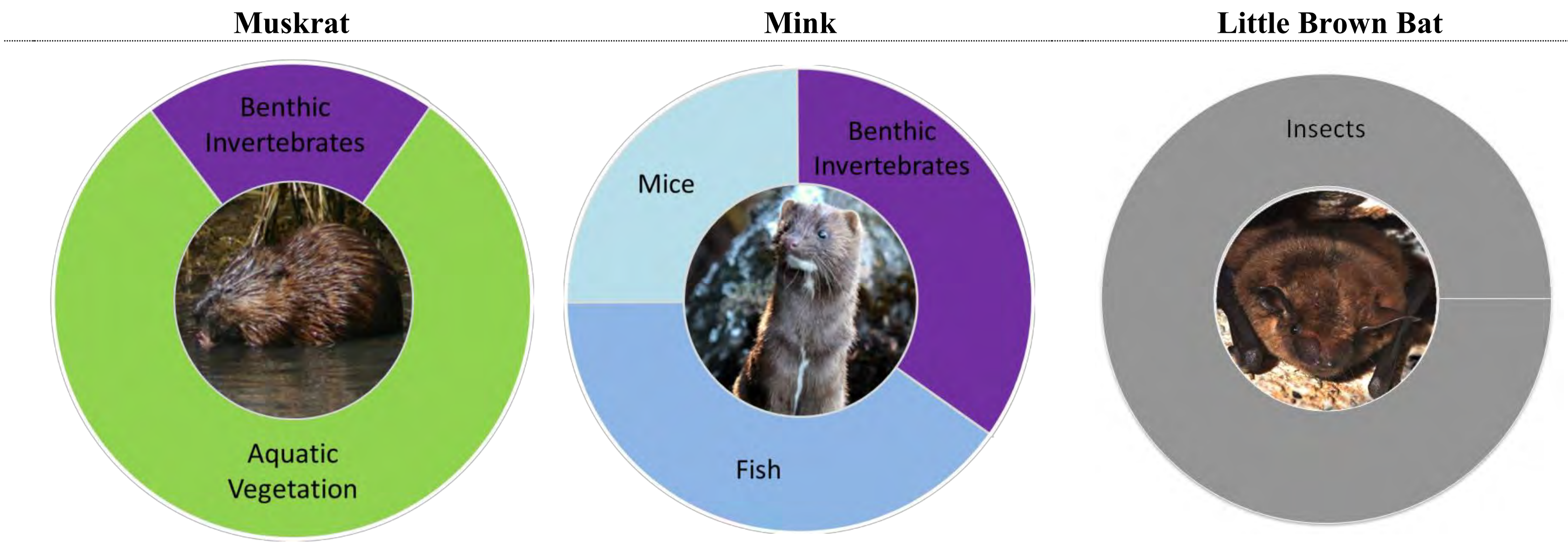


Barn Swallow



Note: These receptors also assumed to consume water and sediment or soil.

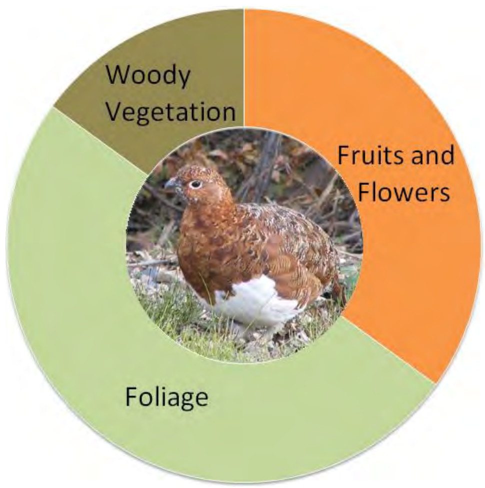
Figure 4.6 Summary of receptor characteristics – mammals in aquatic environment



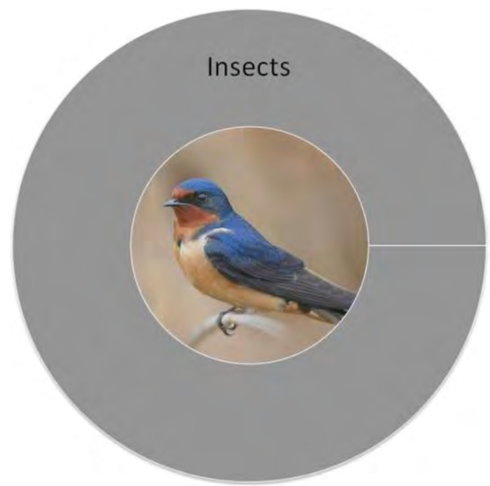
Note: These receptors also assumed to consume water and sediment or soil.

Figure 4.7 Summary of receptor characteristics – birds in terrestrial environment

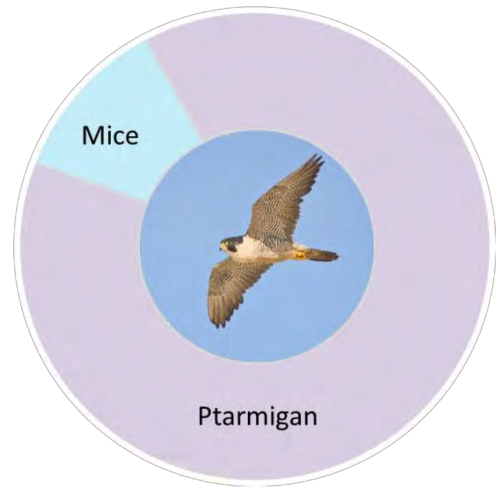
Willow Ptarmigan



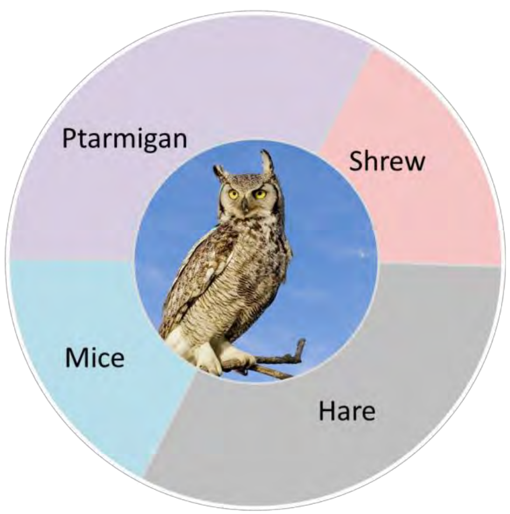
Barn Swallow



Peregrine Falcon

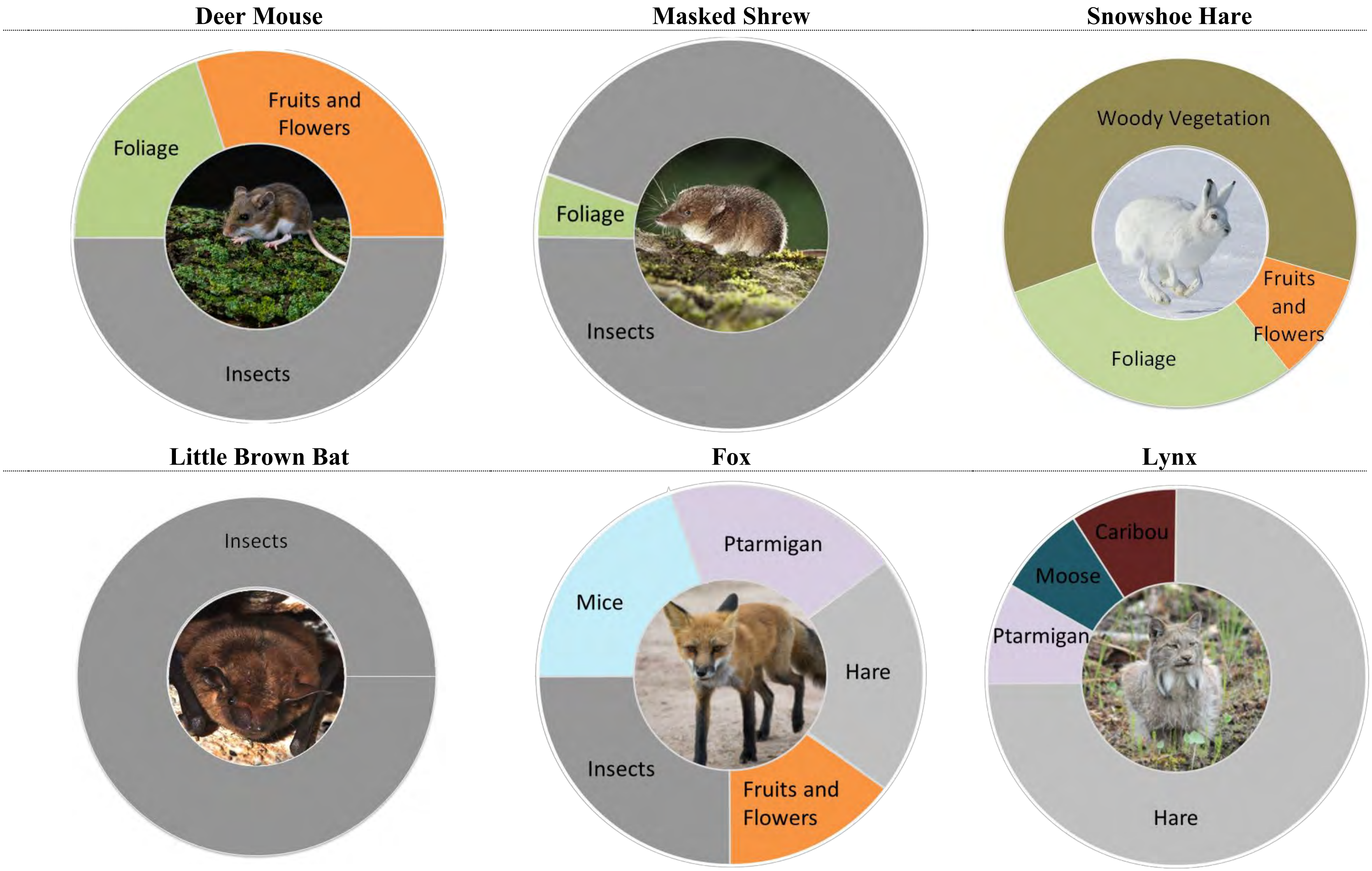


Great Horned Owl



Note: These receptors also assumed to consume water and soil.

Figure 4.8 Summary of receptor characteristics – mammals in terrestrial environment



Note: These receptors also assumed to consume water and soil.

4.3.4 Conceptual Site Model

A CSM provides a picture to show the ways that the COPCs move from the soil, sediment, and water and the ways that the different pathways and receptors are being evaluated in the risk assessment. The picture in Figure 4.9 is a simplified version of the interactions and not all receptors and pathways are shown. Additional information is provided in Appendix K.

There is an extensive database of information that was the basis of the ERA. The COPC to be carried forward through the ERA were summarized in Section 4.3.1, the ecological receptors selected to be included were provided in Section 4.3.2, and Section 4.3.3 summarized how these receptors are connected to the environment (pathways).

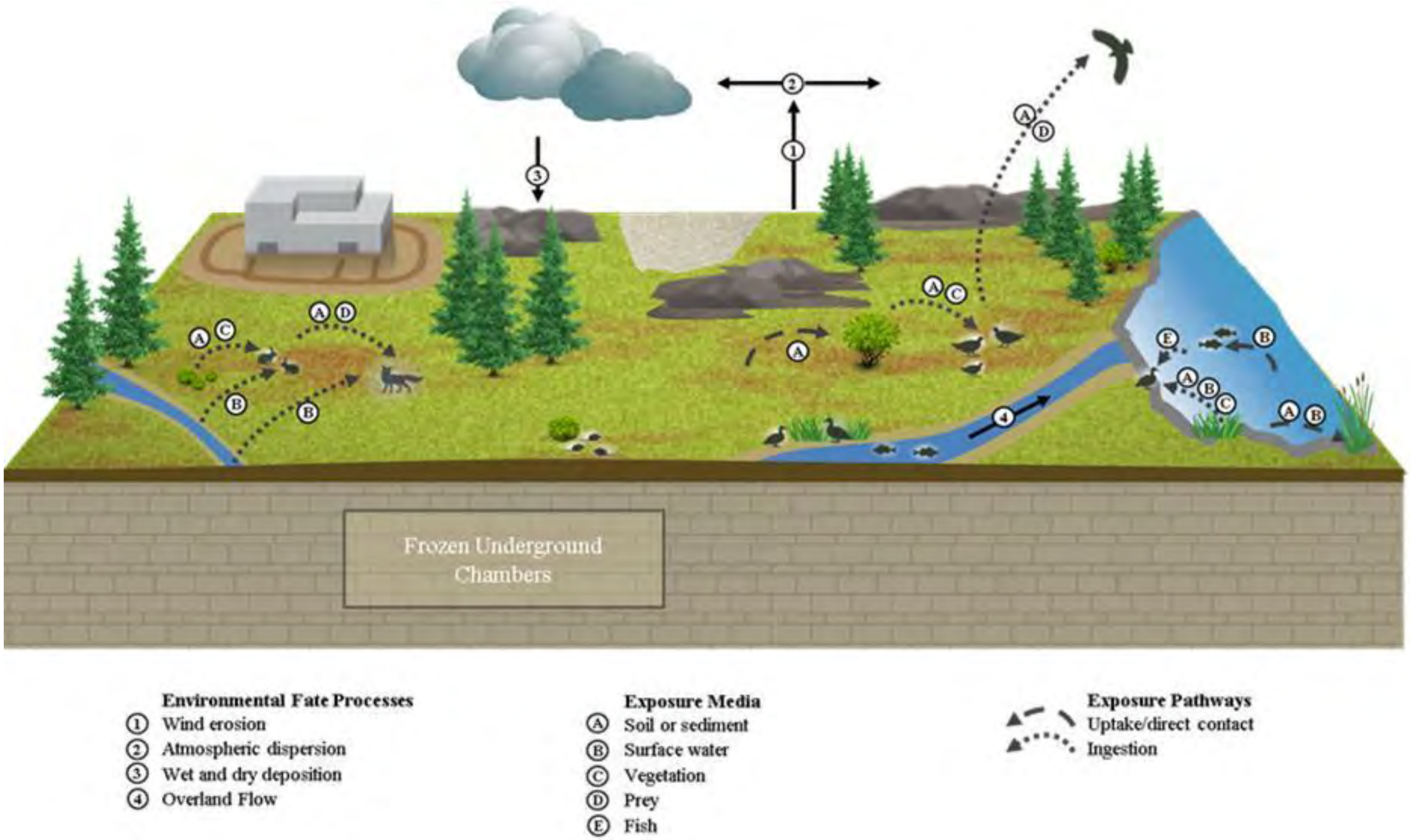
4.3.5 Assessment Endpoints and Measurement Endpoints

For this ERA, specific protection goals have not been established. The assessment focusses on assessing the risk of potential adverse effects to ecological receptors to be used in the decision-making process for the remedial actions on the Giant Mine as appropriate.

To determine the ecological significance of exposure to a COPC, ecological endpoints need to be selected. These endpoints are characteristics of an ecological component (such as fish mortality) that may be affected by exposure to a given constituent (Suter 1993; U.S. EPA 1992). There are two types of endpoints: assessment and measurement (Table 4.5). Assessment endpoints are explicit expressions of actual environmental values to be protected (U.S. EPA 1992; FCSAP 2012a). The assessment endpoints for this ERA include:

- maintenance of the health and ecological integrity of the benthic invertebrate community;
- maintenance of the health and ecological integrity of water column organisms;
- maintenance of the health and ecological integrity of the fish populations;
- maintenance of the health and ecological integrity of the wildlife that use the aquatic resources on the site;
- maintenance of the health and ecological integrity of the vegetation community on the site; and
- maintenance of the health and ecological integrity of the wildlife that use the terrestrial areas of the site.

Figure 4.9 Conceptual site model for the ecological risk assessment



Note: Schematic representation; not all pathways and receptors shown. Additional detail is provided in Appendix K. This diagram should be read in conjunction with the Site Description and other components of the Problem Formulation.

Table 4.5 Summary of assessment and measurement endpoints

Assessment Endpoint	Line of Evidence	Measurement Endpoint
Maintenance of the health and ecological integrity of the benthic invertebrate community.	Sediment Chemistry	Sediment chemistry is compared to benchmarks (Interim Sediment Quality Guidelines [ISQG] and PELs from CCME and other benchmarks, if available).
	Benthic community*	Benthic community from exposed sites is compared to reference sites. Determination made to whether there is a difference in the taxonomic composition and relative abundances of invertebrates.
	Benthic tissue concentrations*	As a measure of the bioaccumulation, benthic invertebrate tissue data compared to data from reference locations.
	Sediment toxicity*	Whole sediment laboratory toxicity tests on representative benthic invertebrate species (14-d *Hyalella azteca* and 10-d *Chironomus sp*).
Maintenance of the health and ecological integrity of the water column organisms.	Water Chemistry	Water chemistry is compared to toxicity benchmarks are based on endpoints such as growth, survival, and/or reproduction (generally using Species Sensitivity Distributions).
	Periphyton concentrations*	As a measure of the bioaccumulation, periphyton tissue data compared to data from reference locations.
	Water toxicity*	Surface water laboratory toxicity testing on representative phytoplankton and zooplankton species (72-h *Pseudokirchneriella subcapitata*, 2-brood *Ceriodaphnia dubia*).
Maintenance of the health and ecological integrity of the fish populations.	Water Chemistry	Water chemistry is compared to toxicity benchmarks are based on endpoints such as growth, survival, and/or reproduction (generally using Species Sensitivity Distributions).
	Fish Health*	Information on fish health will be integrated in the assessment as appropriate.
	Fish Tissue	Compare measured data fish tissue data to available benchmarks specific for the protection of fish health.
Maintenance of the health and ecological integrity of wildlife that use the aquatic resources on the site.	Food chain model	Comparison of estimated exposure to COPC from the food chain to toxicity benchmarks that are based on endpoints such as growth, survival, and reproduction.
	Survey	Studies on muskrat in Baker Creek were conducted in 2003 and 2004 that looked at population density, tissue concentrations and health. These studies are considered in the risk assessment, but the contribution is limited as the information is dated.
Maintenance of the health and ecological integrity of vegetation communities on the site.	Soil Chemistry	Soil chemistry is compared to the ecological component of regulatory guidelines.
	Tissue Concentrations	Comparison of measured concentrations in vegetation to phytotoxicity benchmarks.
Maintenance of the health and ecological integrity of wildlife that use the terrestrial areas on the site.	Food chain model	Comparison of estimated exposure to COPC from the food chain to toxicity benchmarks that are based on endpoints such as growth, survival, and reproduction.
	Tissue Concentrations	Comparison of measured concentrations in tissue of small mammal (whole body) to benchmarks that are specific to tissue. There is some information available but these benchmarks are limited for the COPC considered in this assessment.

* These lines of evidence were collected for a previous investigation (Golder 2013a, 2013b) and are repeated here as no new information is available.

For determining the health and ecological integrity of receptors, consideration was given to effects at a population level. A higher level of protection is appropriate for species at risk.

Due to the difficulty in measuring direct effects on assessment endpoints, "measurement endpoints" are adopted to provide a framework for the evaluation of predicted effects. A measurement endpoint is defined as "a quantitative summary of the results of a toxicity test, a biological study, or other activity intended to reveal the effects of a substance" (Suter 1993). A measurement endpoint is a parameter that measures or describes exposure of, or an effect on, a receptor of concern (FCSAP 2012a). Different measurement endpoints were selected including:

- comparison of measured concentrations in water, sediment and soil to regulatory guidelines;
- biological surveys that summarize what biota is present and/or the health;
- laboratory toxicity testing of water and sediment collected from the site;
- comparison of measured concentrations in environmental media (e.g., fish, vegetation, mammals) to background and/or toxicity guidelines; and
- a food chain model that tracks the movement of contaminants through the environment and estimates the intake of a COPC by wildlife. These intakes were then compared to toxicity benchmarks.

4.3.6 Summary of Site Information

The ERA considered data collected at the site from 2010 to 2016. This included an extensive amount of information on abiotic components including soil, water, and sediment. A list of the reports that have been consulted is provided in Appendix A.

These reports were reviewed and a data gaps analysis carried out to determine the needs for the ERA. The data gaps that were identified related to the lack of chemistry for aquatic and terrestrial plants on the Giant Mine as well as data related to small mammals such as mice and voles.

A study was completed by Golder during the summer of 2016 to obtain information on soil, sediment, vegetation, and small mammals (co-located samples) on the Giant Mine. The program and results are provided as Attachment 1 of Appendix B. Ten co-located sediment and aquatic plant samples (sedge [*Carex aquatilis*]) were collected in lower

Baker Creek, Upper Baker Creek, and the Yellowknife area. All samples were analyzed for total metals and duplicate sediment and aquatic plant samples were collected for quality assurance (QA) purposes. For the terrestrial environment, 10 co-located soils and terrestrial plants were collected in four quadrants of the site, including four outcrop, four forest, and two wetland stations. Cranberry (*Vaccinium vitis-idaea*) and alder (*Alnus* sp.) leaves were collected to represent terrestrial forbs and shrubs. All samples were analyzed for total metals and duplicate soil and plant samples from four locations were collected for QA purposes. Plant and soil samples from five locations were also sent for arsenic bioaccessibility analysis.

Ninety-eight commercial mouse traps were set on eight transects across the Giant Mine in the fall of 2016. At all sites small mammals were trapped, and co-located soil and vegetation samples were collected. Three small mammal species were caught, including deer mouse (*Peromyscus maniculatus*), northern red-backed vole (*Myodes rutilus*), and an unidentified shrew species (*Sorex* sp.). All samples were sent for total metals analysis.

4.4 Exposure Assessment

There are many factors that go into evaluation of exposure, including receptor characteristics, receptor location, and the levels of COPC in different parts of the environment (e.g., water, soil, plants). These factors are discussed in the following sections.

The evaluation of potential effects on aquatic biota (e.g., benthic invertebrates, fish, aquatic plants) relies on water and sediment concentrations to assess direct exposure, while terrestrial plants are evaluated based on soil concentrations. For other aquatic and terrestrial receptors (i.e., mammals and birds) the exposure assessment relies on water, sediment, and soil concentrations as well as predicted concentrations for each dietary component through the food chain.

The aquatic environment was explicitly modelled to estimate future conditions; water and sediment quality predictions were made for Baker Creek and Back Bay to capture the effect of remediation activities (see Appendix K).

To facilitate evaluation of the immediate and long-term benefit of the GMRP, several different time steps were specifically identified from the overall schedule of the remedial activities, the years included current (year 2017); end of remediation (year 2030); and post remediation (years 2040, 2060, 2080, and 2120). The water and sediment quality predictions provided concentrations for all of the modelled years (see Appendix K); however, the following years were selected for discussion purposes:

Current	2017
Immediately Post-Remediation	2030
Future	2120

Similarly, future on-site soil concentrations resulting from implementation of the selected remediation measures were estimated. The predicted post-remediation soil concentrations are not expected to change substantially over time and so, for the terrestrial-based receptors, the predictions for 2030 and 2120 are the same and are grouped together and presented simply as 'future'.

4.4.1 Exposure Locations

A summary of locations for evaluation of aquatic receptors is shown in Figure 4.10, while the terrestrial receptor locations are indicated in Figure 4.11. The home range for each species was taken into account when selecting the appropriate exposure location(s) for that receptor. For example, it is appropriate to evaluate shrew on each individual quadrant of the Giant Mine, whereas, for a receptor with a larger home range, such as a fox, it is more appropriate to assume it roams over the entire Giant Mine.

Most receptors are assumed to spend their entire life on the selected exposure area; however, for a few receptors with large home ranges (e.g., falcon and lynx) it is reasonable to assume that they spend only a portion of their time at the Giant Mine with the rest spent in nearby areas which are at background conditions. For these receptors, the assumed percentage of each year spent on the Giant Mine is indicated in Figure 4.11 in brackets. For migratory birds, it is assumed that while in the area, they reside entirely on-site and are present for a sufficient time that they come into equilibrium with their surroundings; therefore, the time spent in other locations with lower concentrations is not accounted for in the assessment. A full discussion of selected receptor exposure locations is provided in Appendix J.

Figure 4.10 Exposure locations for aquatic receptors

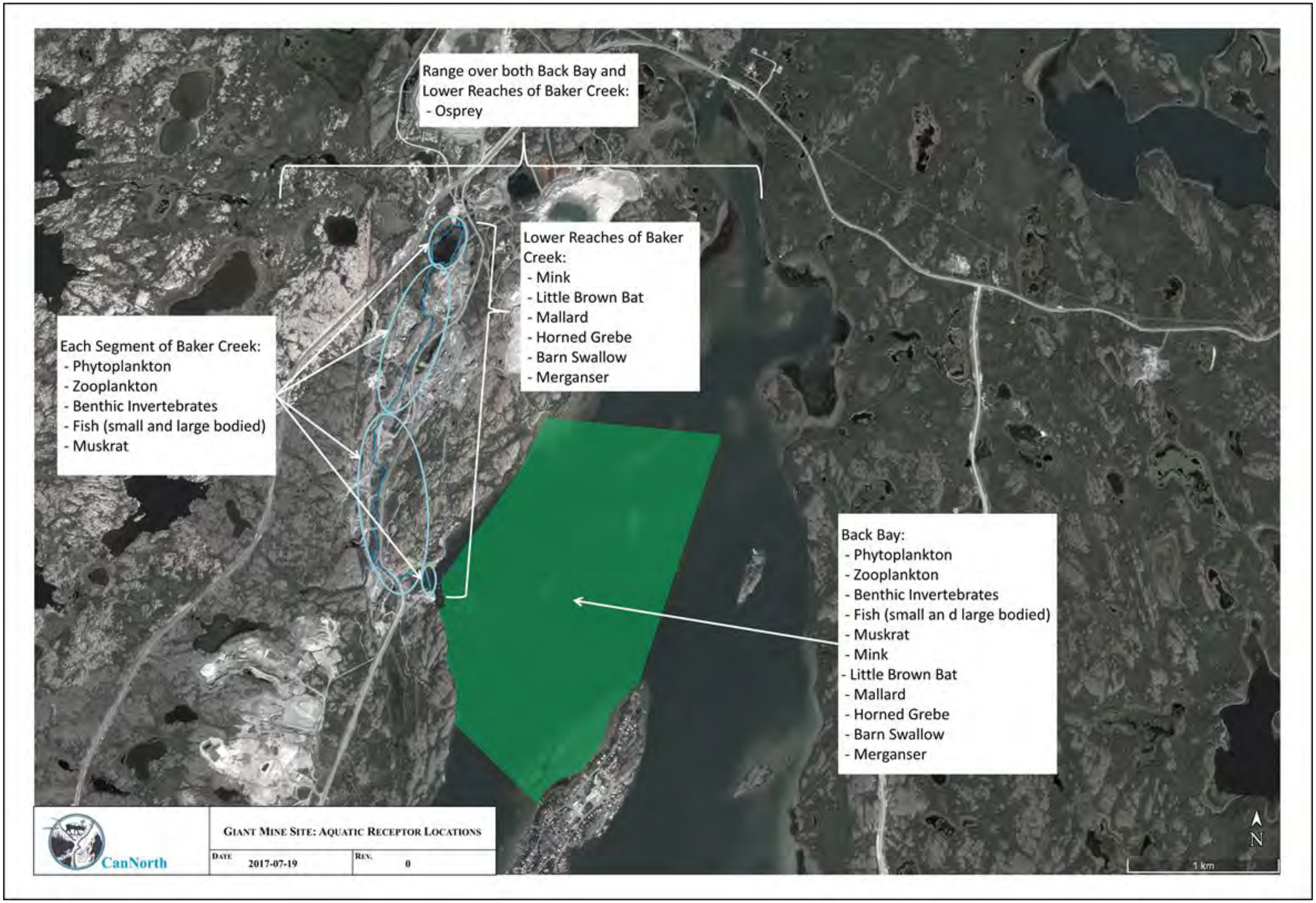
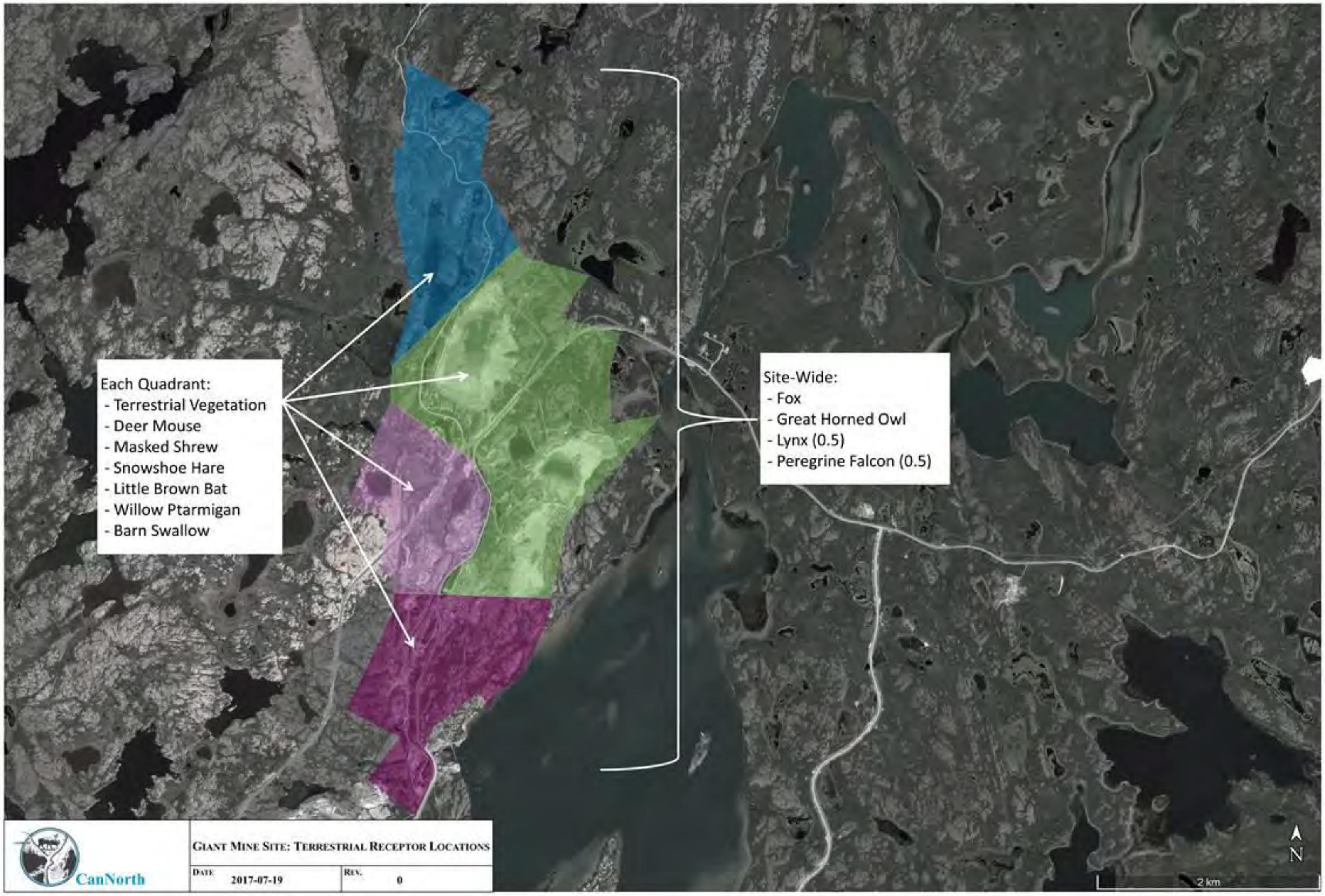


Figure 4.11 Exposure locations for terrestrial receptors



4.4.2 Exposure Point Concentrations

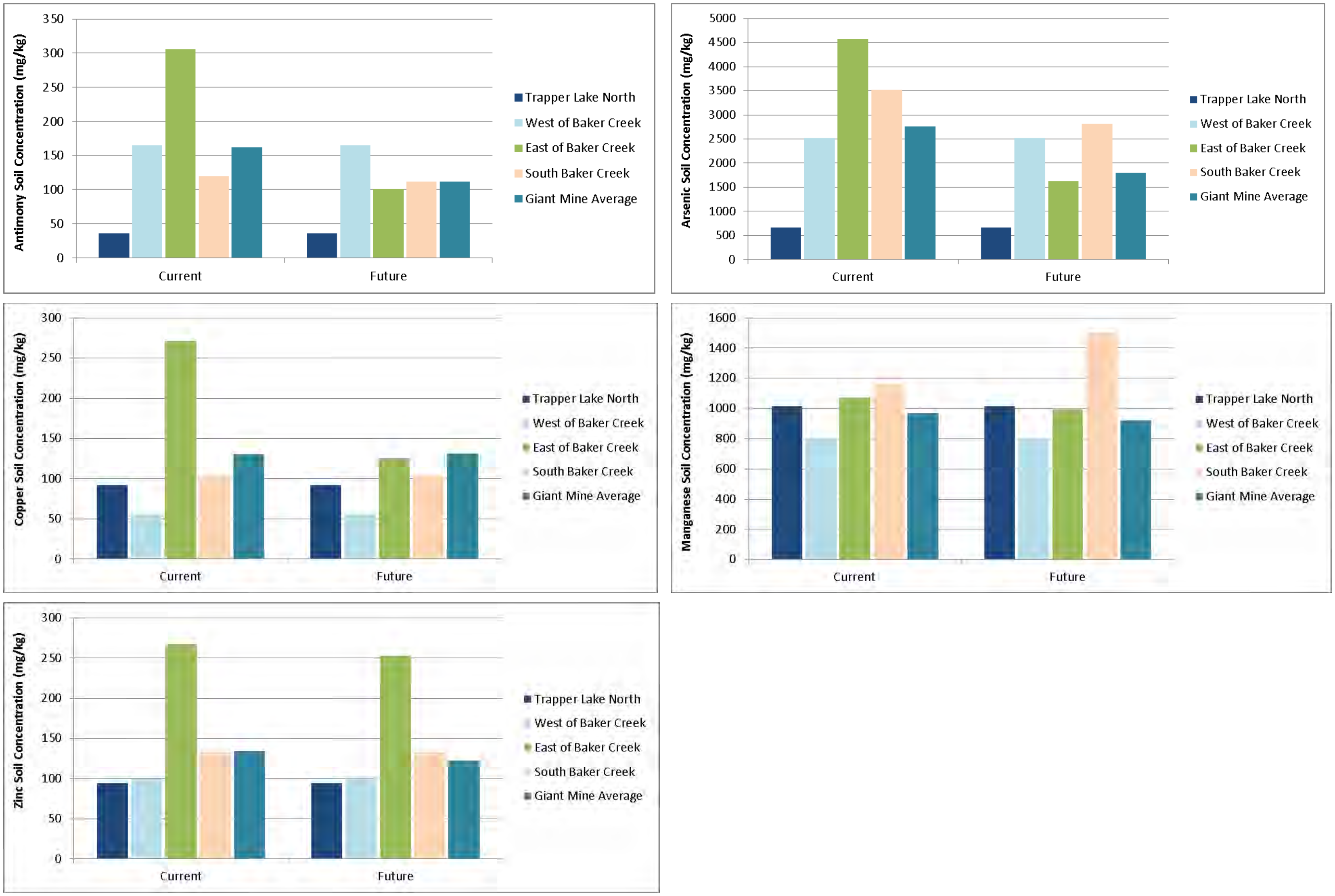
The EPCs are the concentrations of each COPC in each compartment of the environment that are used in the assessment. They are set to provide a reasonable yet cautious representation of the actual conditions in the environment that a population of receptors may experience. There is an extensive database of information that provided the basis for determining the EPCs for the ERA. However, there were some media where concentrations of COPC were estimated since measured data were not available. The setting of the EPCs is discussed in detail in subsequent sections. A full summary of all derived EPCs is provided in Appendix K.

For those combinations of receptors and COPC that were identified as a potential risk for the current scenario, the change of exposure expected as a result of the GMRP was evaluated. After the implementation of the GMRP, the concentrations in abiotic and biotic components of the environment were estimated for those COPC and receptor combinations.

4.4.2.1 Soil

The EPCs for soil taken to be representative of current conditions were derived using measured data and are summarized in Figure 4.12. Future EPCs were developed through a reanalysis of the Giant Mine data, taking into consideration the planned remediation at the site. The assumptions regarding the remediation plan were based on the results of the SDE and include covering of the tailings areas, clean up of the disturbed area soils to GNWT arsenic industrial criterion, active management of areas of extremely high arsenic around the former Mill Complex, and administrative controls. The remediation plan was discussed in Section 1.5. Soil concentrations in the four quadrants were modified based on the activities that will be undertaken in each of the quadrants. Details of the future soil concentration development are provided in Appendix K.

Figure 4.12 Soil EPCs for the Giant Mine



4.4.2.2 Surface Water and Sediment

The EPCs for surface water and sediment taken to be representative of current conditions were derived using measured data. Surface water EPCs are summarized in Figure 4.13 and Figure 4.14 for lower Baker Creek and Back Bay, respectively, while sediment EPCs are summarized in Figure 4.15 and Figure 4.16 for lower Baker Creek and Back Bay, respectively. Golder (2017) have prepared an evaluation of the loads to Baker Creek from the different areas of the Giant Mine.

The remediation plan will result in a reduction of the some of the contaminant loads to Baker Creek as there will be less contaminated runoff from the site. However, not all arsenic loads are eliminated, and there are still arsenic loads entering Baker Creek from upstream locations; these loads may be due to historical releases from the Giant Mine but will not be affected by the remediation program. Therefore, the concentrations of arsenic in Baker Creek will still be elevated in the future. As part of the remediation plan, sediment will be dredged (removed) from Reach 0 to 6 in Baker Creek; however, due to the presence of COPC in the water, the concentrations in sediment will gradually increase over time after the remediation activities have been completed. The initial conditions post-dredging are based on the information from surficial sediment in Reach 4 after re-alignment activities (Golder 2013a). Future surface water and sediment EPCs were estimated based on what is known about how contaminants currently behave. Details of the aquatic modelling are provided in Appendix K.

Figure 4.13 Surface water EPCs for lower Baker Creek segments

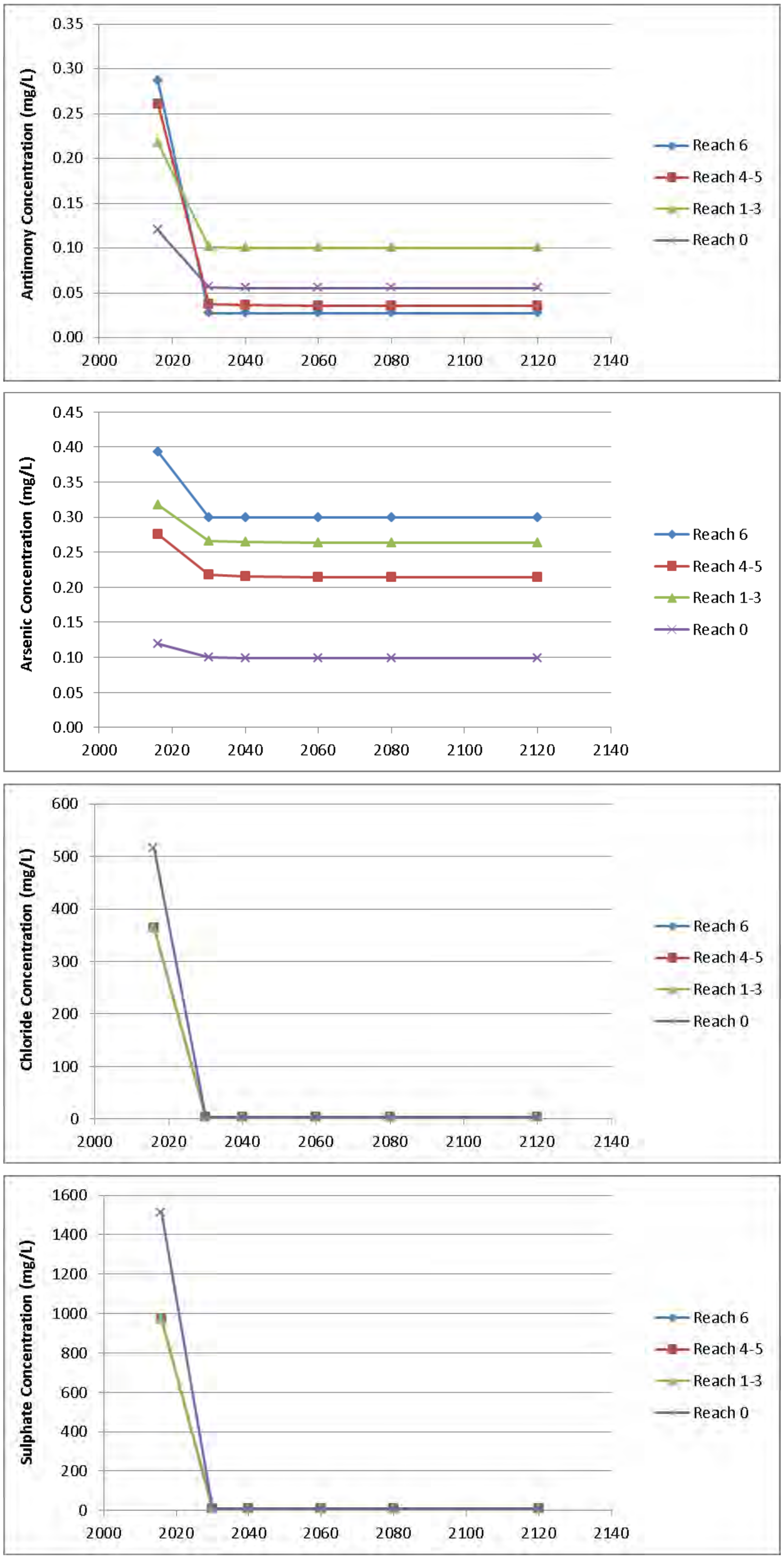


Figure 4.14 Surface water EPCs for Back Bay

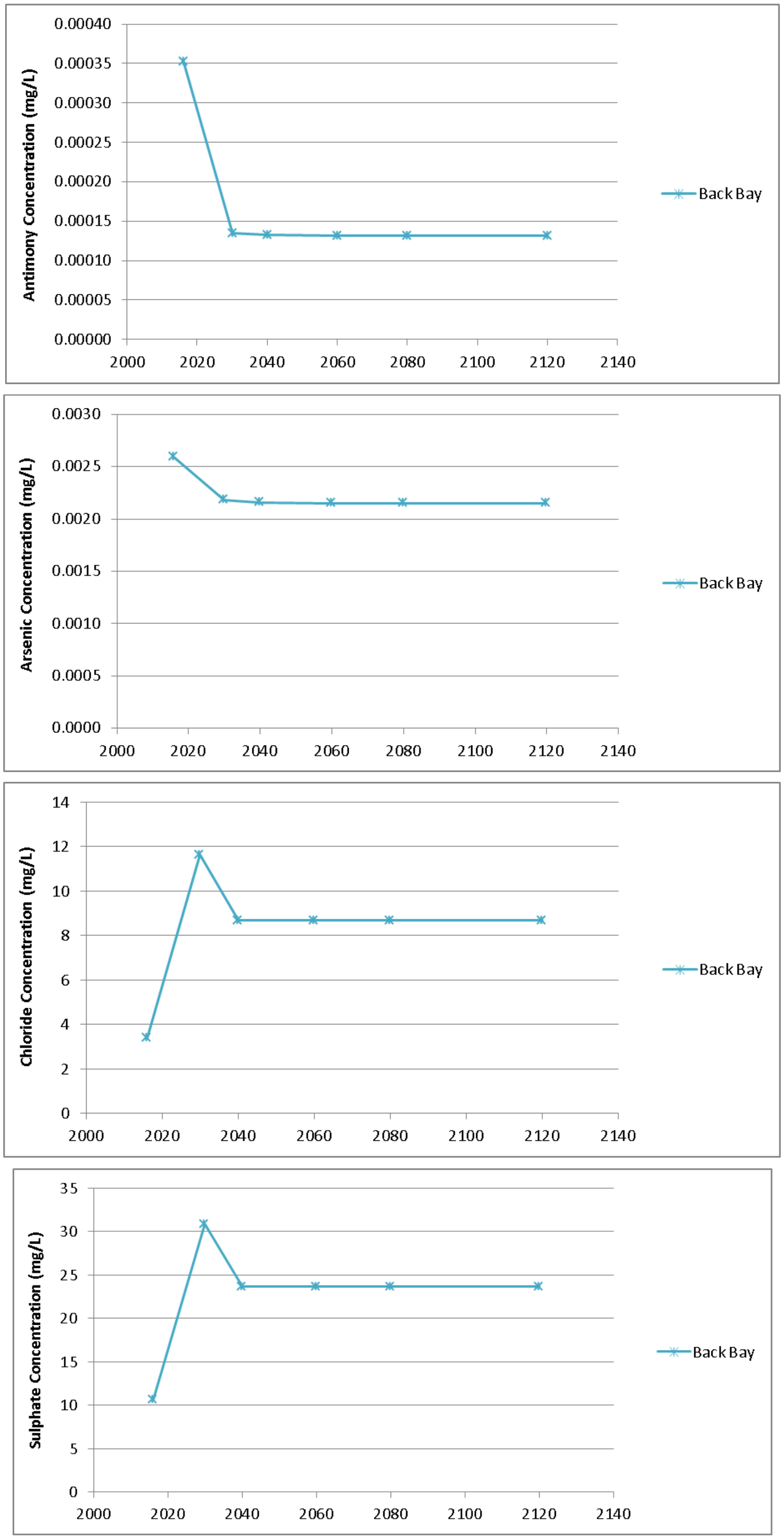
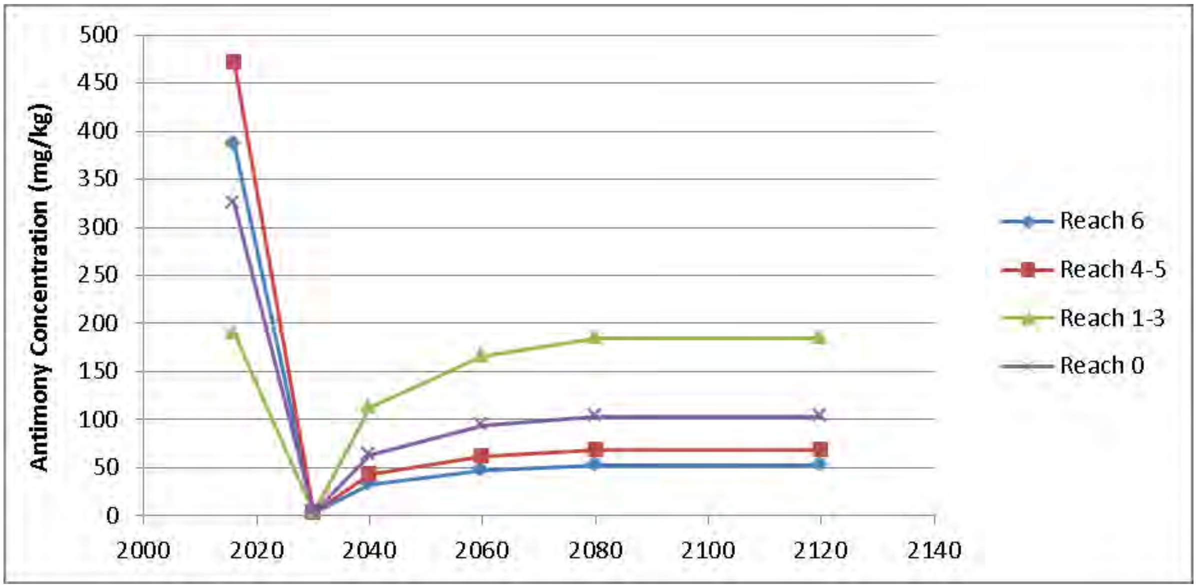


Figure 4.15 Sediment EPCs for lower Baker Creek segments



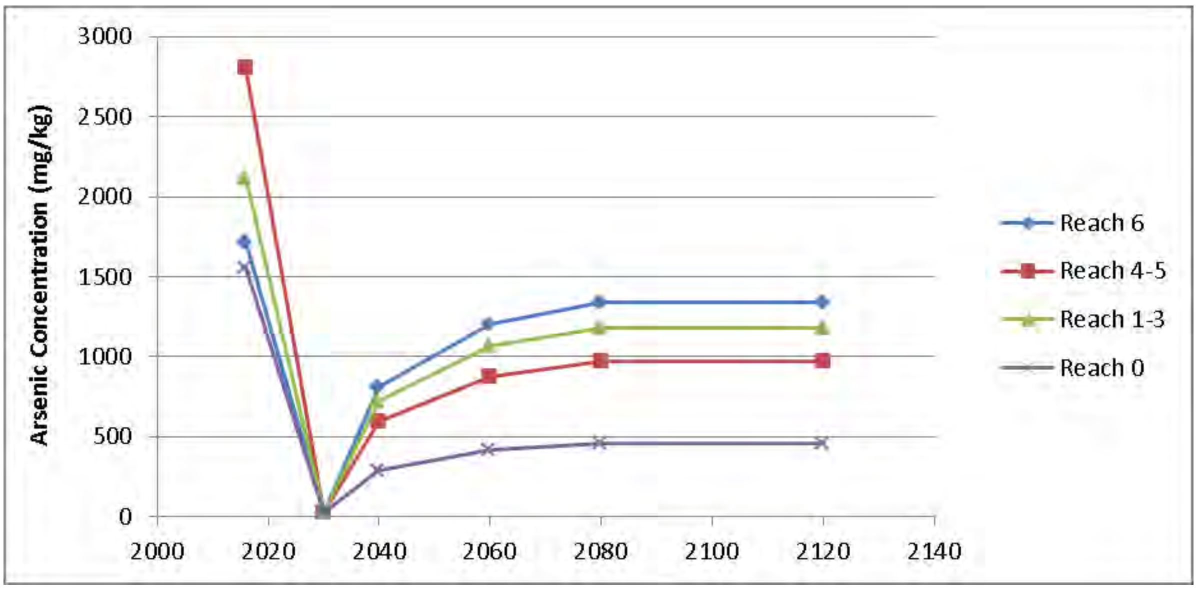
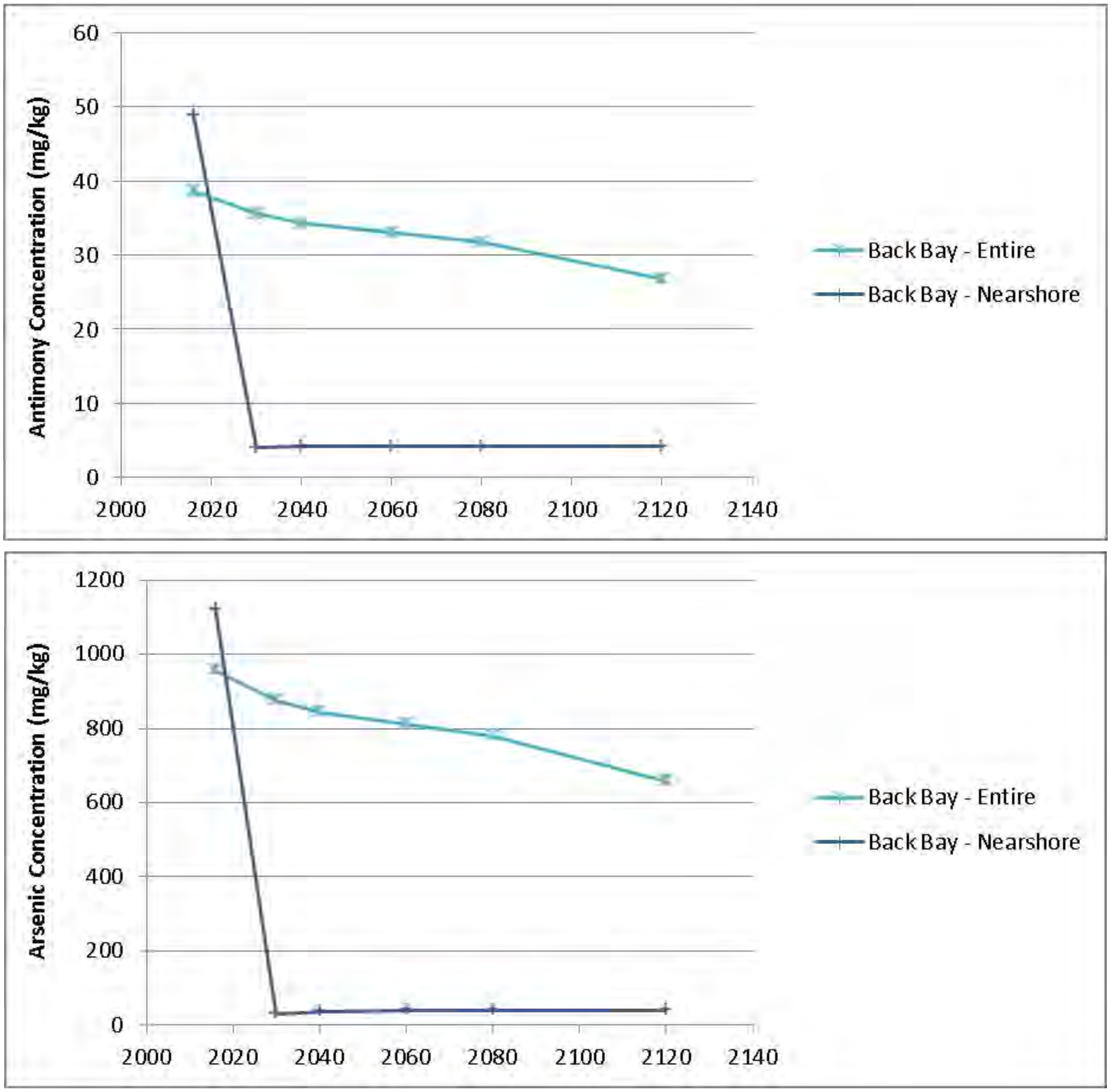


Figure 4.16 Sediment EPCs for Back Bay



4.4.2.3 Other Media

The wildlife at the site eat a range of different food items that are found at the site. For most of these environmental compartments (e.g., aquatic vegetation, terrestrial insects, hare), current and future EPCs were estimated using either site-specific transfer factors or through the use of pathways calculations and intake estimates in conjunction with feed-to-flesh transfer factors.

Transfer factors (TFs) assume that the concentration in the biota can be estimated from the concentration in the soil, water, or sediment (as appropriate). For this assessment, site-specific TFs were developed using data collected at the Giant Mine to the extent possible. Using information from the Giant Mine allows for all of the unique characteristics of the site to be included. It is important that data are collected from similar locations (i.e., soil samples collected at the same place as plants). Figure 4.17 shows how TFs were calculated. Site-specific transfer factors were derived in this way for aquatic vegetation, benthic invertebrates, fish, terrestrial vegetation, and small mammals (shrew and mouse). While there were measured data for a number of these biotic components, data were not available for some of the locations on the Giant Mine, which resulted in the need for TFs. Details regarding derivation of the site-specific TFs are provided in Appendix K.

Figure 4.17 Derivation of site-specific transfer factors

It is also necessary to estimate concentrations of wildlife that are eaten by others (i.e., both the fox and the great horned owl eat birds such as ptarmigan). For these animals, concentrations were estimated by first approximating the intakes of the COPC and then using feed-to-flesh transfer factors obtained from literature to convert the amount ingested into a flesh concentration. These trophic transfer equations and feed-to-flesh transfer factors are provided with further discussion in Appendix K.

4.4.3 Bioavailability/Bioaccessibility Assessment and Other Considerations

Bioaccessibility refers to the portion of the total amount of a chemical that can be absorbed into the bloodstream. Once the chemical reaches the bloodstream, it can be circulated to other areas of the body where it can cause a biological effect. The amount of the chemical available to be absorbed in the blood stream depends on its chemical form.

For the ERA, it was important to examine the bioaccessibility of arsenic in particular since it was the primary chemical associated with the activities at the Giant Mine and it is present in many different chemical forms (arsenopyrite, arsenic trioxide, etc.). Some of these forms can be absorbed into the bloodstream while others cannot. In this assessment, laboratory analyses of soils, sediments, fish tissue, and plants were conducted to determine the levels of arsenic that were available for exposure.

Table 4.6 summarizes the bioaccessibility values used for arsenic in the ERA. Appendix F provides a detailed discussion on all the bioaccessibility studies for various media that have been carried out as well as an analysis of the data for use in the risk assessment. Additional information on bioaccessibility is provided in Section 3.3.4.

For COPCs and media with no information on bioaccessibility (i.e., water, benthic invertebrates, aquatic vegetation, terrestrial insects, non-foliage vegetation), no adjustment for bioavailability or bioaccessibility was made (i.e., 100% was assumed). This is a conservative assumption as it assumes that the bioavailability of the COPC in the environment is the same as used in the toxicity studies, whereas, in reality, the bioavailability of the ingested COPC is generally less than this. The values used in the assessment are provided in Appendix K.

In addition to accounting for bioaccessibility, the speciation of arsenic was taken into account in the ERA. Chemicals such as arsenic are found in different forms in the environment and the different forms do not have the same toxicity. For example, in fish there are many forms of arsenic both in an inorganic and organic form. The most common organic arsenic compound in fish, arsenobetaine, can be assumed to be non-toxic (ATSDR 2007). For this reason, it is appropriate to take into account site-specific arsenobetaine concentrations when estimating arsenic intake through fish ingestion. Additional discussion on arsenobetaine is provided in Section 3.3.4. For the ERA, the arsenobetaine content in fish was taken to be between 36 and 50% depending on location; values used are shown below in Table 4.7, and additional information is provided in Appendix K.

Table 4.6 Summary of arsenic bioaccessibility assumptions for ERA

Media	Location	Bioaccessibility Assumption	Rationale	Data Reference
Sediment	Background Locations	26%	Average of 10 samples from Townsite, assume background same as Townsite.	Golder (2016g), Table 2
	Baker Creek – Reach 7 to 11	16.6%	Average of seven samples.	Golder (2015b)
	Baker Creek – Reach 0 to 6	44%	Single sample from Reach 6.	Golder (2015b)
	Back Bay	26%	Average of 10 samples from the Townsite area.	Golder (2016g), Table 2
	Baker Creek/Back Bay Combined	35%	Average of Back Bay and Baker Creek Reach 0 to 6.	-
Fish	Background Locations	62%	Average of lake whitefish, northern pike, and inconnu from background locations.	Stantec (2014d), Appendix C
	Baker Creek – Reach 7 to 11	62%	Assumed same as background.	Stantec (2014d), Appendix C
	Baker Creek – Reach 0 to 6	61%	Average of lake whitefish and northern pike from the outlet of Baker Creek.	Stantec (2014d), Appendix C
	Back Bay	68%	Average of lake whitefish and northern pike from Back Bay.	Stantec (2014d), Appendix C
	Baker Creek/Back Bay Combined	65%	Average of Back Bay and Baker Creek Reach 0 to 6.	-
Waterfowl	Background Locations	50%	Average of hare muscle from uncontaminated areas.	Koch et al. (2013)
	Back Bay	38%	Average of eight hare samples from contaminated areas.	Koch et al. (2013)
	Baker Creek/Back Bay Combined	38%	Average of Back Bay and Baker Creek Reach 0 to 6.	-
	Baker Creek – Reach 0 to 6	38%	Average of eight hare samples from contaminated areas.	Koch et al. (2013)
Soil	Background Locations	38%	Average of nine samples representative of undisturbed soils.	Golder (2016j)
	Giant Site	36%	Average of 38 samples from disturbed areas.	Golder (2016c)
	Giant Townsite	30%	Average of eight samples from the Townsite area.	Golder (2016g), Table 4
Foliage	All	34%	Average of 10 alder and cranberry leaf samples.	Golder (2016g), Table 8
Mouse/Shrew/ Hare/Ptarmigan	Background Locations	50%	Average of hare muscle from uncontaminated areas.	Koch et al. (2013)
Mouse/Shrew/ Hare/Ptarmigan	Giant Site and Townsite	38%	Average of eight hare samples from contaminated areas.	Koch et al. (2013)
Moose/Caribou	All	50%	Average of hare muscle from uncontaminated areas.	Koch et al. (2013)

Table 4.7 Summary of fish arsenobetaine assumptions for ERA

Location	Arsenobetaine Content	Rationale	Data Reference
Background Locations	36%	Average of lake whitefish, northern pike, and inconnu from background locations.	Stantec (2014d), Appendix C
Baker Creek – Reach 7 to 11	36%	Assumed same as background.	Stantec (2014d), Appendix C
Baker Creek – Reach 0 to 6	46%	Average of lake whitefish and northern pike from the outlet of Baker Creek.	Stantec (2014d), Appendix C
Back Bay	54%	Average of lake whitefish and northern pike from Back Bay.	Stantec (2014d), Appendix C
Baker Creek/Back Bay Combined	50%	Average of Back Bay and Baker Creek Reach 0 to 6.	–

4.4.4 Receptor Characterization

Aquatic and terrestrial receptors chosen for the current assessment were selected to represent a wide range of potential exposures. Receptor characteristics for wildlife selected (as outlined in Section 4.3.3) are provided in Appendix J. These characteristics include the typical body weight, the types of food receptors eat (diet), and how much food and water they would consume in a day. Where available, receptor characteristics from module 3 of the FCSAP guidance (FCSAP 2012b) were adopted for the assessment.

4.4.5 Exposure Estimation

The exposure estimation uses the EPCs in environmental media and the receptor characteristics to estimate the total intake of the COPC by the selected aquatic and ecological receptors. This is illustrated in Figure 4.18 where it shows that the total intake by a muskrat includes the amount of water, aquatic vegetation, and sediment that is consumed. Exposures due to ingestion of each dietary component, as well as water and soil or sediment, were calculated using equations provided in Appendix K. Where appropriate, background exposures were taken into account in the exposure estimates.

Figure 4.18 Estimating intakes by wildlife

For aquatic biota, intakes of arsenic and antimony were estimated using the exposure assumptions outlined above. Figure 4.19 presents a summary of the estimated current arsenic intakes for a subset of the receptors in the aquatic environment. This figure illustrates that benthic invertebrates and emergent aquatic insects are a driving factor for exposure in many receptors, while intake of soil is also a large component of intakes for the bat and swallow. Figure 4.20 presents a similar summary for a subset of the terrestrial receptors. As can be seen, this figure shows that a large portion of arsenic intake for all receptors is due to soil ingestion. The bat and swallow are assumed to ingest soil due to where they live and roost/nest; however, they were evaluated for both an aquatic diet (eating emergent aquatic insects like mosquitos) and a terrestrial diet (eating insects such as beetles). These figures provide only a summary of some of the results, estimated intakes for all receptors, locations, and COPC are provided in Appendix M.

For less complex receptors such as aquatic biota (e.g., benthic invertebrates, fish, aquatic plants) and terrestrial plants, potential effects are not based on intakes but instead are based on comparison of water, sediment, or soil concentrations to benchmarks or comparison of tissue concentrations to benchmarks, where available.

Figure 4.19 Estimated current arsenic intakes for wildlife in the aquatic environment

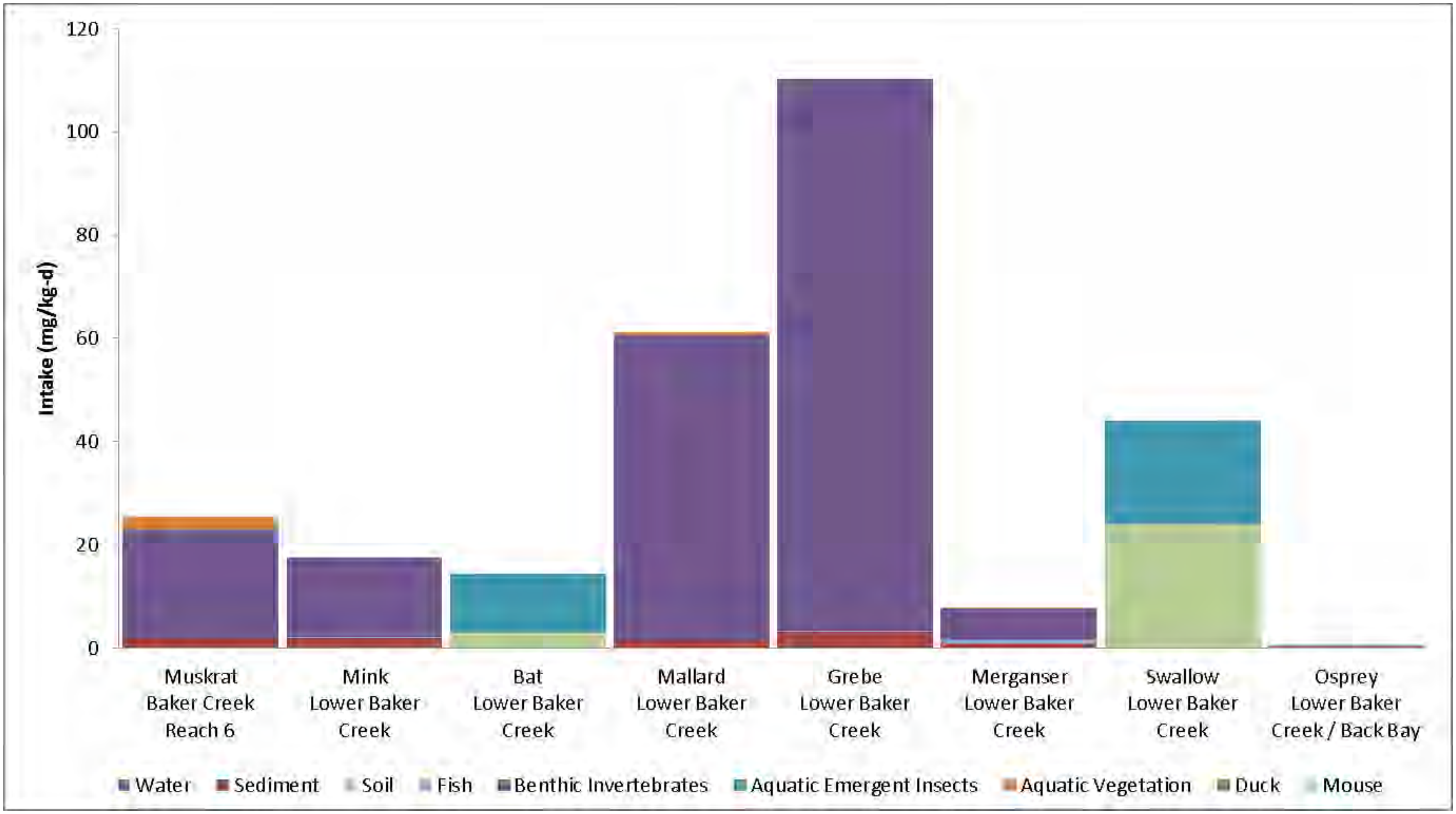
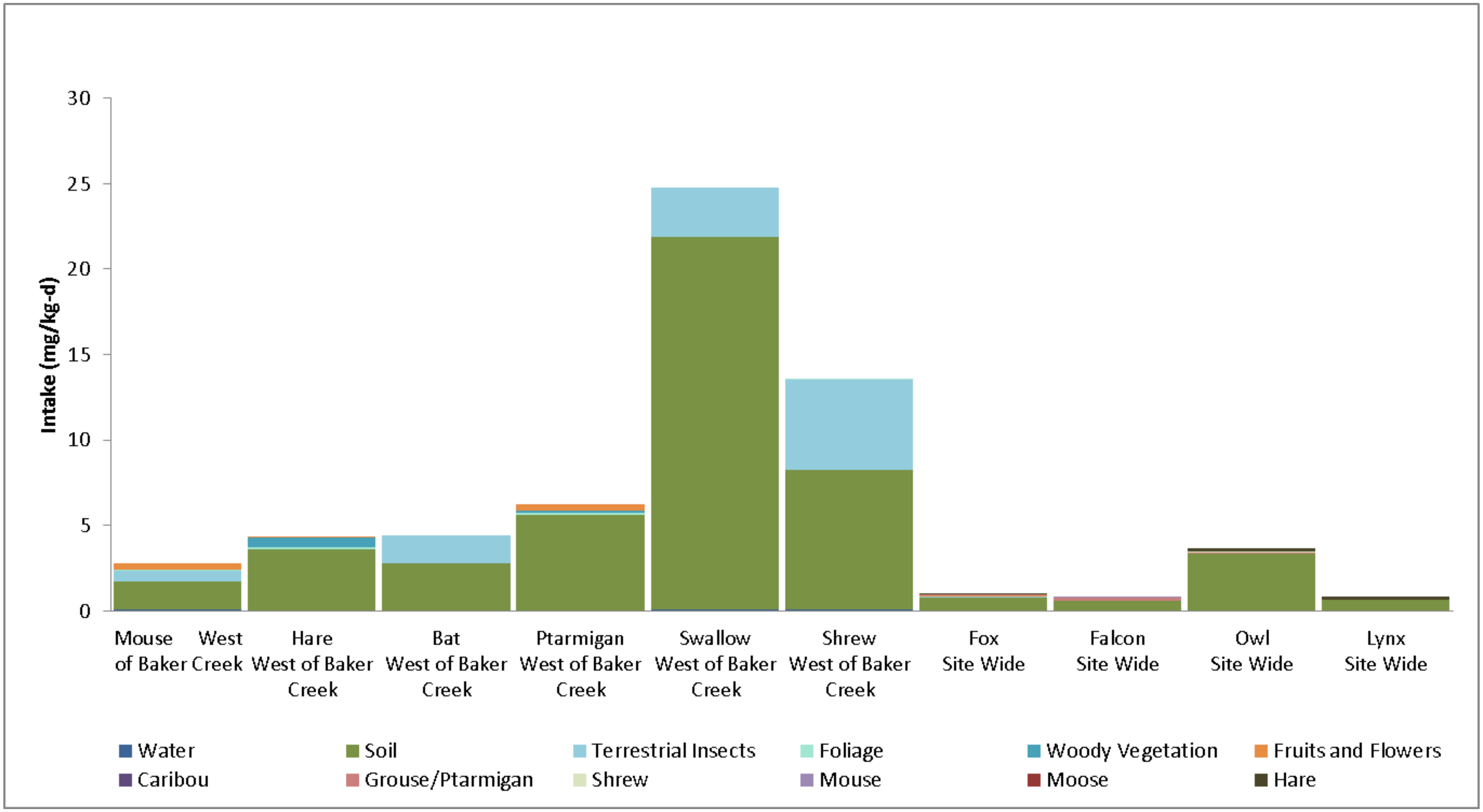


Figure 4.20 Estimated current arsenic intakes for wildlife in the terrestrial environment



4.5 Effects Assessment

4.5.1 Observed Effects (Direct Contact Pathways)

Where available, findings from studies investigating ecological community health in the Giant Mine area were examined and incorporated in the ERA as lines of evidence. These are primarily studies that were discussed as part of a previous investigation (Golder 2013a) and are largely focused on the aquatic environment surrounding the Giant Mine. Observational studies with information either about community health or comparisons to reference areas that were incorporated in the ERA include:

- benthic community observations versus reference locations;
- fish health information; and
- muskrat population density and health.

These are discussed as lines of evidence in the risk characterization (Section 4.6.1).

4.5.2 Site-Specific Thresholds (Direct Contact Pathways)

4.5.2.1 Species Sensitivity Distribution Development

Potential effects to aquatic biota (e.g., zooplankton, aquatic plants, fish) were evaluated using derived Species Sensitivity Distributions (SSDs). This approach involves reviewing aquatic biota toxicity data from reputable sources for appropriateness at this site (e.g., include information for freshwater species only) and then using the resulting dataset to statistically fit a curve, which is a representation of the toxicity of a specific COPC, to aquatic biota. This SSD approach is used by the CCME in the development of generic water quality guidelines. Thus, this approach has been adopted for the development of aquatic toxicity thresholds used in the ERA and is, therefore, supported by the CCME protocol (CCME 2007).

SSD curves were developed for antimony, arsenic, chloride, and sulphate and are presented below. As sulphate toxicity has been found to be dependent on the hardness of the water, SSD curves were developed for sulphate to span different ranges of hardness. Full details regarding the development of these curves as well as the full datasets are provided in Appendix L.

Figure 4.21 Antimony SSD for aquatic toxicity

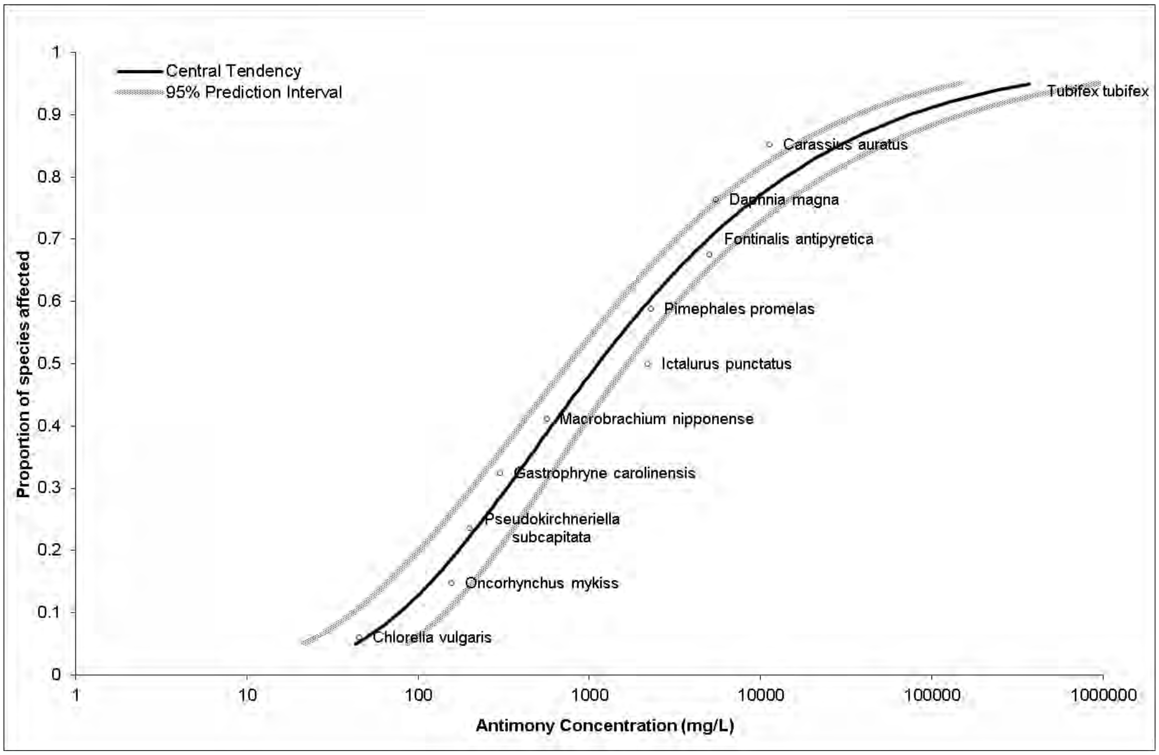


Figure 4.22 Arsenic SSD for aquatic toxicity

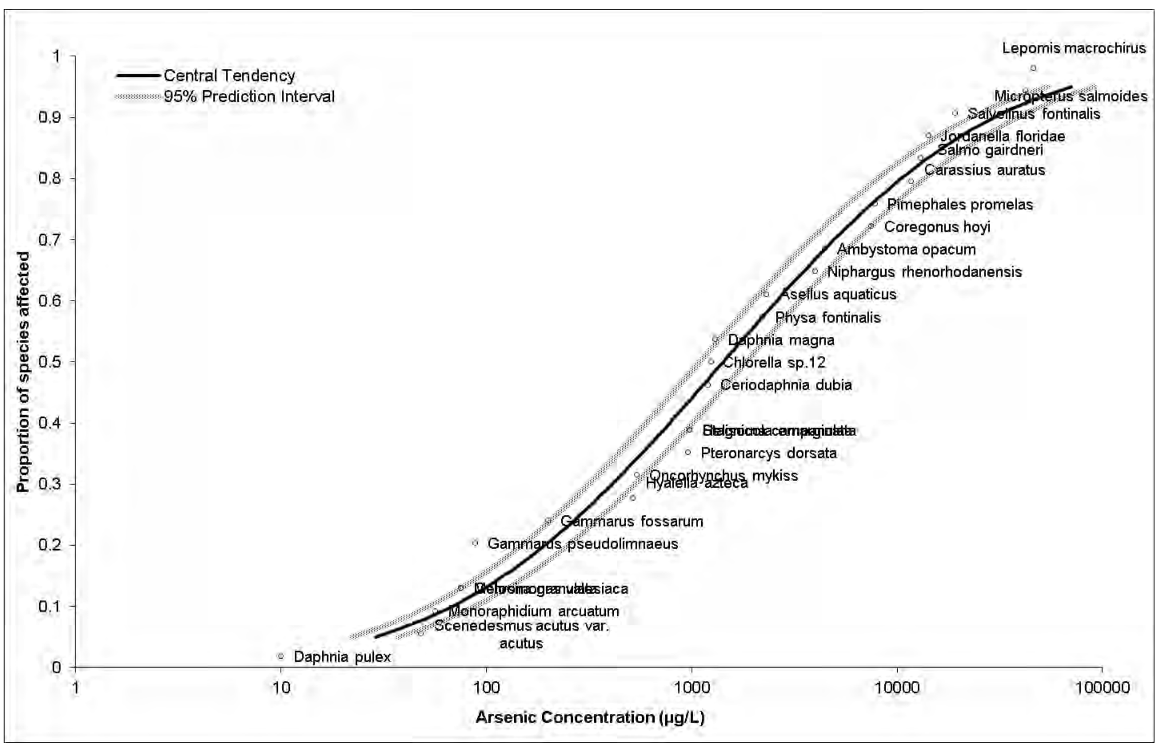


Figure 4.23 Chloride SSD for aquatic toxicity

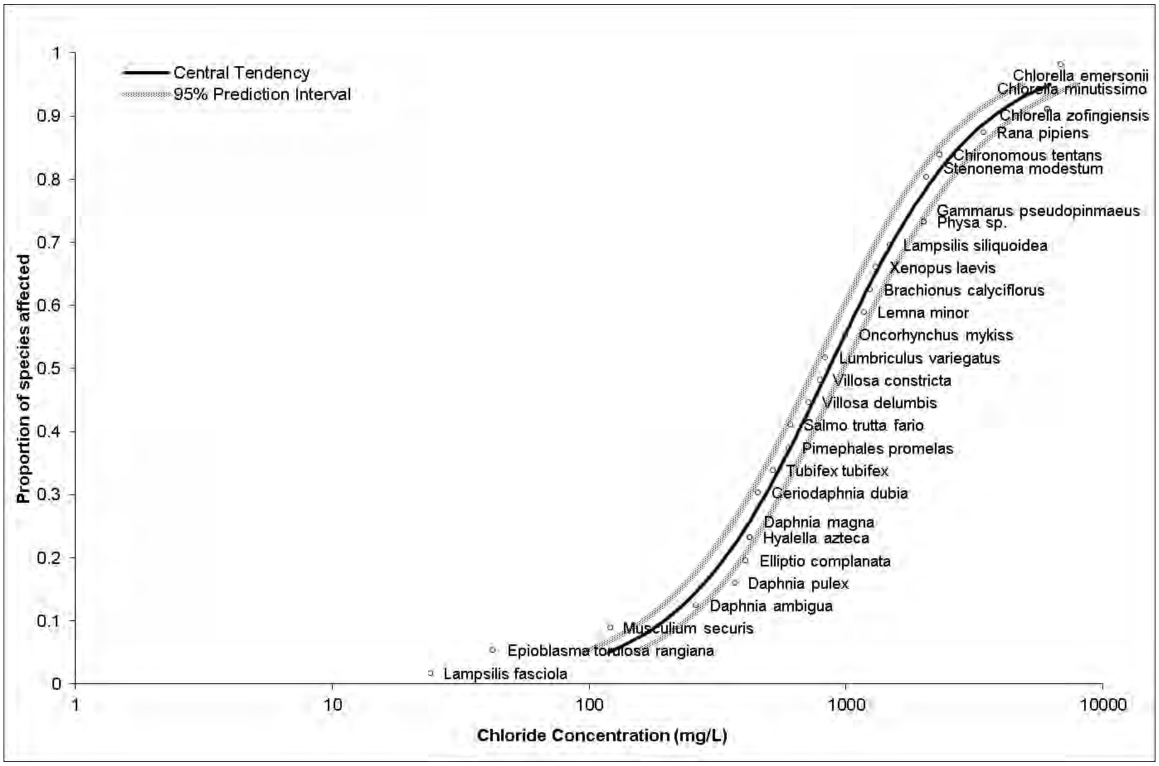
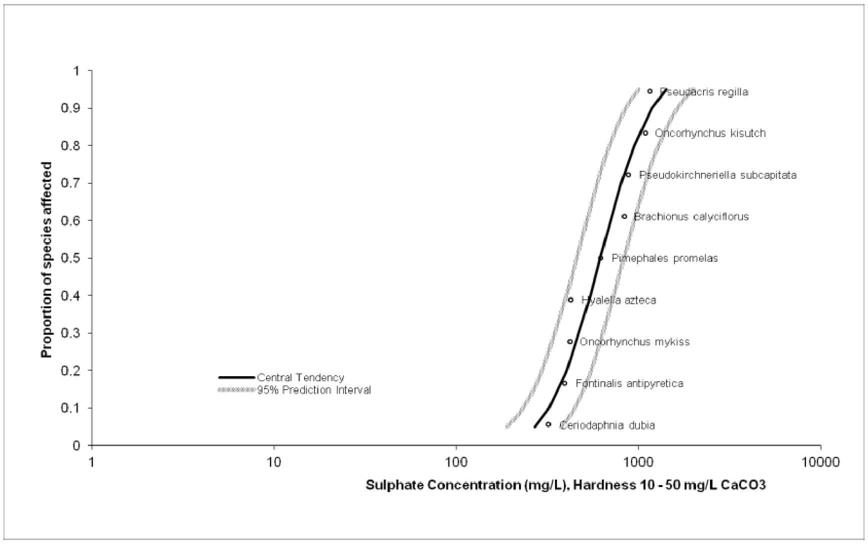
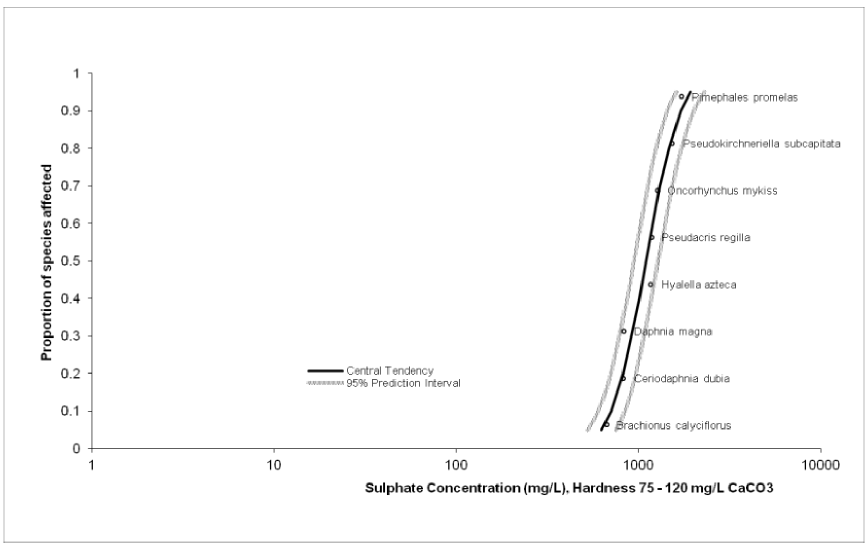
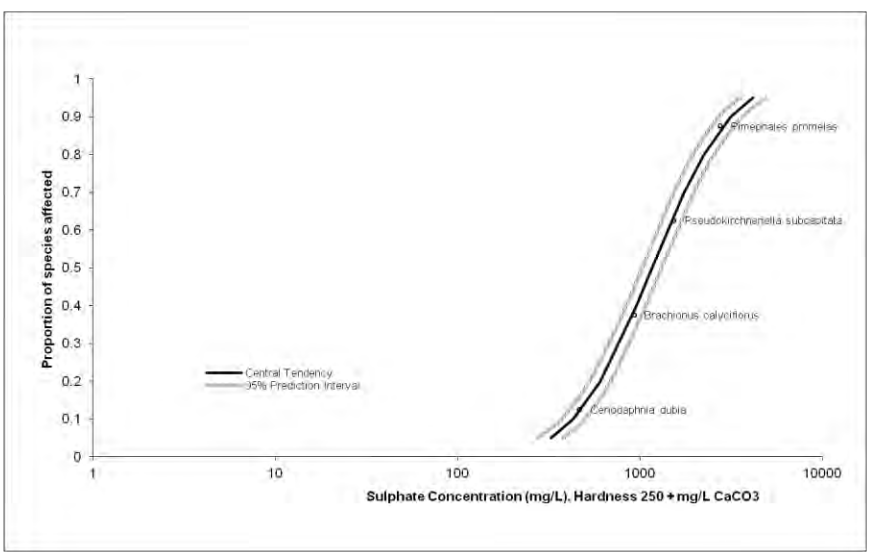


Figure 4.24 Sulphate SSD for aquatic toxicity







4.5.2.2 Site-Specific Toxicity Testing

As part of a previous study conducted by Golder (2013a), acute and chronic toxicity tests were performed on four water samples: three from Baker Creek and one from the Yellowknife River reference location. The tests included:

- acute toxicity with juvenile Rainbow trout (*Oncorhynchus mykiss*) according to Method EPS 1/RM/13 (EC 2000a). The test duration of 96h and survival was the endpoint measured (96-h LC50);
- acute toxicity with water flea (*Daphnia magna*) according to Method EPS 1/RM/14 (EC 2000b). The test duration of 48 h and survival was the endpoint measured (48-h LC50);
- chronic toxicity with water flea (*Ceriodaphnia dubia*) according to Method EPS 1/RM/21 (EC 2007a). The test duration was approximately 7 days and survival and reproduction were the endpoints measured (LC25, LC50, IC25, IC50); and
- chronic toxicity with an algae (*Pseudokirchneriella subcapitata*) according to Method EPS 1/RM/25 (EC 2007b). The test duration was approximately 72 hours and growth inhibition was the endpoint measured (IC25, IC50).

In addition, Golder (2013a) collected sediment sampling for toxicity testing included the following:

- 14 day toxicity with crustacean *Hyalella azteca* according to EPS 1/RM/33 (EC 1997a) methods. Survival and growth were the endpoints measured.
- 10 day toxicity with midge *Chironomus tentans* according to EPS 1/RM/32 (EC 1997b) methods. Survival and growth were the endpoints measured.

The results for each sediment from the exposure station was compared to the average response from the Yellowknife River reference station to determine whether <20% or >50% adverse effects were observed per the FCSAP aquatic sites framework (Golder 2013a).

A full discussion of the sample handing, results, and QA are presented in by Golder (2013a). The results of the toxicity test are summarized as one of the lines of evidence in the risk characterization section.

4.5.3 Toxicity Reference Values for Plants and Wildlife

Toxicity reference values (TRVs) are defined as an exposure concentration or dose for a COPC that is not expected to cause an unacceptable level of effect in a receptor.

4.5.3.1 Dose-Based TRVs for Wildlife

The TRVs selected for comparison to the intake calculated for wildlife are presented in Table 4.8, while the selection of these values is detailed in Appendix L. When available, the values were selected from Environment Canada's FCSAP guidance (FCSAP 2015b) and were otherwise derived in a similar manner for COPC not included in the FCSAP guidance. Environment Canada generally selected values from the U.S. EPA Eco-SSL documents or from Quebec documents (CEAEQ). It should be noted that the FCSAP guidance document is a draft report and the TRVs were provided by ECCC for use on this project; this information should not be used on a wider basis until the guidance document has been finalized. The TRVs were derived from toxicological endpoints of survival, growth, and reproduction.

Table 4.8 Summary of default wildlife toxicity reference values

COPC	Mammals			Birds		
	TRV (mg/kg-d)	Endpoint	Source	TRV (mg/kg-d)	Endpoint	Source
Antimony	0.059	Reproduction	Eco-SSL (U.S. EPA 2005a)	No data		
Arsenic [a]	1.04	Growth	Eco-SSL (U.S. EPA 2005b)	4.4	Growth	CEAEQ (2012)
Copper [a]	5.6	Growth and survival	Eco-SSL (U.S. EPA 2007a)	4.5	Reproduction	CEAEQ (2012)
Manganese	51.5	Growth and Reproduction	Eco-SSL (U.S. EPA 2007b)	179	Growth and Reproduction	Eco-SSL (U.S. EPA 2007b)
Zinc [a]	75.4	Growth and reproduction	Eco-SSL (U.S. EPA 2007c)	66.1	Growth and reproduction	Eco-SSL (U.S. EPA 2007c)

Source: a – EC (2015b) Module 7 – Default wildlife Toxicity Reference Values (TRVs).

4.5.3.2 Tissue Benchmarks for Wildlife and Plants

In addition to selected dose-based TRVs, tissue benchmarks derived specifically as indicators of either no or lowest effects levels were also used, as available, with measured data from the Giant Mine to evaluate population health of a number of species. This approach was taken for fish, small mammals, and terrestrial plant foliage. Available benchmarks for these media are presented in this section; further discussion regarding sources of these values is presented in Appendix L.

Table 4.9 Tissue benchmarks selected for evaluation of fish

COPC	NOEC	LOEC
	mg/kg ww	
Antimony	5	9
Arsenic	1.5	2

Notes: NOEC – No Observed Effects Concentration; LOEC – Lowest Observed Effects Concentration.
Benchmarks apply to whole fish and were obtained from CH2MHill (2015).

Table 4.10 Terrestrial plant phytotoxic levels

COPC	Phytotoxic Leaf Concentration [a] mg/kg dw
Antimony	150
Arsenic	3-26
Copper	20-100
Manganese	40-1,000
Zinc	100-1,500

Notes: Ranges based on Davis et al. (1978), McBride (1994), Langmuir et al. (2004), and Kabata-Pendias (2011).

Table 4.11 Tissue benchmarks selected for evaluation of small terrestrial mammals

COPC	Toxic Tissue Concentration mg/kg ww
Arsenic	6 - 28 liver 5 - 26 kidney
Copper	690 liver 23 kidney

Notes: Information was not available for antimony, manganese or zinc.
Source: Puls (1994).

4.6 Risk Characterization

Risk characterization is the process of estimating the potential for an adverse effect on populations of ecological receptors based on the information obtained from the exposure and effects assessments. The risk characterization for the ERA is discussed in the following sections; more detailed results are provided in Appendix M.

The risk characterization uses the extensive data collected from the Giant Mine on soil, water, and sediment, as well as other information, relying mostly on recently collected information but also considering older information where appropriate. The strengths and weaknesses of the different sources of information used in the ERA are discussed.

4.6.1 Weight of Evidence Evaluation

The WOE approach taken in characterizing potential risks within the ERA involved drawing from all available information. For each of the assessment endpoints (e.g., benthic invertebrates, fish, terrestrial wildlife), the available Lines of Evidence (LOE) were evaluated and considered together, including information on the strengths and weaknesses of the various pieces of information in order to form a conclusion on the potential impact.

The assessment of potential effects on aquatic biota is discussed in Section 4.6.1.1; the information in this section was used as a LOE to support the assessment of the selected populations of aquatic biota (Sections 4.6.1.3 and 4.6.1.4). The assessment endpoints in the terrestrial environment are discussed in Sections 4.6.1.6 and 4.6.1.7.

4.6.1.1 Aquatic Biota

The assessment of potential effects on aquatic biota involved the development of SSDs for antimony, arsenic, chloride, and sulphate. These SSD curves integrate toxicity information, obtained from a review of the scientific literature, on a range of aquatic biota and are used to support the assessment of different communities. The SSD curves are presented in this section and referenced as a LOE where appropriate.

The complete comparison of current and predicted water quality to the derived SSD curves is presented in Appendix M; a few examples are presented here for illustration.

In general, it is expected that average conditions across Back Bay (both current and future) pose low risk to aquatic biota. This is illustrated in Figure 4.25 where the surface water EPCs developed for Back Bay are well below the SSD-derived 95% protection level. Similar trends are seen for antimony, chloride, and sulphate.

This is not the case, however, for surface water levels in lower Baker Creek; the following examples are provided for a sub-set of the Baker Creek segments.

Current chloride and sulphate concentrations in all segments of lower Baker Creek are predicted to be above levels protective of 80% of species due to the discharge from the effluent treatment plant; however, in the future, chloride and sulphate concentrations in lower Baker Creek are predicted to drop well below the 95% protection level (see Figure 4.26 for chloride in Baker Creek Reach 0). This is due to the fact that the discharge from the effluent treatment plant will be relocated to the mouth of Baker Creek.

For antimony, current conditions in Reach 1-3, Reach 4-5, and in Baker Pond (Reach 6) are all above the 80% protection level concentration and levels in Reach 0 are above the 90% protection level. This means that there is a potential for 10 to 20% of aquatic species present to be affected. While antimony levels are expected to fall in the future, concentrations in Reach 1-3 are expected to remain above the 90% protection level and levels in Reach 0 are expected to remain above the 95% protection level. This is shown in Figure 4.27 for antimony in Baker Creek Reach 1-3.

Figure 4.25 SSD curve for current and future conditions – arsenic in Back Bay

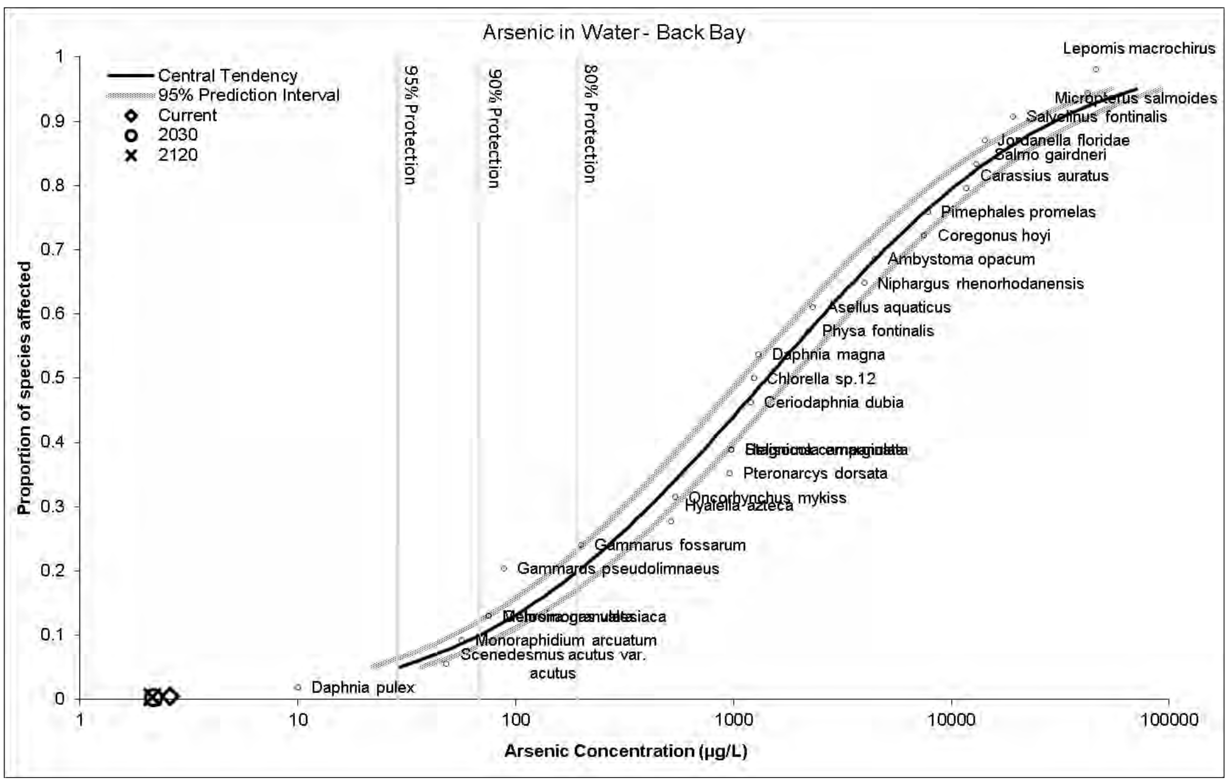


Figure 4.26 SSD curve for current and future conditions – chloride in Baker Creek Reach 0

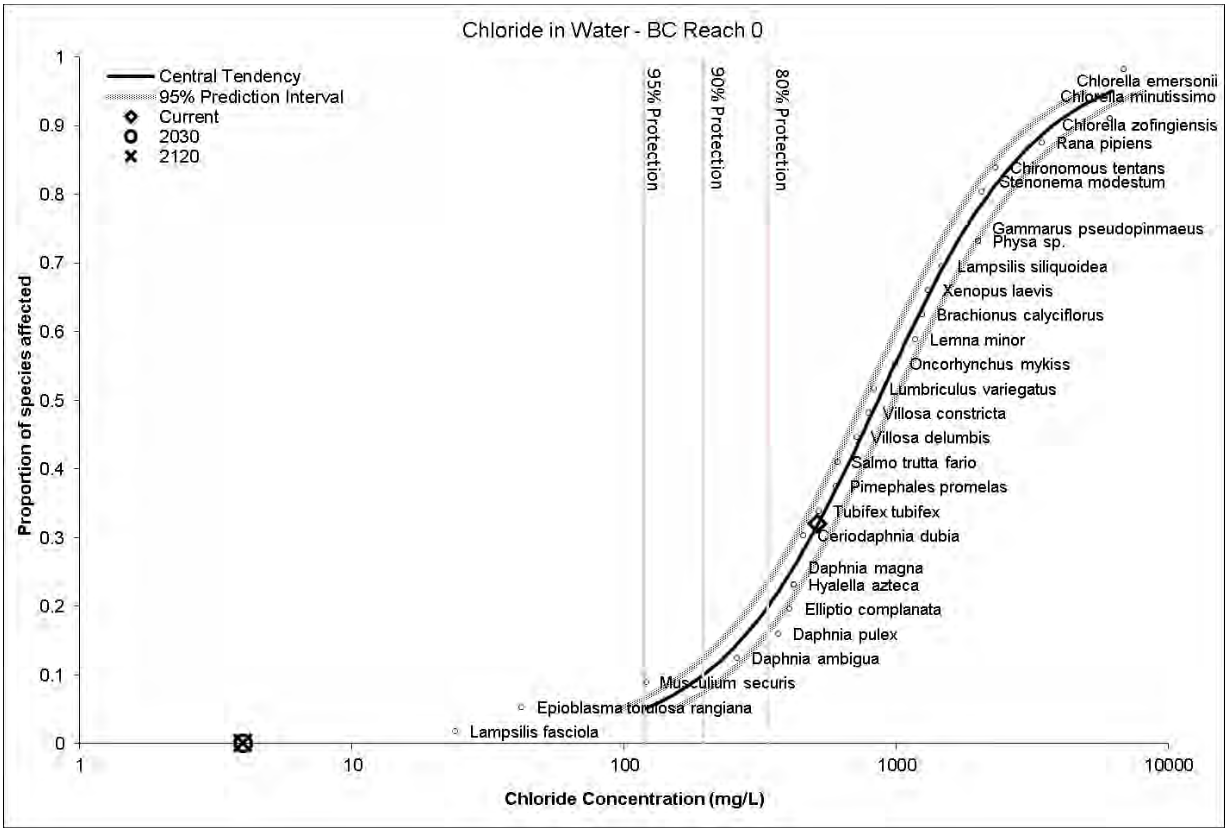
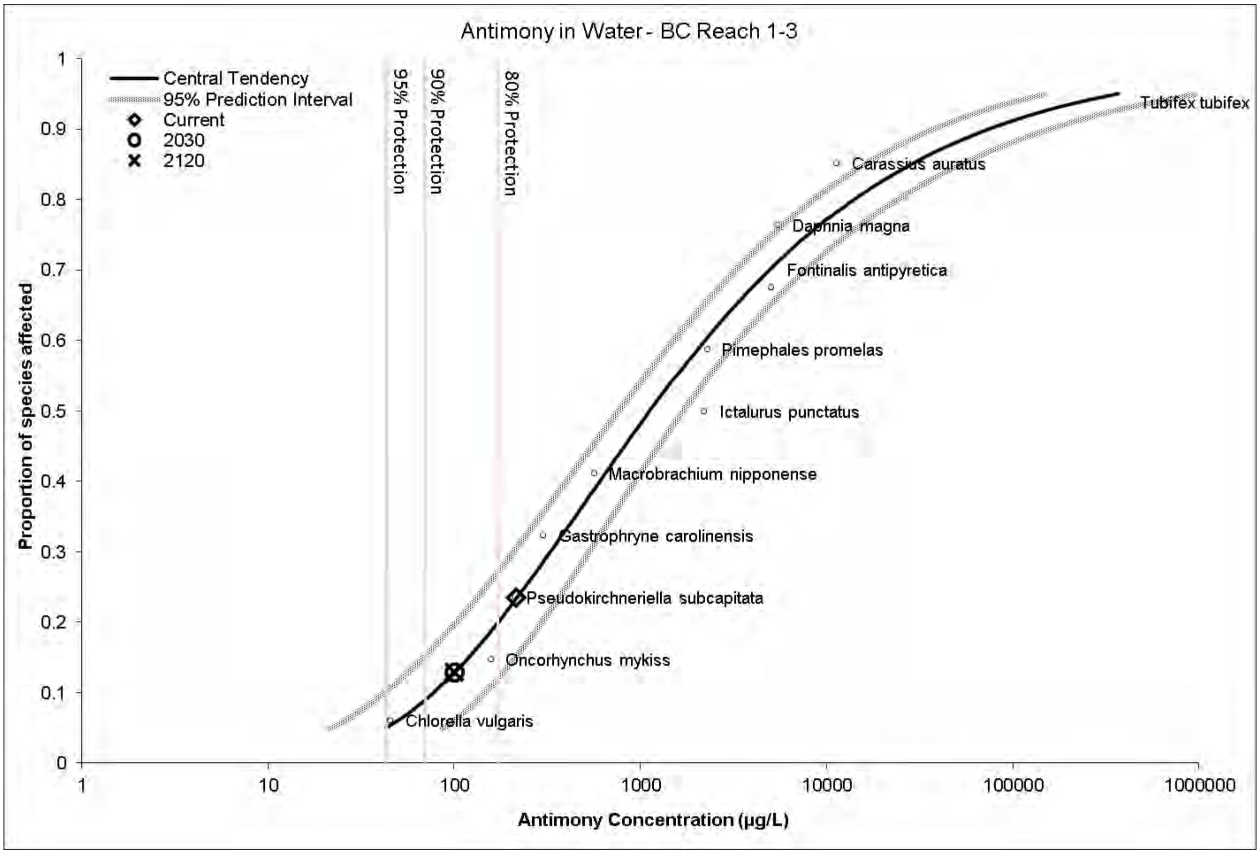


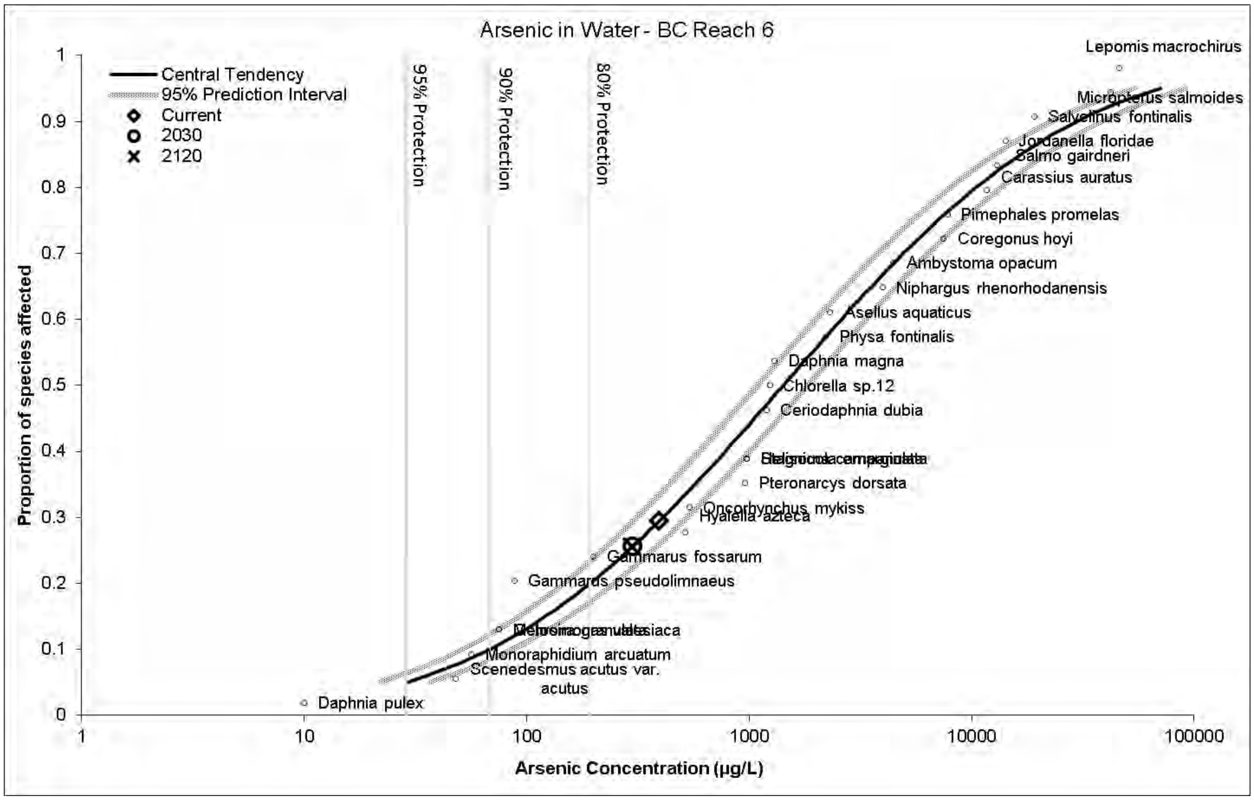
Figure 4.27 SSD curve for current and future conditions – antimony in Baker Creek Reach 1-3



Similar to antimony, current arsenic levels in lower Baker Creek are above the 80% protection level in Reach 1-3, Reach 4-5, and Reach 6 with conditions in Reach 0 that are above the 90% protection level. This indicates there is a potential for 10% to 20% of aquatic biota to be affected. It should be noted that conditions in Upper Baker Creek (Reach 7-11) are above the derived 95% protection level as well.

While arsenic concentrations in the surface water of lower Baker Creek are predicted to decrease in the future, it is expected that concentrations in Reach 1-3, Reach 4-5, and Reach 6 will remain above the 80% protection level, and concentrations in Reach 0 will remain above the 90% protection level. This is illustrated below in Figure 4.28 for arsenic in Baker Creek Reach 6.

Figure 4.28 SSD curve for current and future conditions – arsenic in Baker Creek Reach 6



4.6.1.2 Benthic Invertebrate Community

The WOE evaluation for benthic invertebrates in Baker Creek relies extensively on the results of an assessment conducted by Golder (2013a). This assessment studied the health of the benthic community integrating information on sediment concentrations, sediment toxicity, and benthic invertebrate community composition (abundance, taxonomic richness, and evenness).

Sediment Chemistry

One of the LOEs is a comparison of the sediment chemistry with the appropriate benchmarks; this is shown in Table 4.12 for Baker Creek and Table 4.13 for Back Bay / North Yellowknife Bay. The comparisons shown in this table are based on the current measured data.

It can be seen that the concentrations of several metals in the sediments in Baker Creek are well above the guideline values. In lower Baker Creek (Reach 0-6), cadmium, chromium, and mercury are typically between the ISQG and the PEL, while the other COPC are generally above both benchmarks. In the Upper Baker Creek (Reach 7-11), arsenic has been identified as a potential concern. Although chromium in sediments has also been highlighted, the concentrations are consistent throughout all of Baker Creek and are close to background (as seen in Table 4.13).

Table 4.12 Comparison of sediment concentrations in Baker Creek to guidelines

COPC	Unit	Guideline (mg/kg) [a]		Exposure Point Concentration (mg/kg) [b]				
		ISQG	PEL	Reach 0	Reach 1-3	Reach 4-5	Reach 6 [c]	Baseline Baker Creek (Reach 7-11)
Arsenic	mg/kg	5.9	17	**1555**	**2114**	**2803**	**1716**	**183**
Cadmium	mg/kg	0.6	3.5	0.94	1.4	**4.3**	1.9	0.13
Chromium	mg/kg	37.3	90	43	47	47	54	41
Copper	mg/kg	35.7	197	**1078**	**225**	**1044**	**1142**	17
Lead	mg/kg	35	91.3	**92**	**253**	**1415**	**253**	6.7
Mercury	mg/kg	0.17	0.486	0.18	0.19	0.42	0.23	0.05
Zinc	mg/kg	123	315	**250**	311	**806**	**508**	42

Note:
Although antimony is a COPC in sediment there were no guidelines available for comparison
a – Sediment quality guidelines for the protection of freshwater aquatic life for long-term exposure from the Canadian Council of Ministers of the Environment (CCME 2017). ISQG – Interim Sediment Quality Guideline; PEL – Probable Effects Level.
b – Except where noted the EPC is the 95% UCLM of data collected from various reaches (number of samples range from 10 to 27 in the segment). Includes surficial data collected in 2013, 2014, 2015, 2016; see Appendix K for more detail.
c – Due to limited data in Reach 6 (N=8), the EPC is represented by the estimated 95th percentile.
Values that are above the ISQG are highlighted and values that are also above the PEL are shown in bold.

Table 4.13 Comparison of sediment concentrations in Yellowknife Bay to guidelines

COPC	Unit	Guideline		Exposure Point Concentration (mg/kg)	
		ISQG	PEL	Back Bay / North Yellowknife Bay[b]	Background[c]
Arsenic	mg/kg	5.9	17	**1071**	**27**
Chromium	mg/kg	37.3	90	44	48
Copper	mg/kg	35.7	197	97	40

Note:
Although antimony is a COPC in sediment there were no guidelines available for comparison
a – Sediment quality guidelines for the protection of freshwater aquatic life for long-term exposure from the Canadian Council of Ministers of the Environment (CCME 2017). ISQG – Interim Sediment Quality Guideline, PEL – Probable Effects Level.
b – 95% UCLM of data collected from Back Bay and North Yellowknife Bay (N=50).
c – Average of 5 samples from south Yellowknife Bay (near Horseshoe Island), see Appendix K for more detail.
Values that are above the ISQG are highlighted and values that are also above the PEL are shown in bold.

Sediment concentrations in Yellowknife Bay are elevated above sediment quality guidelines, particularly for arsenic where the concentration exceeds both the ISQG and PEL. Although chromium levels are above the ISQG, the concentrations are close to background. Similarly, copper in sediments is present at levels between the ISQG and PEL in Yellowknife Bay and background locations.

During remediation, the sediments in Baker Creek will be dredged and the sediment quality immediately post remediation will be much improved. As discussed in Section 4.4.2.2, as the water will still contain elevated levels of COPC, in particular arsenic, the sediment concentrations will increase over time. The upstream Baker Creek results are taken to be a reasonable expectation of the potential future conditions expected in lower Baker Creek. The sediment quality in this segment meets the guidelines for all COPC, with the exception of arsenic and chromium, although chromium is at background levels.

Although there is some remediation planned for sediment along the shore near the Giant Mine, this activity has little impact on the expected future sediment concentrations in Yellowknife Bay. However, as the water concentrations in Back Bay / North Yellowknife Bay are low (Figure 4.14), sediment quality is expected to improve slowly over time (as shown in Figure 4.16). The figure shows that even though sediment concentrations will improve over time, they will still remain above sediment quality guidelines and background concentrations for an extended period of time.

Benthic Community

A survey of the benthic community was undertaken as part of a previous study (Golder 2013a). Samples were collected from Baker Creek and the Yellowknife River reference location and organisms were identified to the lowest practical taxonomic level and counted. Density, abundance, and Simpson's evenness index were used to characterize the community. In addition, spatial trends in abundances of invertebrates in the Ephemeroptera, Plecoptera, and Trichoptera (EPT) orders were evaluated as they usually represent the most sensitive component of the benthic community (Golder 2013a). Analysis of depositional benthic invertebrate community identified no obvious differences among benthic invertebrate communities in Baker Creek and the Yellowknife River. Relative densities of major taxonomic groups were highly variable among stations in Baker Creek. All stations had benthic communities dominated by a few taxa. Regression analysis revealed that evenness reflected variation in habitat features rather than sediment COPC concentrations. Overall, the magnitude of the effect of elevated sediment COPC concentrations in Baker Creek sediments on depositional benthic invertebrates was qualitatively described as low (Golder 2013a). Benthic invertebrate communities in erosional habitats of Baker Creek exhibited differences from communities in similar habitats in the Yellowknife River. The erosional benthic invertebrate community within Baker Creek appears to reflect exposure to COPCs from treated effluent rather than historical sediment contamination (Golder 2013a).

These results provide information on the recent to current conditions in Baker Creek. The GMRP will have a significant and substantial impact on the benthic community after dredging occurs. The dredging of Baker Creek will remove the sediment, and it will take a substantial amount of time for habitat to be re-established. It is expected that the habitat will be different from the current situation. Additionally, it is expected that there will be substantial changes to the benthic community as a result of the water treatment plant effluent discharge relocation, as sections of Baker Creek will likely dry out for extended periods in the summer, which will affect the benthic community. Based on these observations, it is difficult to determine the conditions of the benthic communities in Baker Creek in the future.

A survey of the benthic invertebrate community of Yellowknife Bay was conducted in 2013 (Stantec 2014c). It was found that the benthic invertebrate community was variable across the study area. Benthic invertebrate abundance, biomass, richness, diversity, and evenness indicated a relatively diverse benthic community that was typically dominated by a few taxa. Within the near-field area, the benthic community was diverse and generally comprised many different taxa, although the community was dominated by only a few species of amphipods and bivalves. Within the Historical Foreshore Tailings sites and at the downstream reference, diversity was the lowest among sample groups and all sites were dominated by chironomids. This difference in community was attributed to differences in benthic habitat. There was a moderate dissimilarity in the benthic invertebrate community throughout the study area, which was attributed to the noted difference in benthic habitat between sites. It is not expected that these conditions will change substantially in the near future.

Benthic Tissue

As part of a previous study on Baker Creek (Golder 2013a), the chemistry of depositional invertebrate tissues from Baker Creek was compared to those in Yellowknife River. The assessment found that arsenic and antimony from 21 samples from Reach 0 to 6 on Baker Creek were frequently present at concentrations more than 10 times the Yellowknife

River reference mean. In addition, antimony and arsenic were elevated in Upper Baker Creek, with arsenic being over 10 times the reference mean.

Using the Upper Baker Creek station as a surrogate for future conditions, it is predicted that arsenic and antimony will continue to be present at elevated concentrations in invertebrate tissue.

Sediment Toxicity

As part of a previous study on Baker Creek (Golder 2013a), toxicity tests (described in Section 4.5.2.2) were performed on sediment samples from 17 locations in Baker Creek as well as the Yellowknife River reference location. The results of the individual toxicity tests were integrated into a single measure of sediment toxicity as summarized in Table 4.14.

Table 4.14 Summary of results of sediment toxicity testing

Baker Creek Reach Segment	Station	Adverse effects related to sediment toxicity are:
Reach 0	BCSS-DEP-01 BCSS-DEP-03	Possible, but likely limited in magnitude
Reach 1-3	BCSS-DEP-04 BCSS-DEP-08	Probable
	BCSS-DEP-06	Possible
	BCSS-DEP-07	Possible, but likely limited in magnitude
	BCSS-DEP-10	Not anticipated
Reach 4-5	BCSS-DEP-15	Probable
	BCSS-DEP-13	Possible
	BCSS-DEP-11	Possible but likely limited in magnitude
	BCSS-DEP-12 BCSS-DEP-14	Not anticipated
Reach 6	BCSS-DEP-18 BCSS-DEP-20 BCSS-DEP-21	Probable
	BCSS-DEP-19	Possible
Upper Baker Creek	BCSS-DEP-11	Possible but likely limited in magnitude

Source: Golder (2013a).

These toxicity tests provide information on the current conditions of Baker Creek. The GMRP will have a significant and substantial impact on the sediment. Dredging of Baker Creek will remove the sediment and it will take time for deposition to re-establish a sediment layer that can support benthic invertebrates. Once this occurs, the sediment will contain elevated concentrations of COPC, as the water in Baker Creek will still have elevated concentrations of arsenic in particular (Section 4.4.2.2). Using current conditions at Upper Baker Creek as a surrogate for the conditions in lower Baker Creek, it is expected that adverse effects are possible but likely limited in magnitude.

Summary

Table 4.15 summarizes the information from the individual LOEs into an overall WOE evaluation for current conditions. For the assessment of Baker Creek, Golder (2013a) assigned minimal weight to the sediment chemistry LOE since the presence of contaminants in the environment does not necessarily imply an adverse ecological effect. The benthic community LOE was assigned more weight than the sediment toxicity results, as the survey had good spatial coverage of Baker Creek and provides information about actual conditions in the creek with respect to benthic community structure. Similarly, more weight was given to the results of the benthic invertebrate community survey in Yellowknife Bay (Stantec 2014c) in the assessment of potential impacts in this area.

Table 4.15 Summary of assessment of benthic invertebrate community – current

Assessment Endpoint	Line of Evidence	Measurement Endpoint
Maintenance of the health and ecological integrity of the benthic invertebrate community.	Sediment chemistry	There are exceedances of sediment benchmarks (both ISQG and PEL) through lower Baker Creek for multiple COPC. The sediment in Yellowknife Bay is elevated compared to background and exceeds sediment benchmarks, although only arsenic exceeds both the ISQG and PEL.
	Benthic community	Benthic invertebrate communities in depositional areas of Baker Creek were no different than the reference area. Impacts of elevated sediment COPC concentrations in Baker Creek sediments on depositional benthic invertebrates can be qualitatively described as low. Benthic invertebrate communities in erosional habitats of Baker Creek exhibit differences from communities in similar habitats in the Yellowknife River. The benthic community of Yellowknife Bay is variable and reflects a relatively diverse benthic community but typically dominated by a few taxa. The difference in community composition was attributed to differences in benthic habitat.
	Benthic tissue concentrations	Concentrations of arsenic and antimony in benthic invertebrate tissue from Baker Creek have been measured at more than 10 times that from the reference location.
	Sediment toxicity	The results of the toxicity testing in Baker Creek show that effects on benthic invertebrates can range from none anticipated (3/17 locations) to probable (6/17 locations).
Overall Assessment: Benthic invertebrates were observed at all stations within Baker Creek, even those where sediment contaminant concentrations were elevated and laboratory sediment toxicity tests results indicated lethality. There were no obvious major differences among (bottom-dwelling) invertebrate communities in Baker Creek and the Yellowknife River. There was however only sporadic occurrence of mayflies in Baker Creek compared to their consistent presence in the Yellowknife River. Overall, the magnitude of the effect of elevated sediment COPC concentrations in Baker Creek on depositional benthic invertebrates can be qualitatively described as low. Benthic invertebrate communities in erosional habitats of Baker Creek do exhibit differences from communities in similar habitats in the Yellowknife River. Despite some elevated concentrations in sediment of Back Bay / North Yellowknife Bay, the benthic community of Yellowknife Bay is variable and reflects a relatively diverse benthic community but typically dominated by a few taxa. The difference in community composition was attributed to differences in benthic habitat.		

Note: Assessment of conditions in Baker Creek is largely obtained from Golder (2013a); see Appendix A for additional detail.

Table 4.16 provides a summary of the expected conditions in the future. As this is a predictive assessment, the LOEs rely on anticipated changes from the GMRP and uses the existing information from the site, particularly from the upper reaches of Baker Creek.

Table 4.16 Summary of assessment of benthic invertebrate community - future

Assessment Endpoint	Line of Evidence	Measurement Endpoint
Maintenance of the health and ecological integrity of the benthic invertebrate community	Sediment Chemistry	With the exception of arsenic, the expected future sediment quality in Baker Creek was taken equal to the current data for Reach 7-11. This data indicates that sediment quality in Baker Creek will be expected to meet guidelines or be close to background. Arsenic concentrations are expected to rise above the sediment quality guidelines with time after dredging. The sediment concentrations in Yellowknife Bay are expected to improve over time, but arsenic concentrations will be elevated for a significant period of time.
	Benthic community	There is expected to be significant and substantial impact on the benthic community after the GMRP due to changes in the habitat (from dredging) and changes in flow (may be periods of time during the summer that the creek is dry). It is uncertain what the benthic community will be in the future.
	Benthic tissue concentrations	It is expected that concentrations of arsenic and antimony in benthic invertebrate tissue will continue to be elevated due to remaining elevated COPC concentrations in the sediment.
	Sediment toxicity	Once the sediment layer is re-established in Baker Creek, it is expected that adverse effects on benthic invertebrates are possible but likely limited in magnitude.
Overall Assessment: The GMRP is expected to have a significant impact on benthic invertebrates. Once the community in Baker Creek has re-established, it is possible that there will be some minor effects in invertebrates in erosional habitats, but significant impacts on the benthic invertebrate community from the presence of COPC in sediment are not expected. The benthic community will be affected due to changes in the habitat (from dredging) and changes in flow within Baker Creek (may be periods of time during the summer that the creek is dry). The conditions in Yellowknife Bay are expected to improve over time, albeit slowly. The benthic invertebrate community does not appear to be affected by COPC in sediment, and, therefore, the benthic community is not expected to change with the implementation of the GMRP outside of the limited areas near the Giant Mine where sediment remediation is planned.		

4.6.1.3 Water Column Organisms

The WOE evaluation for water column organisms relies, in part, on the results of an assessment conducted by Golder (2013a). This assessment studied the health of water column organisms, integrating information on water concentrations, periphyton concentrations, and water toxicity testing. These individual LOEs are discussed in this section.

Water Chemistry

The evaluation of potential impacts on water column organisms were based on the comparison of water chemistry to the SSD curves (Section 4.6.1.1). Currently, chloride and sulphate concentrations in all segments of lower Baker Creek may be affecting aquatic biota; however, in the future, chloride and sulphate concentrations in lower Baker Creek are predicted to drop to well below the 95% protection level. For antimony and arsenic, there may be impacts on some aquatic biota, and although this expected to improve in the future, some minor changes to the composition in aquatic biota in Baker Creek may occur. Some of the more sensitive species for exposure to arsenic and sulphate are water column organisms.

Currently, the water quality in Back Bay meets water quality guidelines, and no effects on aquatic organisms are expected. Part of the GMRP will entail moving the effluent treatment plant discharge to Back Bay (Yellowknife Bay in the vicinity of the outlet of Baker Creek). This source to the environment was included in the assessment, and water concentrations were estimated (Section 4.4.2.2). The water quality in Back Bay is expected to meet water quality guidelines, and no effects on aquatic biota are expected (Section 4.6.1.1).

Periphyton Tissue Chemistry

As part of a previous study on Baker Creek (Golder 2013a), the chemistry of periphyton tissues from Baker Creek was compared to those in Yellowknife River. The assessment found that arsenic and antimony from 12 samples from Reach 0 to 5 on Baker Creek were consistently present at concentrations more than 10 times the Yellowknife River reference mean.

In the future, there will be improvement to the water quality (Section 4.4.2.2); however, it is expected that arsenic and antimony will continue to be present at elevated concentrations in periphyton tissue.

Water Toxicity Testing

As part of a previous study on Baker Creek (Golder 2013a), acute and chronic toxicity tests (described in Section 4.5.2.2) were performed on four water samples: three from Baker Creek and one from the Yellowknife River reference location.

None of the Baker Creek water samples were acutely toxic to juvenile rainbow trout or *Daphnia magna*. Neither the upstream Baker Creek water sample (station SNP 43-11 from Reach 7) nor the Yellowknife River reference sample demonstrated chronic toxicity to *Ceriodaphnia dubia* or *Pseudokirchneriella subcapitata*. However, the sample from the outlet of Baker Pond (Reach 6) demonstrated adverse effects in the chronic toxicity test with reduced *Ceriodaphnia* reproduction and inhibition of algal growth. In addition, the sample from the mouth of Baker Creek (Reach 0, SNP 43-5) demonstrated inhibition of algal growth.

These toxicity tests provide information on the current conditions. In the future, water quality for arsenic is expected to improve slightly, while more significant improvements are predicted for antimony, chloride, and sulphate. This will have an effect on the toxicity to water column organisms. The information from the upstream Baker Creek location suggests that there should not be significant toxicity to water column organisms in the future.

Summary

Table 4.17 summarizes the information from the individual LOEs into an overall WOE evaluation. The information on periphyton concentrations provides insight into the bioaccumulation but does not in itself help the decision on potential impacts. The water chemistry and toxicity testing were both considered in the overall WOE and had consistent conclusions regarding the potential for an impact.

Table 4.18 provides a summary of the expected conditions in the future. As this is a predictive assessment, the LOEs rely on estimated concentrations from modelling and considered the existing information from the site, particularly from the upper reaches of Baker Creek.

Table 4.17 Summary of assessment of water column organisms - current

Assessment Endpoint	Line of Evidence	Measurement Endpoint
Maintenance of the health and ecological integrity of the water column organisms.	Water Chemistry	Comparing the water chemistry to toxicity of aquatic biota, there are potential impacts due to the presence of elevated levels of chloride, sulphate, antimony, and arsenic. Water column organisms appear sensitive to the presence of sulphate and arsenic.
	Periphyton concentrations	Concentrations of arsenic and antimony in periphyton have been measured at more than 10 times that from the reference location.
	Water toxicity	Toxicity tests conducted on Baker Creek indicate reduced *Ceriodaphnia* reproduction and inhibition of algal growth.
Overall Assessment: It is expected that water column organisms (invertebrates and algae) in Baker Creek are currently being affected by the presence of COPC in the water. The potential for an effect is limited to Baker Creek, as no adverse effects are expected in Yellowknife Bay.		

Table 4.18 Summary of assessment of water column organisms - future

Assessment Endpoint	Line of Evidence	Measurement Endpoint
Maintenance of the health and ecological integrity of the water column organisms.	Water Chemistry	The concentrations of all COPC are expected to improve with the implementation of the GMRP. Comparing the water chemistry to toxicity of aquatic biota, there is the potential for some minor effects due to the presence of elevated levels of antimony and arsenic. Water column organisms appear sensitive to the presence of arsenic.
	Periphyton concentrations	Concentrations of arsenic and antimony in periphyton are expected to remain elevated.
	Water toxicity	Using upstream Baker Creek as a surrogate for future conditions, toxicity to water column organisms is not expected.
Overall Assessment: With the implementation of the GMRP the conditions in Baker Creek are expected to improve. There is the potential for some effects due to the presence of antimony and arsenic but this is expected to be minor. There are no potential effects expected in Yellowknife Bay, including consideration of moving the effluent release to Yellowknife Bay near the vicinity of the outlet of Baker Creek.		

4.6.1.4 Fish

The WOE evaluation for fish is based on comparison of water concentrations and fish tissue concentrations to appropriate benchmarks, as well as information on fish health.

Water Chemistry

The assessment of potential impacts on water column organisms is based on the comparison of water chemistry to the SSD curves (Section 4.6.1.1). Currently, chloride and sulphate concentrations in all segments of lower Baker Creek may be affecting aquatic biota (although the concentrations are below levels expected to impact fish). In the future, chloride and sulphate concentrations in lower Baker Creek are predicted to drop to well below the 95% protection level for all aquatic biota. For antimony and arsenic, there may be impacts on some aquatic biota; although the potential for an effect is expected to improve in the future, some minor changes to the composition in aquatic biota in Baker Creek may occur. Some of the more sensitive species for exposure to antimony are fish.

Currently, the water quality in Back Bay meets water quality guidelines, and no effects on fish are expected. Part of the GMRP will result in the effluent treatment plant discharge being moved to Back Bay (Yellowknife Bay in the vicinity of the outlet of Baker Creek). This source to the environment, along with continued discharge from Baker Creek, was included in the estimate of future water concentrations (Section 4.4.2.2). The water quality in Back Bay is expected to continue to meet water quality guidelines, and no effects on fish are expected (Section 4.6.1.1).

Fish Tissue Chemistry

The measured antimony and arsenic concentrations in fish tissues are compared to fish tissue benchmarks. The information for arctic grayling is provided in Table 4.19, ninespine stickleback is in Table 4.20, and slimy sculpin is in Table 4.21. These tables indicate that the highest concentrations were measured in arctic grayling followed by slimy sculpin. Slimy sculpin are present in Baker Creek all through the year, so higher concentrations in this fish compared to ninespine stickleback, which are only present in the summer, is expected (Golder 2013a). A separate study measured arsenic in eight lake whitefish from Baker Pond and the muscle was found to have an average of 0.57 mg/kg ww (Cott et al. 2016). It should be noted that the database of fish tissue concentrations from Baker Creek is limited.

Table 4.19 Comparison of measured arctic grayling arsenic and antimony concentrations to available benchmarks – current – Baker Creek

COPC	Fish Tissue Benchmark [a]		Measured Whole Body Arctic Grayling Summary Statistics							
	NOEC	LOEC	N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile
	mg/kg ww									
Antimony	5	9	4	0	0.50	0.62	0.55	0.05	0.55	0.61
Arsenic	1.5	2	4	0	**7.5**	**16**	**12**	3.6	**12**	**16**

Note: Summary of measured data from arctic grayling obtained from Reach 0 and 1 (Golder 2013a).
a – Fish tissue benchmarks obtained from CH2MHill (2015).
Values that are above the NOEC are highlighted and values that are also above the LOEC are shown in bold.

Table 4.20 Comparison of measured ninespine stickleback arsenic and antimony concentrations to available benchmarks – current – Baker Creek

COPC	Fish Tissue Benchmark [a]		Measured Whole Body Ninespine Stickleback Summary Statistics							
	NOEC	LOEC	N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile
	mg/kg ww									
Antimony	5	9	4	0	0.04	0.08	0.06	0.02	0.06	0.08
Arsenic	1.5	2	4	0	0.74	1.6	1.0	0.39	0.97	1.5

Note: Summary of measured data from ninespine stickleback obtained from Reach 0 and 1 (Golder 2013a).
a – Fish tissue benchmarks obtained from CH2MHill (2015).
Values that are above the NOEC are highlighted and values that are also above the LOEC are shown in bold.

Table 4.21 Comparison of measured slimy sculpin concentrations to available benchmarks – current – Baker Creek

COPC	Fish Tissue Benchmark [a]		Measured Whole Body Slimy Sculpin Summary Statistics							
	NOEC	LOEC	N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile
	mg/kg ww									
Antimony	5	9	4	0	0.17	0.23	0.21	0.03	0.21	0.23
Arsenic	1.5	2	4	0	**2.4**	**2.7**	**2.6**	0.13	**2.5**	**2.7**

Note: Summary of measured data from ninespine stickleback obtained from Reach 0 and 1 (Golder 2013a).
a – Fish tissue benchmarks obtained from CH2MHill (2015).
Values that are above the NOEC are highlighted and values that are also above the LOEC are shown in bold.

In arctic grayling and slimy sculpin, arsenic concentrations are at levels where effects may occur. Only the maximum measured concentration of ninespine stickleback is above the No Observed Effect Concentration (NOEC), so effects on these small fish are not expected.

A comparison was also completed for potential future fish tissue concentrations (see Appendix K for the estimation approach) as shown in Table 4.22. It is noted that these fish concentrations are based on all resident fish species. This comparison shows that, due to the presence of elevated levels of arsenic, there is the potential for fish effects throughout lower Baker Creek, although to a lesser degree in Reach 0.

Table 4.22 Comparison of predicted 2120 fish concentrations to available benchmarks

COPC	Fish Tissue Benchmark [a]		Baker Creek Reach 0	Baker Creek Reach 1-3	Baker Creek Reach 4-5	Baker Creek Reach 6
	NOEC	LOEC				
	mg/kg ww					
Antimony	5	9	0.16	0.28	0.10	0.08
Arsenic	1.5	2	1.9	**5.0**	**4.1**	**5.7**

Note: Predicted concentrations (see Appendix K).
a – Fish tissue benchmarks obtained from CH2MHill (2015).
Values that are above the NOEC are highlighted and values that are also above the LOEC are shown in bold.

There is information on flesh from large-bodied fish obtained from Baker Creek including northern pike (N=10), lake whitefish (N=31), and burbot (N=2). The tissue benchmarks provided are for whole fish, so they do not directly apply; however, it is noted that, while arsenic levels in lake whitefish are all below the fish tissue benchmark, arsenic levels in burbot and northern pike exceeded the NOEC and Lowest Observed Effect Concentration (LOEC) in several samples.

Mercury was identified as a COPC in sediment. Mercury has the potential to be converted to methylmercury in sediment and then biomagnify through the aquatic food chain, resulting in the highest concentrations in the upper level predatory aquatic receptors (i.e., fish such as northern pike). To examine this potential, the concentration of mercury in fish tissue in Baker Creek was compared to information from background locations and Yellowknife Bay as shown in Figure 4.29 for lake whitefish and Figure 4.30 for northern pike. This comparison shows that the mercury levels in fish tissue in Baker Creek are similar to those found in other locations and, therefore, the elevated mercury in sediment is not resulting in increased concentrations in fish.

Figure 4.29 Comparison of mercury in lake whitefish from Baker Creek to background and Yellowknife Bay

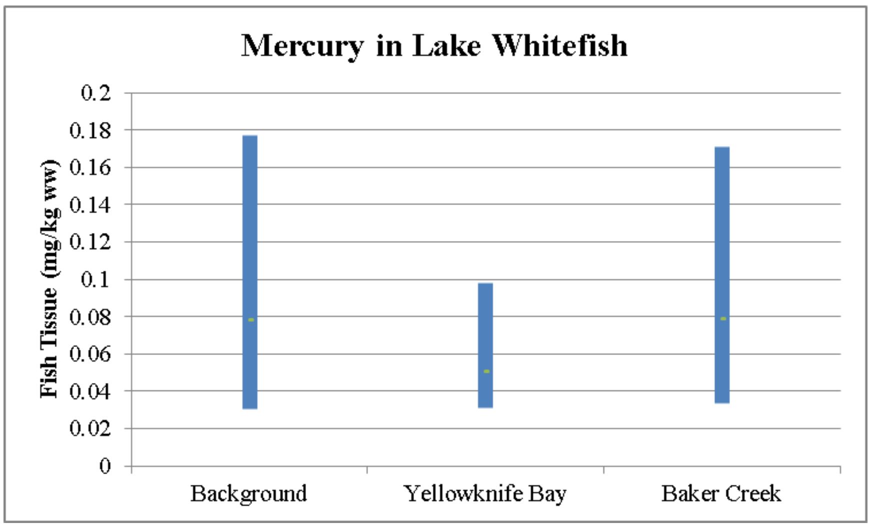
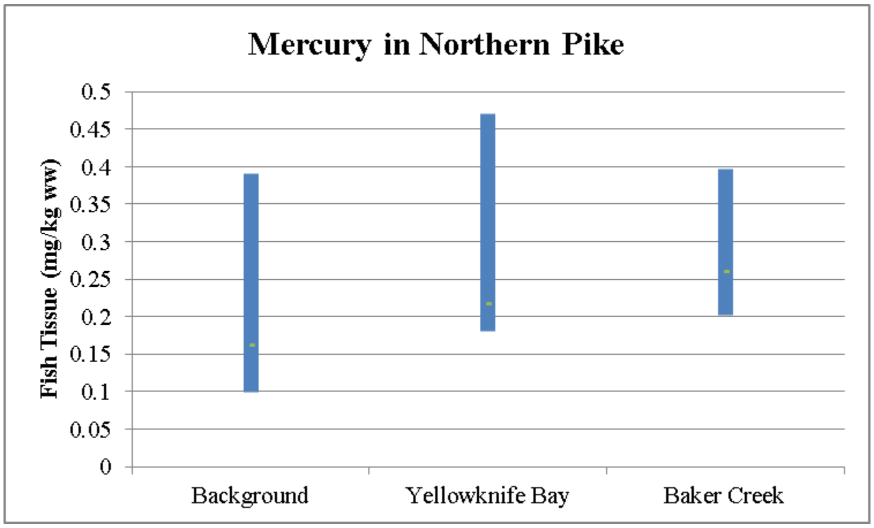


Figure 4.30 Comparison of mercury in northern pike from Baker Creek to background and Yellowknife Bay



Fish Health

As part of the Environmental Effects Monitoring (EEM) program, a lethal field survey of slimy sculpin and a non-lethal survey of ninespine stickleback were conducted in Baker Creek (exposure area), in two far-field exposure areas, and in two reference locations in Yellowknife River (Golder 2013b). Ninespine stickleback populations differed between the exposure and reference areas in terms of composition of adults and young. Statistical analyses could not be conducted due to the unequal sample sizes (Golder 2013b).

Differences in the health endpoints (e.g., relative liver size, condition) of slimy sculpin were noted in the different phases of the EEM. The differences were generally small and not consistent among years with the exception of male age, relative liver size, and condition. However, these differences were generally below the critical effects size identified by Environment Canada. The results of the slimy sculpin fish surveys were complicated, inconsistent, and had no obvious response pattern (Golder 2013b).

Summary

Table 4.23 summarizes the information from the individual LOEs into an overall WOE evaluation. The water chemistry and fish tissue results were both considered in the overall WOE. The fish tissue LOE has the benefit of accounting for bioaccessibility of

COPC and site-specific conditions (i.e., fish movement, habitat, etc.), but there are limitations in terms of the database of information available for fish from Baker Creek.

Table 4.24 provides a summary of the expected conditions in the future. This is a predictive assessment, and the LOEs rely on estimates of water concentrations and fish tissue in the future.

Table 4.23 Summary of assessment of fish – current

Assessment Endpoint	Line of Evidence	Measurement Endpoint
Maintenance of the health and ecological integrity of the fish populations.	Water Chemistry	Comparing the water chemistry to toxicity of aquatic biota, there are potential impacts due to the presence of elevated levels of COPC. In particular, antimony and arsenic may be at concentrations where fish could be affected.
	Fish Tissue	The current measured fish tissue concentrations from Baker Creek are above toxicity benchmarks for arsenic and, therefore, potential effects are possible.
	Fish Health	Fish surveys did not find any obvious response pattern between slimy sculpin in exposure, far-field, and reference areas.
Overall Assessment: It is expected that fish in Baker Creek are currently being affected by the presence of COPC in the water and sediment. The potential for an effect is limited to Baker Creek, as no adverse effects are expected in Yellowknife Bay. The amount of the effect is difficult to determine and fish health surveys have not seen an obvious pattern of response.		

Table 4.24 Summary of assessment of fish – future

Assessment Endpoint	Line of Evidence	Measurement Endpoint
Maintenance of the health and ecological integrity of the fish populations.	Water Chemistry	Comparing the water chemistry to toxicity of aquatic biota, there are potential impacts due to the presence of elevated levels of COPC. In particular, antimony and arsenic may be at concentrations where fish could be affected.
	Fish Tissue	It is anticipated that, in the future, arsenic in fish tissue will continue to be elevated; therefore, there is the potential for fish to be affected.
	Fish Health	No change from the results found in recent surveys is anticipated.
Overall Assessment: With the implementation of the GMRP, it is anticipated that water and sediment quality in Baker Creek will improve. However, arsenic in the water of Baker Creek will continue to be elevated, and this may cause fish in Baker Creek to continue to be affected. The potential for an effect is limited to Baker Creek, as no adverse impacts are expected in Yellowknife Bay.		

4.6.1.5 Wildlife in the Aquatic Environment

The WOE evaluation for wildlife that have aquatic-based diets is primarily based on comparison of exposure to toxicity benchmarks. Information on a previous study of muskrats in Baker Creek was also included. Consideration was given to including other LOEs, such as benchmarks for diet concentrations, but no relevant data were found.

Food Chain Model

This section presents the results for aquatic wildlife receptors. The evaluation used a Screening Index value (SI), which is a comparison of the predicted intake to a toxicity benchmark. Predicted SI values for all aquatic receptors are provided in Table 4.25, Table 4.26, and Table 4.27 for current, 2030, and 2120, respectively, and the full results are presented in Appendix M. Those receptors with an SI above 1 have been identified. Due to the conservative approach taken in the assessment, it should be noted that an SI above 1 does not necessarily mean that there is an effect; rather, it means that the potential for an effect on this receptor from exposure to the COPC cannot be ruled out. Further evaluation is needed, including considering other information sources or obtaining additional information, in order to make a final determination.

For the most part, conditions in Baker Creek improve immediately post-remediation (2030) and then, as the sediments are re-contaminated from the upstream load, conditions deteriorate slowly over time. This trend can be seen in the predicted SI values over time for receptors in Baker Creek, such as muskrat in Baker Pond (Figure 4.31) and merganser in the lower reaches of Baker Creek (Figure 4.32).

In Back Bay, it is predicted that the planned nearshore sediment remediation will have very little effect on overall sediment concentrations in Back Bay. However, overall it is expected that sediments will slowly improve in Back Bay over the long term. This general trend is seen in predicted SI values over time for receptors in Back Bay, such as bat (Figure 4.33) and mink (Figure 4.34).

Figure 4.31 Predicted SI values for muskrat – Baker Pond (Reach 6)

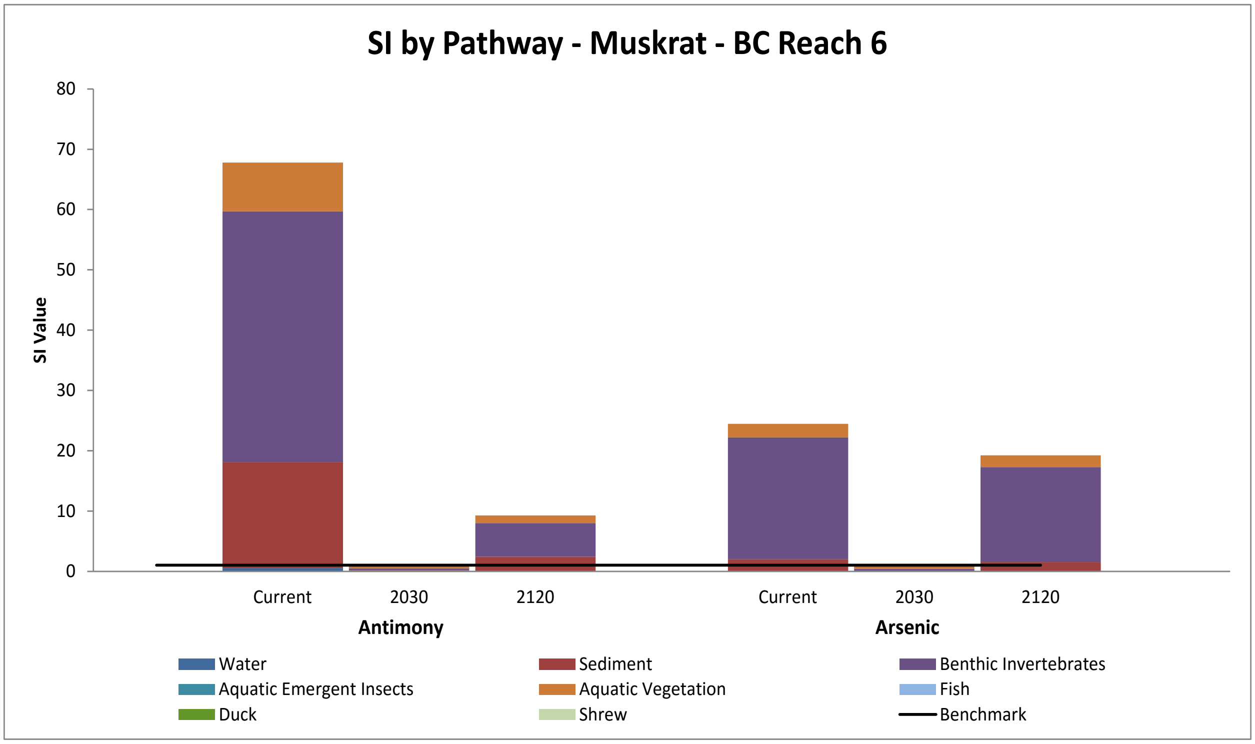


Figure 4.32 Predicted SI values for merganser – lower Baker Creek (Reach 0 to 6)

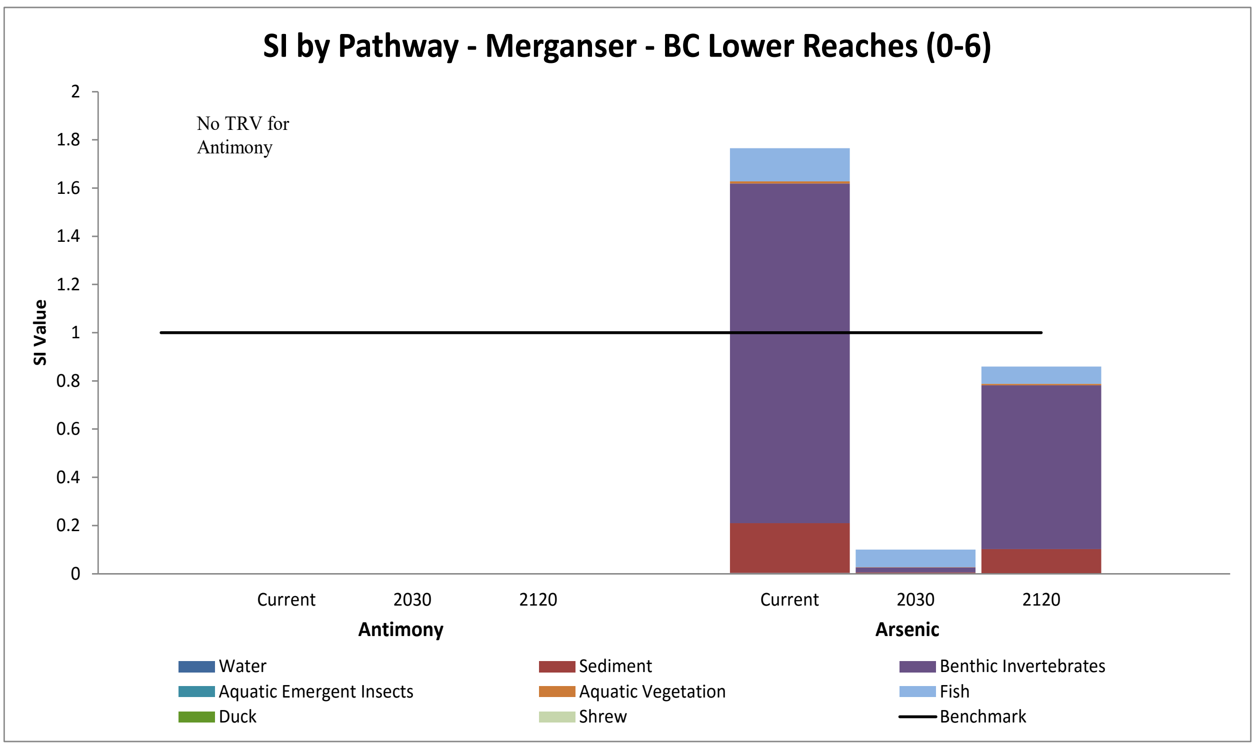


Figure 4.33 Predicted SI values for bat – Back Bay

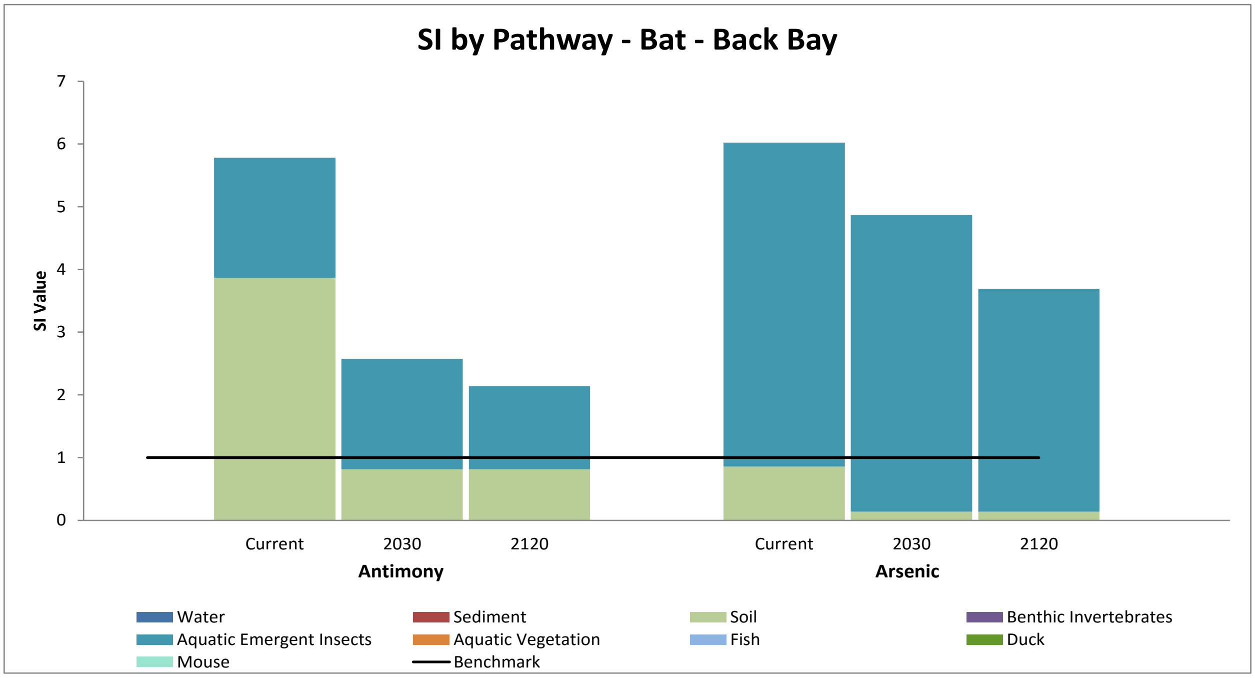


Figure 4.34 Predicted SI values for mink – Back Bay

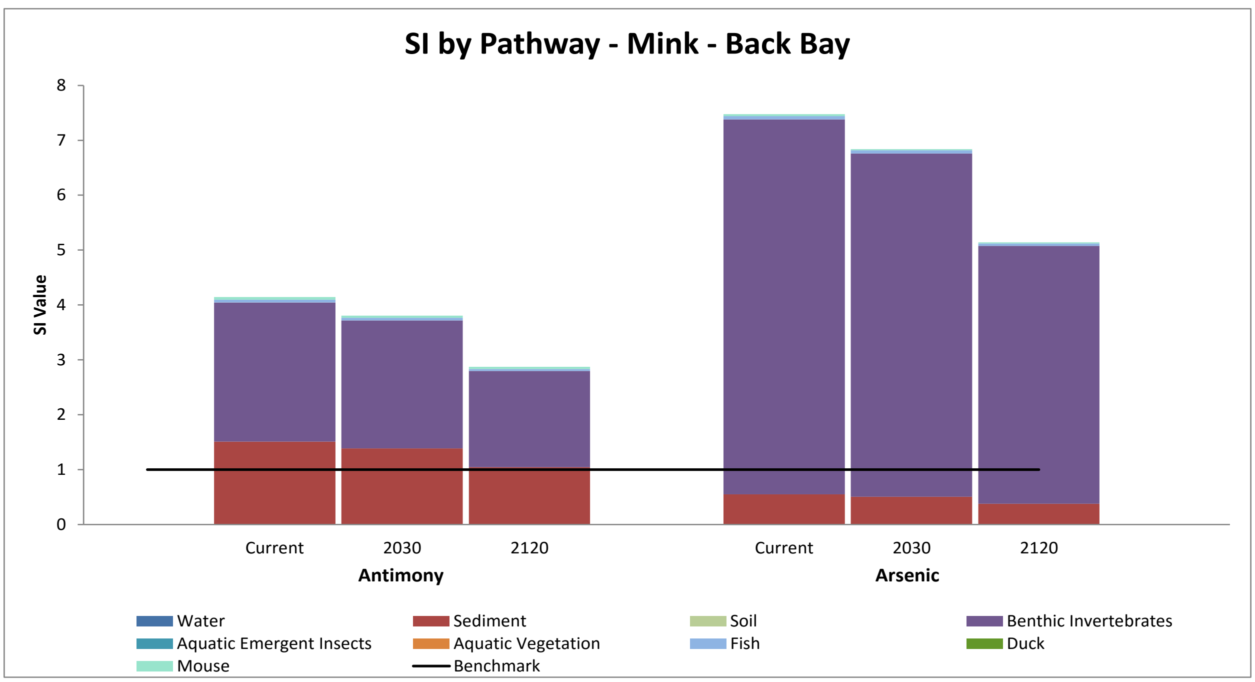


Table 4.25 SI values for wildlife in the aquatic environment – current

Receptor	Location	SI Values	
		Antimony	Arsenic
Muskrat	BC Reach 0	57	22
	BC Reach 1-3	34	30
	BC Reach 4-5	83	39
	BC Reach 6	68	24
	Back Bay	6.9	13
Mink	BC lower Reach (0-6)	37	17
	Back Bay	4.1	7.5
Mallard	BC lower Reach (0-6)	-	14
	Back Bay	-	6.4
Grebe	BC lower Reach (0-6)	-	25
	Back Bay	-	12
Merganser	BC lower Reach (0-6)	-	1.8
	Back Bay	-	0.78
Bat	BC lower Reach (0-6)	26	14
	Back Bay	5.8	6.0
Swallow	BC lower Reach (0-6)	-	10
	Back Bay	-	3.8
Osprey	Back Bay/ Baker Creek	-	0.19

Note: Shaded values exceed the benchmark of 1. There is no TRV for exposure of birds to antimony, so a SI value cannot be calculated.

Table 4.26 SI values for wildlife in the aquatic environment – 2030

Receptor	Location	SI Values	
		Antimony	Arsenic
Muskrat	BC Reach 0	1.8	0.60
	BC Reach 1-3	2.9	0.92
	BC Reach 4-5	1.4	0.82
	BC Reach 6	1.1	0.98
	Back Bay	6.4	12
Mink	BC lower Reach (0-6)	0.54	0.37
	Back Bay	3.8	6.8
Mallard	BC lower Reach (0-6)	-	0.22
	Back Bay	-	5.9
Grebe	BC lower Reach (0-6)	-	0.38
	Back Bay	-	11
Merganser	BC lower Reach (0-6)	-	0.10
	Back Bay	-	0.71
Bat	BC lower Reach (0-6)	6.0	2.1
	Back Bay	2.6	4.9
Swallow	BC lower Reach (0-6)	-	3.6
	Back Bay	-	2.2
Osprey	Back Bay/ Baker Creek	-	0.06

Note: Shaded values exceed the benchmark of 1. There is no TRV for exposure of birds to antimony, so a SI value cannot be calculated.

Table 4.27 SI values for wildlife in the aquatic environment – 2120

Receptor	Location	SI Values	
		Antimony	Arsenic
Muskrat	BC Reach 0	18	7.0
	BC Reach 1-3	33	17
	BC Reach 4-5	12	14
	BC Reach 6	9.3	19
	Back Bay	4.8	9.4
Mink	BC lower Reach (0-6)	11	8.1
	Back Bay	2.9	5.1
Mallard	BC lower Reach (0-6)	-	6.7
	Back Bay	-	4.4
Grebe	BC lower Reach (0-6)	-	12
	Back Bay	-	7.9
Merganser	BC lower Reach (0-6)	-	0.86
	Back Bay	-	0.54
Bat	BC lower Reach (0-6)	11	7.2
	Back Bay	2.1	3.7
Swallow	BC lower Reach (0-6)	-	5.8
	Back Bay	-	1.7
Osprey	Back Bay/ Baker Creek	-	0.11

Note: Shaded values exceed the benchmark of 1. There is no TRV for exposure of birds to antimony, so a SI value cannot be calculated.

Survey and Tissue Concentrations

Two field investigations targeting muskrat (Golder 2004; Jacques Whitford 2003) were undertaken on Baker Creek to support the previous ERA (SENES 2006).

As part of the Golder (2004) program, five muskrat were caught from Baker Creek and eight muskrat were caught from the reference area, Gar Lake. Each of the animals was given a physical examination, and chemical analysis was performed on the muscle, organs, and tails. Table 4.28 shows a summary of arsenic concentrations in muskrat from upstream and downstream of the Giant Mine. As can be seen, the muskrat downstream of the Giant Mine have higher concentrations, indicating that the Giant Mine has an effect on arsenic concentrations measured in the muskrats. Arsenic in tissue concentrations downstream were higher than the reference in all tissues, but it is noted that antimony in the livers of muskrat from Baker Creek were also higher than the reference location.

Despite these findings, the physical examination found that, while some individuals had external scars or broken teeth, all animals appeared to be healthy externally.

Table 4.28 Summary of measured arsenic levels in tissues of muskrat from Baker Creek

Statistic	Measured Arsenic Concentrations (mg/kg ww)					
	Upstream			Downstream		
	Liver	Kidney	Muscle	Liver	Kidney	Muscle
Mean	0.66	0.7	0.24	1.4	2.6	0.51
Maximum	1.18	1.4	0.5	1.8	7.2	0.63

Source: SENES 2006.

The Jacques Whitford (2003) study found 12 active burrows in Baker Creek downstream of the Giant Mine that supported an estimated population of between 66 and 197 animals.

Based on physical examination of study animals (Golder 2004) and field evidence from the population survey (Jacques Whitford 2003), which indicates that there are active dens that support a substantial population of muskrat on Baker Creek, it is unlikely that the presence of COPC in the sediments of Baker Creek are causing serious adverse effects on populations of small terrestrial mammals that have a significant aquatic-based diet. However, there are limitations to the extent that the muskrat study can be included in the assessment. The survey was only an external examination and did not fully explore potential effects on endpoints such as reproduction. The survey of burrows did not include a reference site, so it is uncertain whether the muskrat density has been affected. In addition, these studies were conducted over 10 years ago, and although contaminant levels are expected to change slowly over time, enough time has passed to change conditions.

Summary

Table 4.23 summarizes the information from the individual LOEs into an overall weight of evidence evaluation. The food chain model was the primary LOE as it includes a range of receptors. The muskrat survey provides valuable information that, although the animals are being exposed to COPC, no adverse effects have been noted, but the survey only includes muskrat and there are limitations.

Table 4.24 provides a summary of the expected conditions in the future. This is a predictive assessment, and the LOEs rely on estimates of water and sediment concentrations that will be directly affected by the GMRP as well as anticipated changes to the concentrations in the biological environment. It should be noted that the dredging of Baker Creek will affect the habitat and, thus, will change the use of Baker Creek by many of these receptors. In addition, moving the effluent treatment plant discharge may result in Baker Creek being dry for periods during the summer, and this will also affect the use of this watercourse by wildlife.

Table 4.29 Summary of assessment of wildlife in aquatic environment – current

Assessment Endpoint	Line of Evidence	Measurement Endpoint
Maintenance of the health and ecological integrity of wildlife that use the aquatic resources on the site.	Food chain model	SI values above 1 were noted for most receptors at most locations for both COPC. Highest SI values were noted for muskrat in lower Baker Creek.
	Survey	Studies investigating muskrat physical health, population density, and chemistry found that the Giant Mine is affecting tissue chemistry; however, all sampled animals were healthy, and there appears to be a substantial muskrat population on lower Baker Creek.
Overall Assessment: While COPC levels in the environment indicate that there is potential for adverse effects to wildlife in the aquatic environment near to the Giant Mine (including Baker Creek and Back Bay), evidence of this was not observed during the muskrat studies; however, data are limited.		

Table 4.30 Summary of assessment of wildlife in aquatic environment – future

Assessment Endpoint	Line of Evidence	Measurement Endpoint
Maintenance of the health and ecological integrity of wildlife that use the aquatic resources on the site.	Food chain model	Due to remediation of the sediments in Baker Creek and Back Bay there is some predicted improvement in 2030 where there are fewer receptors with SI values above 1; however, the sediment levels in lower Baker Creek are predicted increase over time and by 2120 SI values above 1 are predicted for most receptors in most locations for both COPC.
	Survey	The studies on muskrat show that, although they are being exposed, there are no obvious effects; however, data are limited.
Overall Assessment: The GMRP will improve the conditions in Baker Creek although there may still be the potential for adverse effects to wildlife in the aquatic environment near to the Giant Mine (including Baker Creek and Back Bay). The dredging of Baker Creek will affect the use of this watercourse in the short term, and changes in flow within Baker Creek (may be periods of time during the summer that the creek is dry) will also have an effect on the presence of wildlife and how they use the system.		

4.6.1.6 Terrestrial Vegetation

The WOE evaluation for terrestrial vegetation is based on comparison of soil concentrations and vegetation concentrations to appropriate benchmarks. Consideration was given to other LOEs, such as plant health and diversity surveys, but no information was available.

Soil Chemistry

Comparison of soil concentrations at the Giant Mine to the ecological component of soil quality guidelines is presented in Table 4.31 and Table 4.32 for current and future timelines, respectively. Soil concentrations presented for current conditions are the EPCs selected based on calculating the 95% UCLM of all available data, while soil concentrations for the future were predicted for remediated conditions in the disturbed areas and tailings basins at the Giant Mine. These EPCs are discussed in Section 4.4.2, and the full set of EPCs is presented in Appendix K.

As can be seen, antimony, arsenic, and manganese soil EPCs are above the selected benchmarks for all quadrants of the Giant Mine, for both current and future conditions. Copper soil EPCs are above the guideline in Trapper Lake North, East of Baker Creek, and South Baker Creek, while zinc EPCs are below the guideline in all quadrants except East of Baker Creek, for both current and future conditions.

Table 4.31 Comparison of measured soil concentrations to soil guidelines – current

COPC	Soil Guideline [a]	Soil EPCs [b]			
		Trapper Lake North	West of Baker Creek	East of Baker Creek	South Baker Creek
	mg/kg dw				
Antimony	20	**36**	**165**	**306**	**120**
Arsenic	17	**667**	**2,519**	**4,575**	**3,519**
Copper	63	**92**	56	**271**	**104**
Manganese	220 [c]	**1,014**	**807**	**1,072**	**1,159**
Zinc	200	94	100	**267**	133

Note:

a – Ecological component (direct contact) from CCME guidelines (CCME 2017). Due to lack of specific information from CCME, for antimony, the value was adopted from the Ontario Ministry of the Environment and Climate Change (MOE 2011).

b – Current soil EPCs are the 95% UCLM of available data.

c – No regulatory value available; the Eco-SSL (U.S. EPA 2007b) for plants is provided for comparison.

Table 4.32 Comparison of predicted soil concentrations to soil guidelines – future

COPC	Soil Guideline [a]	Soil EPCs [b]			
		Trapper Lake North	West of Baker Creek	East of Baker Creek	South Baker Creek
	mg/kg dw				
Antimony	20	**36**	**165**	**101**	**112**
Arsenic	12	**667**	**2,519**	**1,621**	**2,818**
Copper	63	**92**	56	**126**	**104**
Manganese	220 [c]	**1,014**	**807**	**995**	**1,501**
Zinc	200	94	100	**253**	133

Note:
a – Ecological component (direct contact) from CCME guideline (CCME 2017). Due to lack of information, for antimony, the value was adopted from the Ontario Ministry of the Environment and Climate Change (MOE 2011).
b – Calculated future soil concentrations based on soil/tailings component of the Giant Mine Remediation Plan.
c – No regulatory value available; the Eco-SSL (U.S. EPA 2007b) for plants is provided for comparison.

Tissue Concentrations

Measured foliage concentrations from the Giant Mine collected by Golder (2016g) as part of a program to fill in gaps for this ERA were compared to concentrations representative of phytotoxic levels. Foliage summary statistics along with phytotoxic concentration ranges from literature are shown in Table 4.33, Table 4.34, Table 4.35, and Table 4.36 for Trapper Lake North, West of Baker Creek, East of Baker Creek, and South Baker Creek, respectively.

Measured levels of antimony, copper, and zinc are all below the phytotoxic ranges, while maximum and 95th percentile concentrations of arsenic and manganese are above the reported phytotoxicity ranges. In East of Baker Creek (Table 4.35), the 95% UCLM is above the phytotoxic range, which indicates that more wide-spread effects on vegetation in this quadrant could be expected. As this portion of the site includes the former mill complex, elevated concentrations in this area are expected. It is noted that the vegetation samples sent for analysis were observed to be healthy (i.e., no signs of disease, yellowing leaves, breakage or missing leaves) (Golder 2016g). This indicates that arsenic concentrations up to 284 mg/kg ww do not necessarily translate into phytotoxic effects.

A similar comparison was made for the future using predicted foliage concentrations. Predicted foliage concentrations and the phytotoxic ranges are presented in Table 4.37. All predicted concentrations are well below the phytotoxic ranges for antimony, copper, and zinc, while predicted arsenic concentrations all fall within the phytotoxic ranges.

Predictions for manganese are all within the phytotoxic range with the exception of foliage in South Baker Creek, which are predicted to be higher than the ranges noted in literature.

Table 4.33 Comparison of measured foliage concentrations to phytotoxic levels – current – Trapper Lake North

COPC	Phytotoxic Range	Measured Foliage Summary Statistics								
		N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile	95 UCLM
	mg/kg ww									
Antimony	65 [a]	21	0	0.01	0.77	0.15	0.16	0.10	0.32	0.22
Arsenic	1.3-11 [a]	21	0	0.43	5.1	1.4	1.0	1.1	2.7	1.8
Copper	8.6-43 [a]	21	0	0.74	2.5	1.4	0.48	1.3	2.4	1.6
Manganese	172-430 [a]	21	0	23	**707**	144	206	76	**702**	340
Zinc	43-645 [a]	21	0	2.7	7.3	4.7	1.2	4.6	7.2	5.2

Note: a – Converted from dw to ww using a Giant Mine sample average moisture content of 57 % moisture.
Values that are above the lower end of the range are highlighted and values that exceed the upper end were also bolded.

Table 4.34 Comparison of measured foliage concentrations to phytotoxic levels – current – West of Baker Creek

COPC	Phytotoxic Range	Measured Foliage Summary Statistics								
		N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile	95 UCLM
	mg/kg ww									
Antimony	65 [a]	17	0	0.03	0.25	0.09	0.05	0.08	0.18	0.12
Arsenic	1.3-11 [a]	18	0	0.38	3.3	1.3	0.66	1.1	2.5	1.6
Copper	8.6-43 [a]	17	0	0.77	2.8	1.6	0.48	1.5	2.4	1.8
Manganese	172-430 [a]	17	0	24	**953**	223	281	121	**845**	389
Zinc	43-645 [a]	17	0	1.8	6.9	4.2	1.4	4.0	6.8	4.8

Note: a – Converted from dw to ww using a Giant Mine sample average moisture content of 57 % moisture.
Values that are above the lower end of the range are highlighted and values that exceed the upper end were also bolded.

Table 4.35 Comparison of measured foliage concentrations to phytotoxic levels – current – East of Baker Creek

COPC	Phytotoxic Range	Measured Foliage Summary Statistics								
		N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile	95 UCLM
	mg/kg ww									
Antimony	65 [a]	38	0	0.03	1.8	0.48	0.45	0.30	1.3	0.63
Arsenic	1.3-11 [a]	57	0	0.41	**284**	**12**	38	4.2	**27**	**15**
Copper	8.6-43 [a]	38	0	0.58	2.7	1.4	0.47	1.3	2.1	1.5
Manganese	172-430 [a]	38	0	14	335	89	89	61	303	119
Zinc	43-645 [a]	38	0	2.5	19	5.4	2.9	4.9	8.8	6.2

Note: a – Converted from dw to ww using a Giant Mine sample average moisture content of 57 % moisture.
Values that are above the lower end of the range are highlighted and values that exceed the upper end were also bolded.

Table 4.36 Comparison of measured foliage concentrations to phytotoxic levels – current – South Baker Creek

COPC	Phytotoxic Range	Measured Foliage Summary Statistics								
		N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile	95 UCLM
	mg/kg ww									
Antimony	65 [a]	9	0	0.01	0.05	0.03	0.01	0.02	0.05	-
Arsenic	1.3-11 [a]	10	0	0.36	7.0	1.1	2.1	0.59	4.2	4.0
Copper	8.6-43 [a]	9	0	1.2	1.7	1.5	0.24	1.4	1.7	-
Manganese	172-430 [a]	9	0	56	213	119	66	104	211	-
Zinc	43-645 [a]	9	0	3.1	8.5	5.0	2.1	4.7	8.5	-

Note: a – Converted from dw to ww using a Giant Mine sample average moisture content of 57 % moisture.
Values that are above the lower end of the range are highlighted and values that exceed the upper end were also bolded.

Summary

Table 4.47 summarizes the information from the individual LOEs into an overall weight of evidence evaluation. The measured vegetation concentrations compared to phytotoxicity benchmarks LOE was assigned more weight than the soil chemistry, as it is based on a reasonable sample size with good spatial coverage of Giant Mine and reflects the actual uptake by vegetation.

Table 4.48 provides a summary of the expected conditions in the future. This is a predictive assessment and the LOEs rely on estimates of soil and vegetation concentrations in the future. The concentrations in vegetation were estimated based on our current knowledge of potential uptake based on the measured data.

Table 4.37 Comparison of predicted foliage concentrations to phytotoxic levels – future

COPC	Phytotoxic Range	Trapper Lake North	West of Baker Creek	East of Baker Creek	South Baker Creek
	mg/kg ww				
Antimony	65 [a]	0.21	0.31	0.27	0.28
Arsenic	1.3-11 [a]	2.4	4.4	3.6	4.6
Copper	8.6-43 [a]	1.5	1.5	1.5	1.5
Manganese	172-430 [a]	385	307	378	**570**
Zinc	43-645 [a]	0.55	0.55	0.61	0.57

Note: a – Converted from dw to ww using a Giant Mine sample average moisture content of 57 % moisture.

Table 4.38 Summary of assessment of terrestrial vegetation – current

Assessment Endpoint	Line of Evidence	Measurement Endpoint
Maintenance of the health and ecological integrity of vegetation communities on the site.	Soil Chemistry	Soil concentrations are above the selected benchmark across most of the site for several COPC (antimony, copper, arsenic and manganese).
	Tissue Concentrations	Measured vegetation levels of arsenic and manganese are within and, periodically, above the ranges in literature were observed. There were no obvious signs of stress in the vegetation sampled from the site.
Overall Assessment: The data suggest that there may be some effects on terrestrial vegetation, particularly in the East of Baker Creek quadrant. However, high concentrations in vegetation were not necessarily associated with obvious signs of stress.		

Table 4.39 Summary of assessment of terrestrial vegetation – future

Assessment Endpoint	Line of Evidence	Measurement Endpoint
Maintenance of the health and ecological integrity of vegetation communities on the site.	Soil Chemistry	Soil concentrations are anticipated to be above the selected benchmark across most of the site for several COPC (antimony, copper, arsenic and manganese).
	Tissue Concentrations	Estimated vegetation concentrations of arsenic and manganese are generally within the ranges in literature for phytotoxicity.
Overall Assessment: With the implementation of the GMRP the soil quality at the Giant Mine is expected to improve. There is some possibility of some effects on terrestrial vegetation but wide-spread effects are not expected.		

4.6.1.7 Wildlife in the Terrestrial Environment

The weight of evidence evaluation for wildlife present in the terrestrial environment was primarily based on comparison of exposure to toxicity benchmarks. Information on tissue levels from small mammals obtained from Giant Mine is also considered. Consideration was given to including other LOEs such as benchmarks for diet concentrations and population surveys, but no relevant data were found.

Food Chain model

This section presents the results for terrestrial wildlife receptors. The evaluation used an SI, which is a comparison of the predicted intake to a toxicity benchmark. Predicted SI values for all terrestrial receptors are provided in Table 4.40 and Table 4.41 for current and future (post-remediation) timeframes, respectively, and the full results are presented in Appendix M. Those receptors with an SI above 1 have been identified. Due to the conservative approach taken in the assessment (i.e., use of a NOAEL to calculate an SI), it should be noted that an SI above 1 does not necessarily mean that there is an effect; rather, it means that the potential for an effect on this receptor from exposure to the COPC cannot be ruled out. Further evaluation is needed within an WOE approach, such as considering other information sources or obtaining additional information, in order to make a final determination.

The results show that the SI values for antimony, arsenic, and manganese are well above 1 for most of the selected receptors. A higher SI number suggests a greater risk of an effect. For many of the receptors, the incidental intake of soil is an important pathway of exposure to antimony and arsenic. Soil is consumed by wildlife as they feed, but the actual rates are not well known. The assumptions used in this assessment are generally taken from Environment Canada guidance (FCSAP 2012b). Terrestrial vegetation (foliage) is an important route of exposure for manganese; measured data were used in the assessment of current conditions for this pathway.

The highest SI values were calculated for shrews, small mammals that consume terrestrial insects (e.g., beetles, spiders, insect larvae). Since there are no direct measurements of concentrations of COPCs in insects from the site, it was assumed for this assessment that insects have the same concentrations as those found in terrestrial vegetation. A review of available information for arsenic (Appendix K) suggests that this is a reasonable assumption. There is a lack of suitable information for other COPC such as antimony. Bats and swallows that eat insects also have high SI values.

It is noted that animals may adapt to living in areas of high concentrations. For example, a study was conducted on several birds (gray jay, American tree sparrow, dark-eyed junco, yellow-rumped warbler, and spruce grouse) in the Yellowknife area (Koch et al. 2005), and the primary arsenic species detected in two of the bird species studied was arsenobetaine. As discussed in the paper, arsenobetaine is not normally formed or retained by terrestrial animals. Thus, the birds were thought to be highly adapted and were able to form and/or retain this relatively nontoxic arsenic compound.

Table 4.40 SI values for terrestrial receptors – current

Receptor	Location	SI Values				
		Antimony	Arsenic	Copper	Manganese	Zinc
Mouse	Trapper Lake North	2.2	0.99	0.10	2.1	$4.3x10^{-3}$
	West of Baker Creek	7.5	2.7	0.09	1.6	$4.4x10^{-3}$
	East of Baker Creek	12	7.7	0.16	2.2	$8.8x10^{-3}$
	South Baker Creek	5.8	3.5	0.11	2.4	$5.7x10^{-3}$
Hare	Trapper Lake North	3.2	1.3	0.12	1.7	$6.5x10^{-3}$
	West of Baker Creek	13	4.2	0.10	1.3	$6.8x10^{-3}$
	East of Baker Creek	22	10	0.25	1.7	0.02
	South Baker Creek	9.5	5.7	0.13	1.9	$8.8x10^{-3}$
Bat	Trapper Lake North	3.2	1.6	0.15	2.9	$6.5x10^{-3}$
	West of Baker Creek	11	4.3	0.13	2.3	$6.7x10^{-3}$
	East of Baker Creek	19	6.9	0.25	3.0	0.01
	South Baker Creek	8.5	5.6	0.16	3.3	$8.4x10^{-3}$
Ptarmigan	Trapper Lake North	-	0.42	0.20	0.51	0.01
	West of Baker Creek	-	1.4	0.15	0.40	0.01
	East of Baker Creek	-	3.4	0.44	0.54	0.03
	South Baker Creek	-	1.9	0.22	0.58	0.01
Swallow	Trapper Lake North	-	1.7	0.71	1.5	0.04
	West of Baker Creek	-	5.6	0.52	1.2	0.04
	East of Baker Creek	-	9.9	1.7	1.6	0.10
	South Baker Creek	-	7.7	0.77	1.8	0.05
Shrew	Trapper Lake North	10	4.9	0.48	9.6	0.02
	West of Baker Creek	33	13	0.43	7.6	0.02
	East of Baker Creek	55	21	0.77	10	0.04
	South Baker Creek	25	17	0.50	11	0.03
Fox	Entire Site	2.6	1.0	0.04	0.28	0.01
Falcon	Entire Site	-	0.19	0.05	$6.0x10^{-3}$	0.03
Owl	Entire Site	-	0.83	0.13	0.02	0.05
Lynx	Entire Site	1.9	0.81	0.05	0.03	0.02

Note: Shaded values exceed the benchmark of 1. There is no TRV for exposure to birds to antimony, so an SI value cannot be calculated.

Table 4.41 SI values for terrestrial receptors – future (post-remediation)

Receptor	Location	SI Values				
		Antimony	Arsenic	Copper	Manganese	Zinc
Mouse	Trapper Lake North	2.2	0.99	0.10	2.1	$4.3x10^{-3}$
	West of Baker Creek	7.5	2.7	0.09	1.6	$4.4x10^{-3}$
	East of Baker Creek	5.3	4.0	0.11	2.0	$8.4x10^{-3}$
	South Baker Creek	5.5	2.9	0.11	3.1	$5.7x10^{-3}$
Hare	Trapper Lake North	3.2	1.3	0.12	1.7	$6.5x10^{-3}$
	West of Baker Creek	13	4.2	0.10	1.3	$6.8x10^{-3}$
	East of Baker Creek	8.3	4.6	0.15	1.6	0.02
	South Baker Creek	8.9	4.7	0.13	2.4	$8.8x10^{-3}$
Bat	Trapper Lake North	3.2	1.6	0.15	2.9	$6.5x10^{-3}$
	West of Baker Creek	11	4.3	0.13	2.3	$6.7x10^{-3}$
	East of Baker Creek	7.6	3.0	0.17	2.8	0.01
	South Baker Creek	8.0	4.6	0.16	4.2	$8.4x10^{-3}$
Ptarmigan	Trapper Lake North	-	0.42	0.20	0.51	0.01
	West of Baker Creek	-	1.4	0.15	0.40	0.01
	East of Baker Creek	-	1.5	0.25	0.50	0.03
	South Baker Creek	-	1.6	0.22	0.75	0.01
Swallow	Trapper Lake North	-	1.7	0.71	1.5	0.04
	West of Baker Creek	-	5.6	0.52	1.2	0.04
	East of Baker Creek	-	3.7	0.89	1.5	0.10
	South Baker Creek	-	6.3	0.77	2.3	0.05
Shrew	Trapper Lake North	10	4.9	0.48	9.6	0.02
	West of Baker Creek	33	13	0.43	7.6	0.02
	East of Baker Creek	22	9.3	0.54	9.4	0.04
	South Baker Creek	24	14	0.50	14	0.03
Fox	Entire Site	2.0	0.70	0.03	0.26	0.01
Falcon	Entire Site	-	0.13	0.04	$5.9x10^{-3}$	0.03
Owl	Entire Site	-	0.55	0.13	0.02	0.05
Lynx	Entire Site	1.4	0.55	0.04	0.03	0.02

Note: Shaded values exceed the benchmark of 1. There is no TRV for exposure to birds to antimony, so an SI value cannot be calculated.

The review of available information on the potential toxicity of antimony did not reveal any information on avian toxicity; thus, no SIs for antimony have been calculated for birds. This is a source of uncertainty in the assessment. If it is assumed that birds are as sensitive to antimony as mammals (i.e., same TRVs), many of the SI values would be above 1.

The potential effects are generally limited to the small animals that would live in a small portion of the site. For larger animals that would roam across the site and beyond, only antimony was predicted to be a potential issue. This is again primarily due to the direct ingestion of soil. Exposure to arsenic is not anticipated to be a concern for these receptors.

The GMRP includes covering the tailings areas and remediation of disturbed soils in the former Mill Complex (East of Baker Creek); this is expected to result in a decrease in the soil concentrations at the Giant Mine, primarily in the East of Baker Creek and South Baker Creek quadrants.

There are no remediation activities planned in the Trapper Lake North quadrant and, therefore, the concentrations of antimony and arsenic will remain unchanged in the future. This is observed in Figure 4.35 (hare), Figure 4.36 (bat), and Figure 4.37 (shrew), where the current and future SI values are the same. In West Baker Creek, there is also very little change as a result of the GMRP.

There are expected to be some improvements to soil quality in South Baker Creek, as a result of GMRP and more substantial changes in East of Baker Creek. This improvement is seen to result in decreased future SI values for terrestrial receptors in these quadrants as seen in the examples shown below for hare, bat, and shrew. Receptors with larger home ranges are also expected to see reduced SI values; this is seen for fox (Figure 4.48) and lynx (Figure 4.47). The SI values for the receptors in the future scenario, however, remain well above 1.

Figure 4.35 Predicted SI values for hare – Trapper Lake North

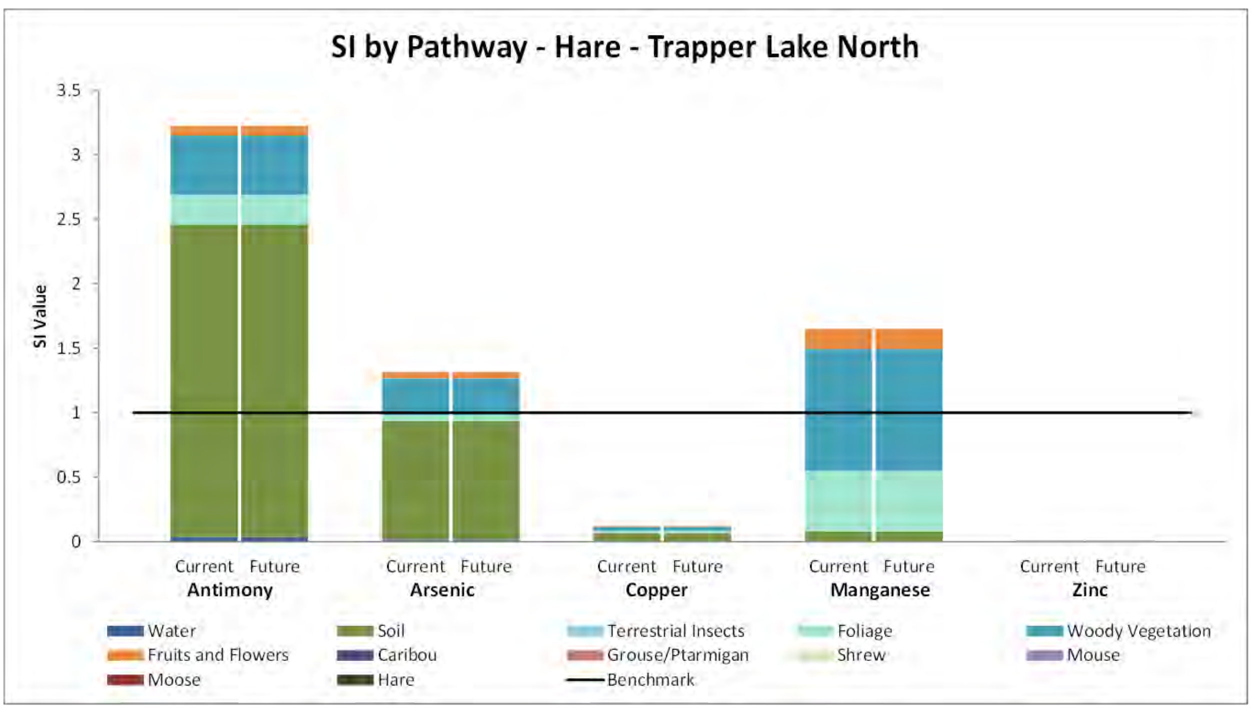


Figure 4.36 Predicted SI values for bat – Trapper Lake North

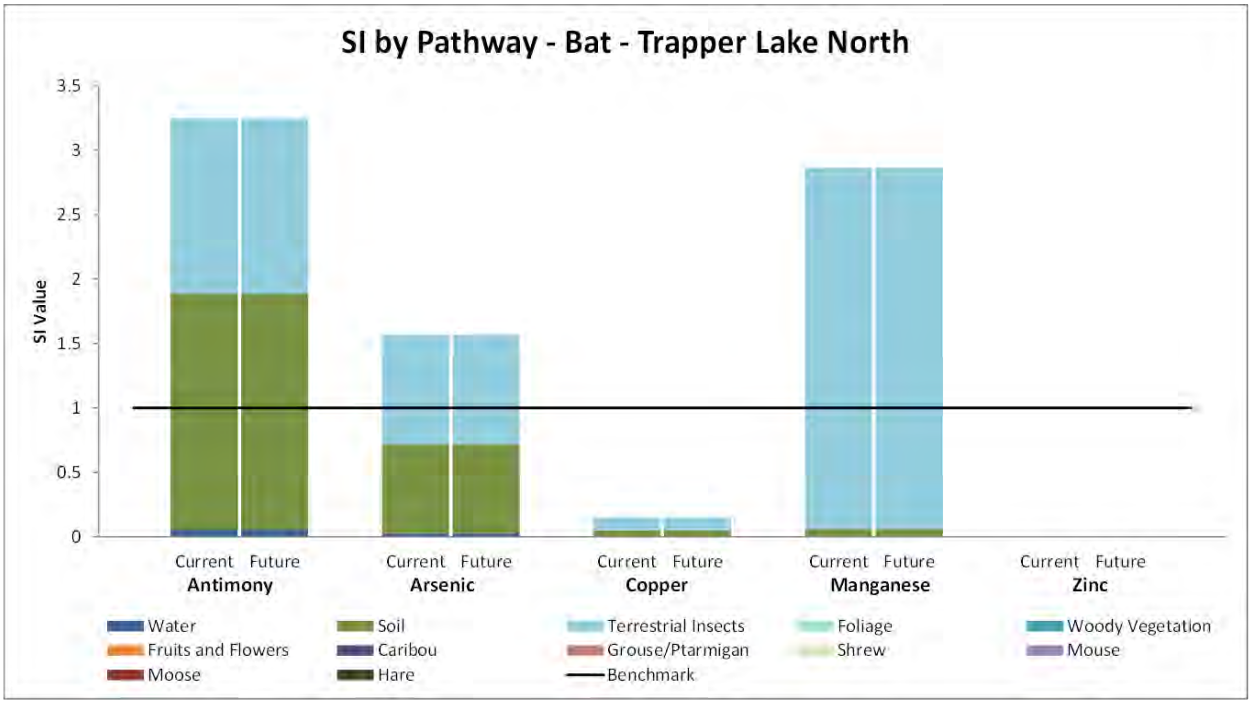


Figure 4.37 Predicted SI values for shrew – Trapper Lake North

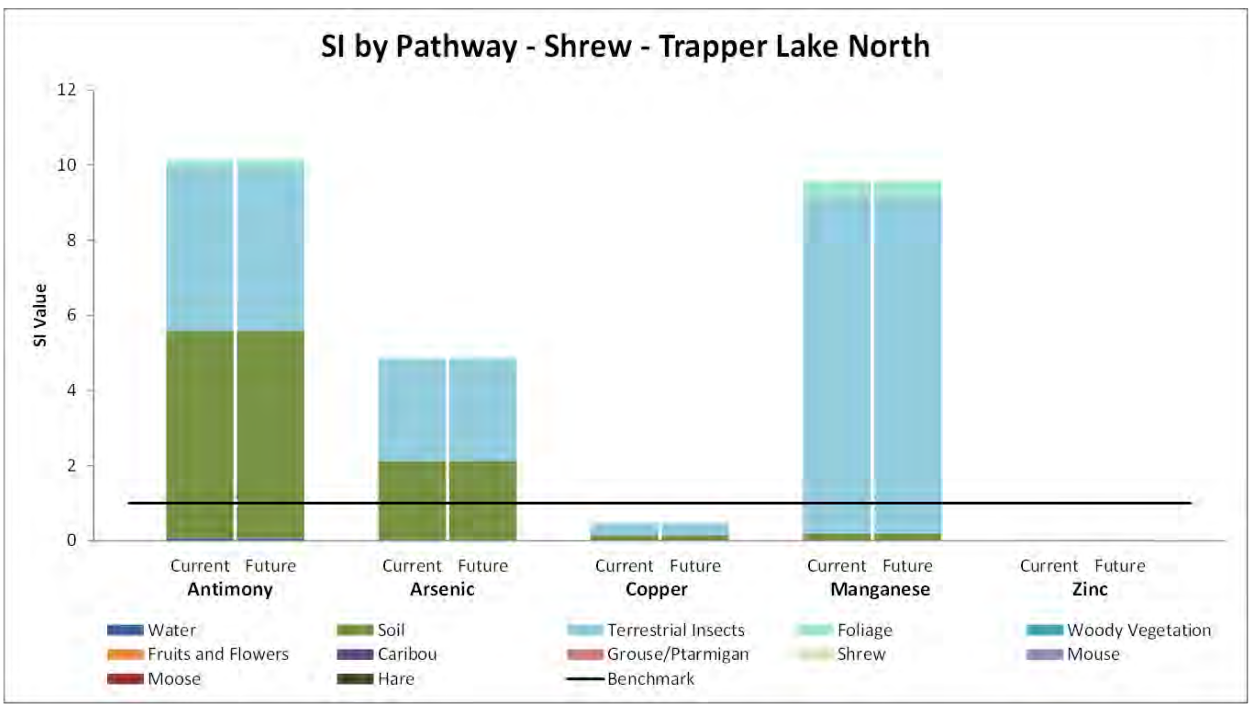


Figure 4.38 Predicted SI values for hare – west of Baker Creek

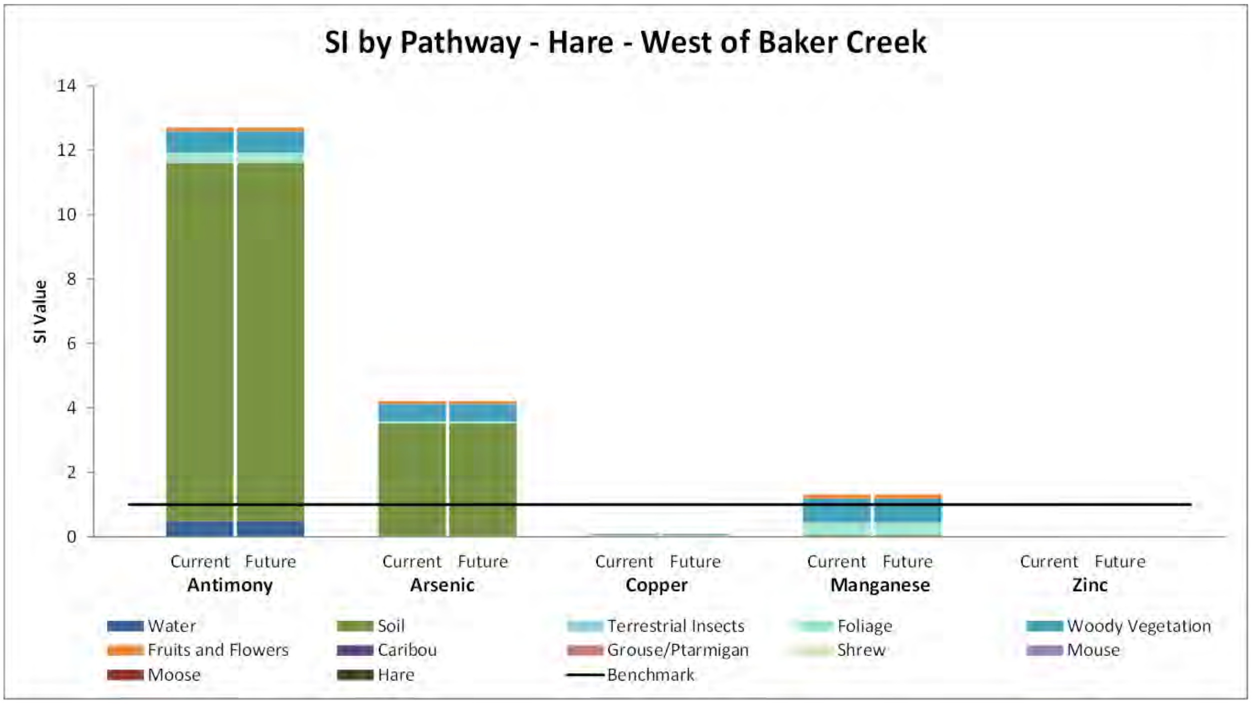


Figure 4.39 Predicted SI values for bat – west of Baker Creek

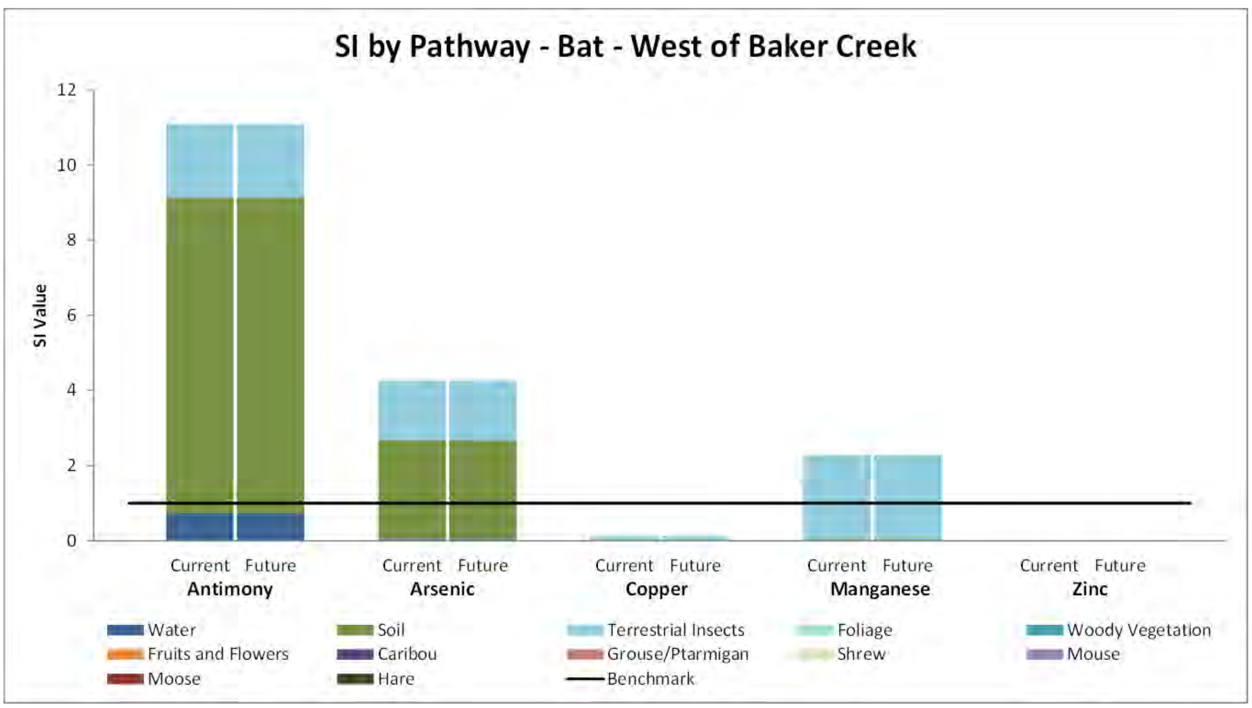


Figure 4.40 Predicted SI values for shrew – west of Baker Creek

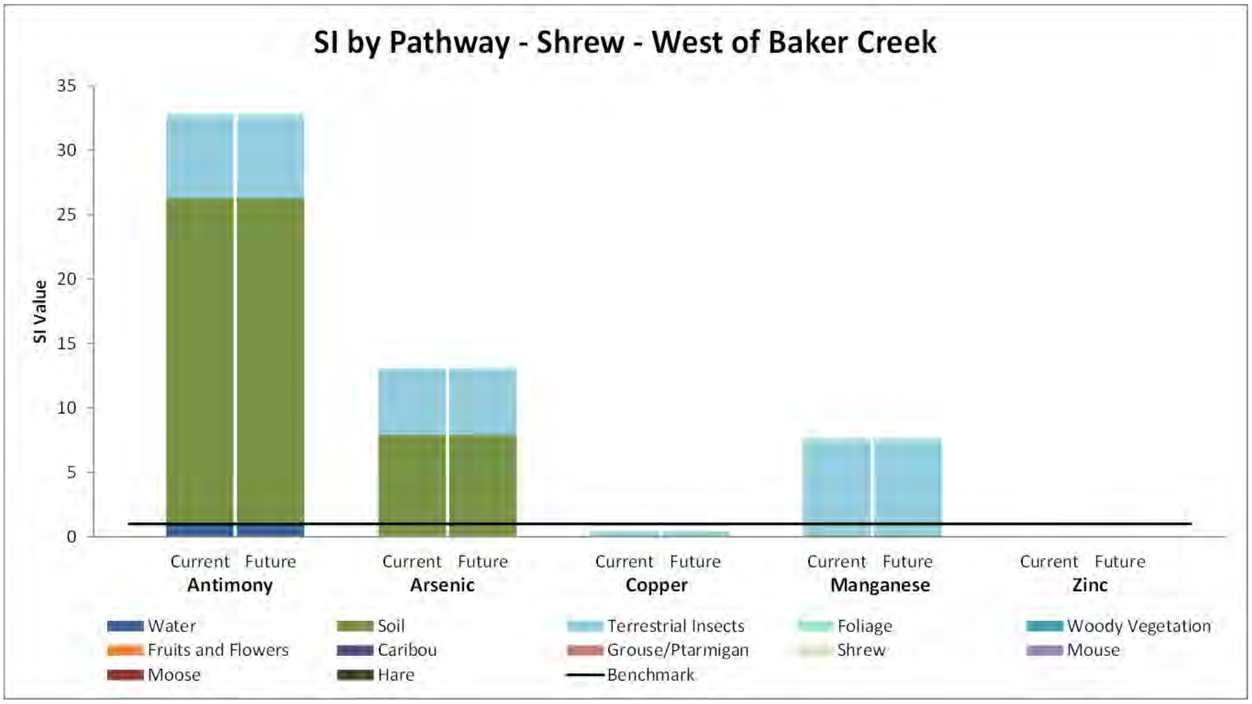


Figure 4.41 Predicted SI values for hare – east of Baker Creek

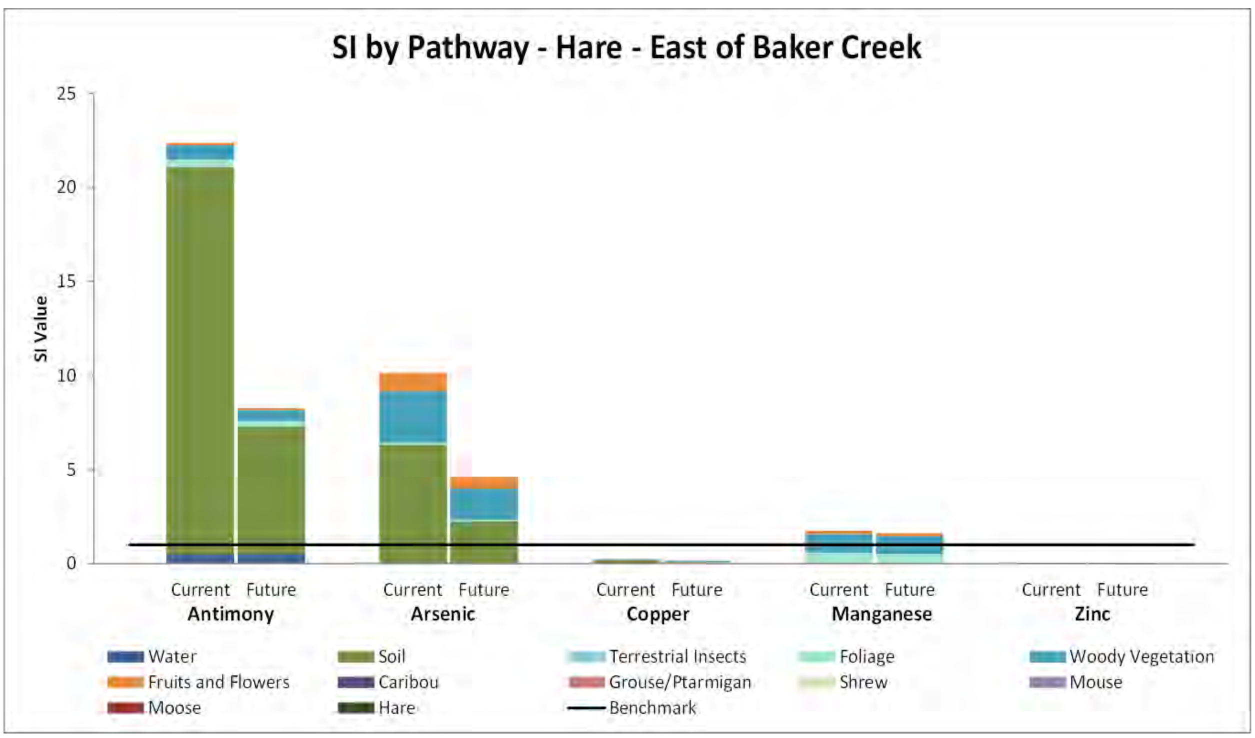


Figure 4.42 Predicted SI values for bat – east of Baker Creek

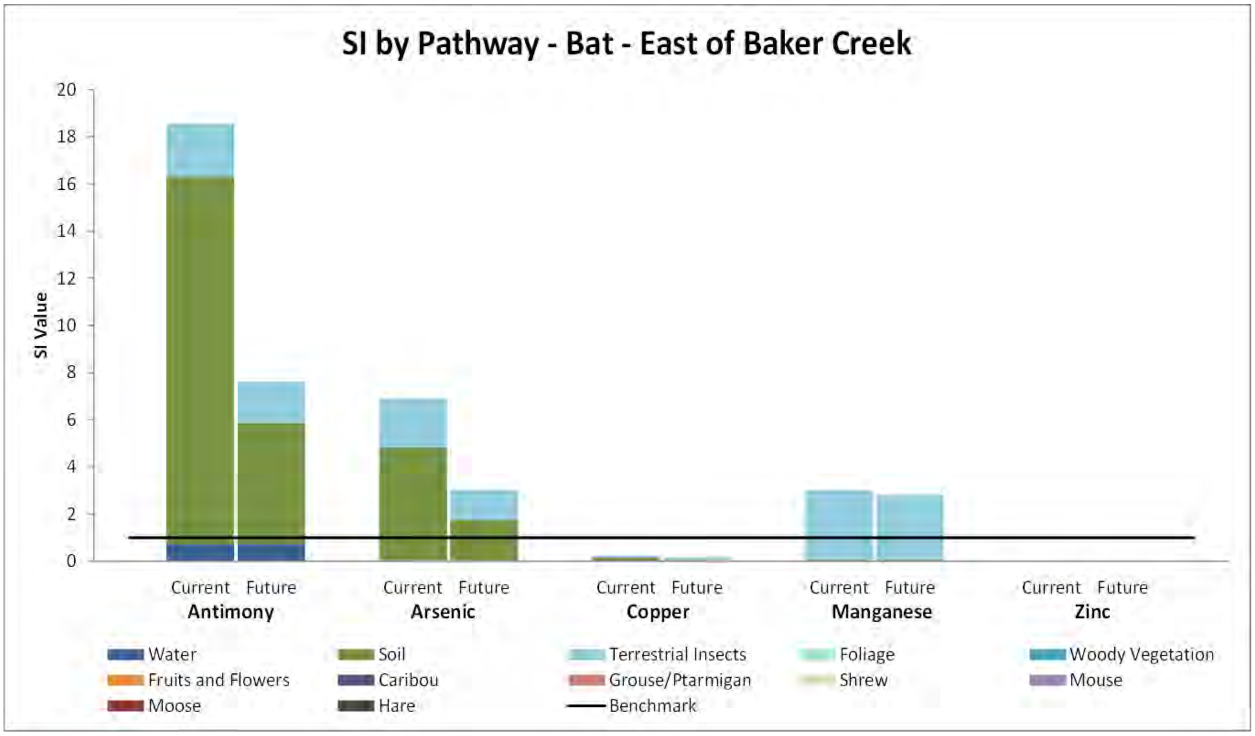


Figure 4.43 Predicted SI values for shrew – east of Baker Creek

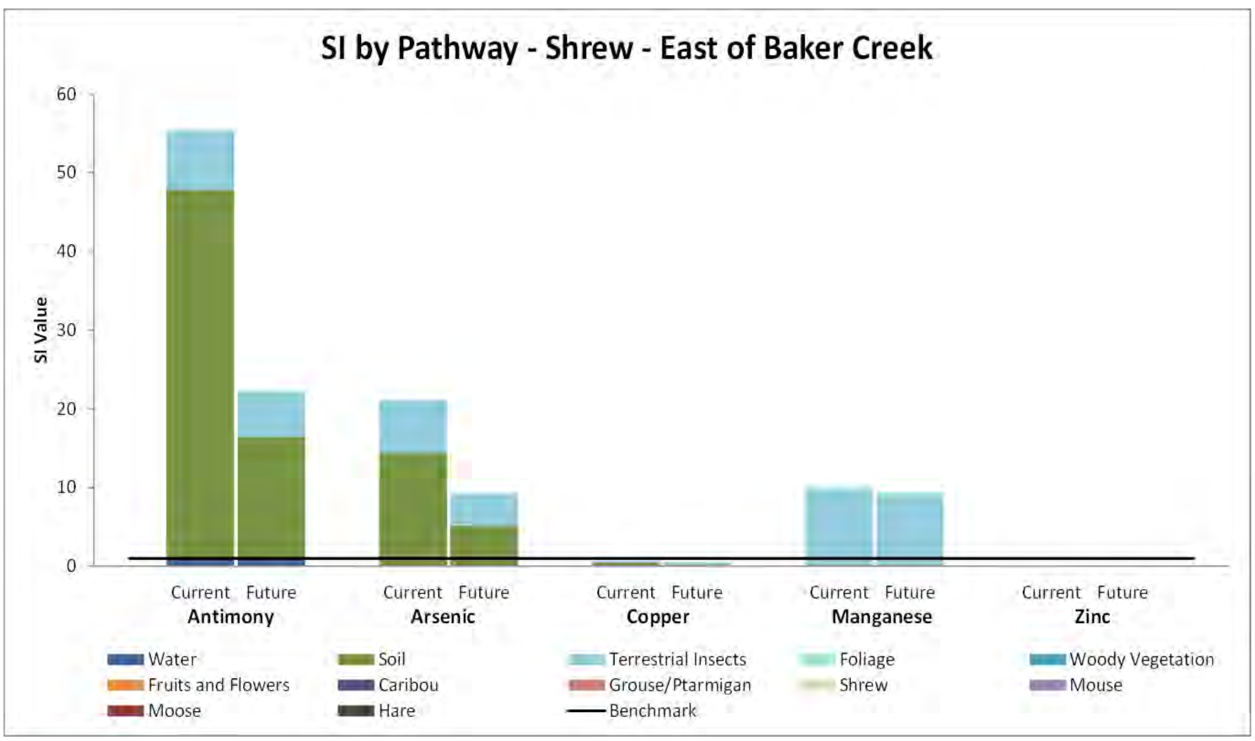


Figure 4.44 Predicted SI values for hare – south Baker Creek

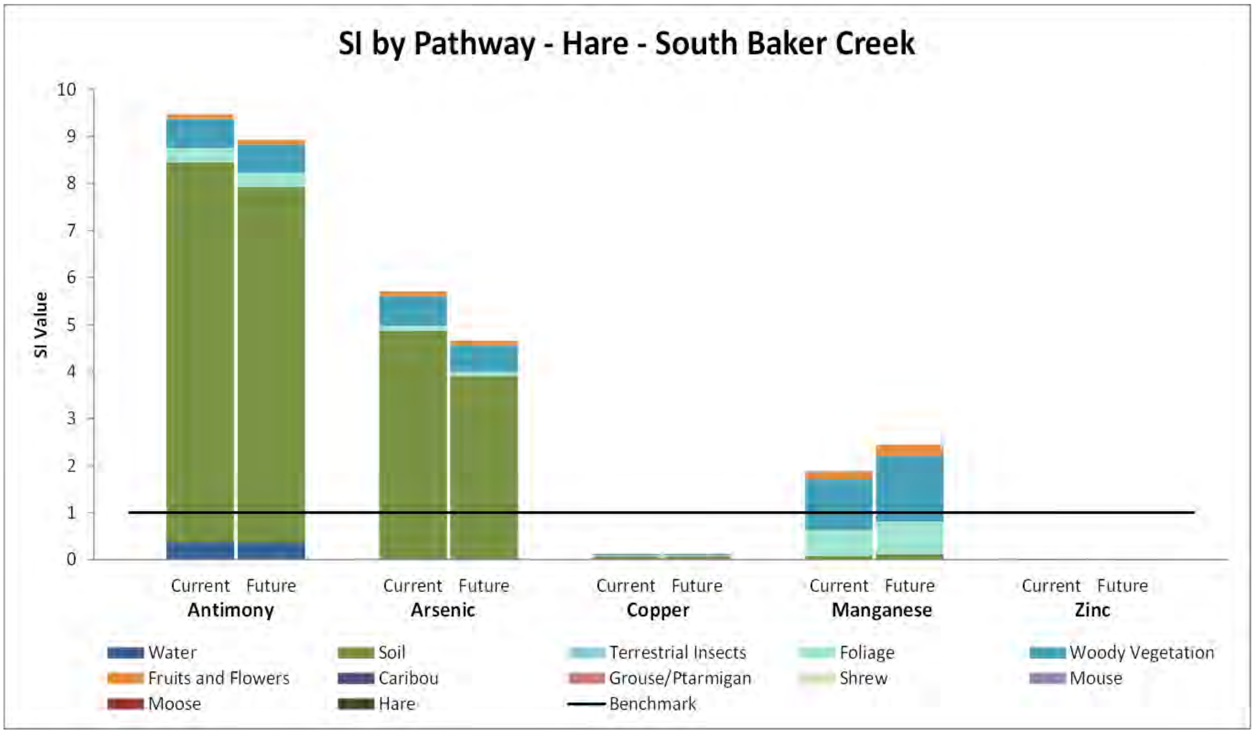


Figure 4.45 Predicted SI values for bat – south Baker Creek

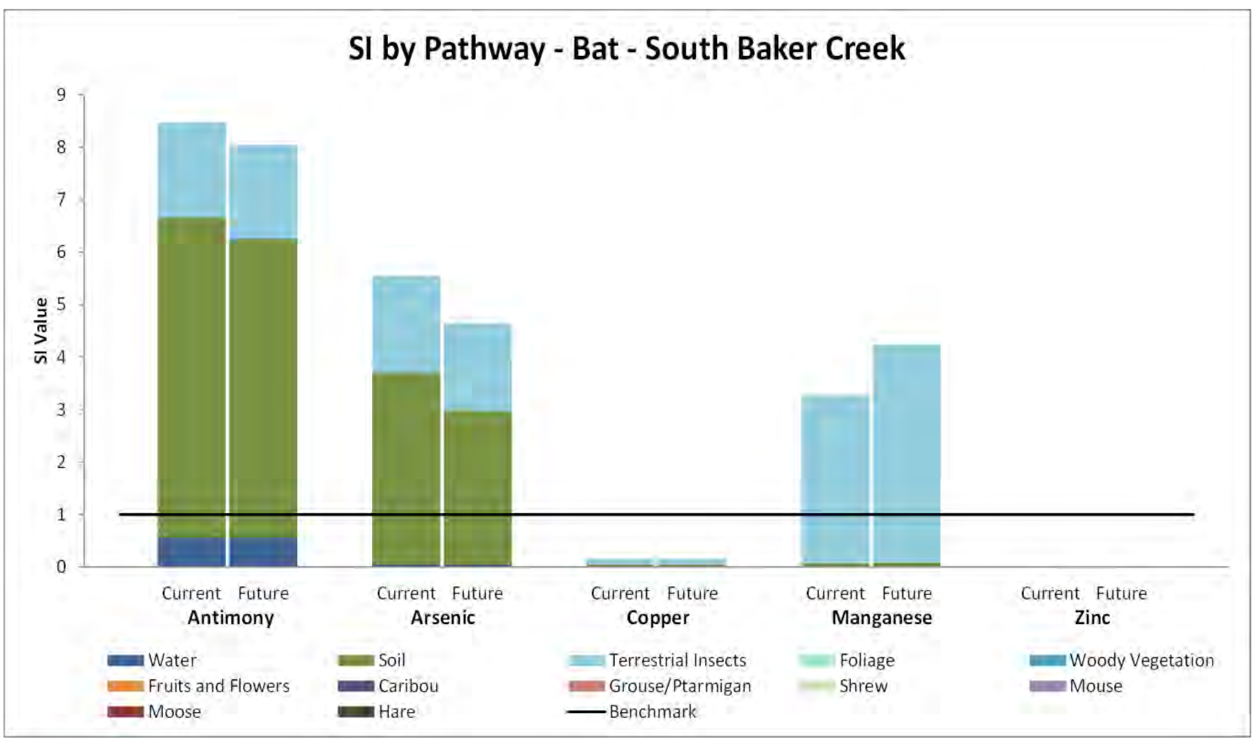


Figure 4.46 Predicted SI values for shrew – south Baker Creek

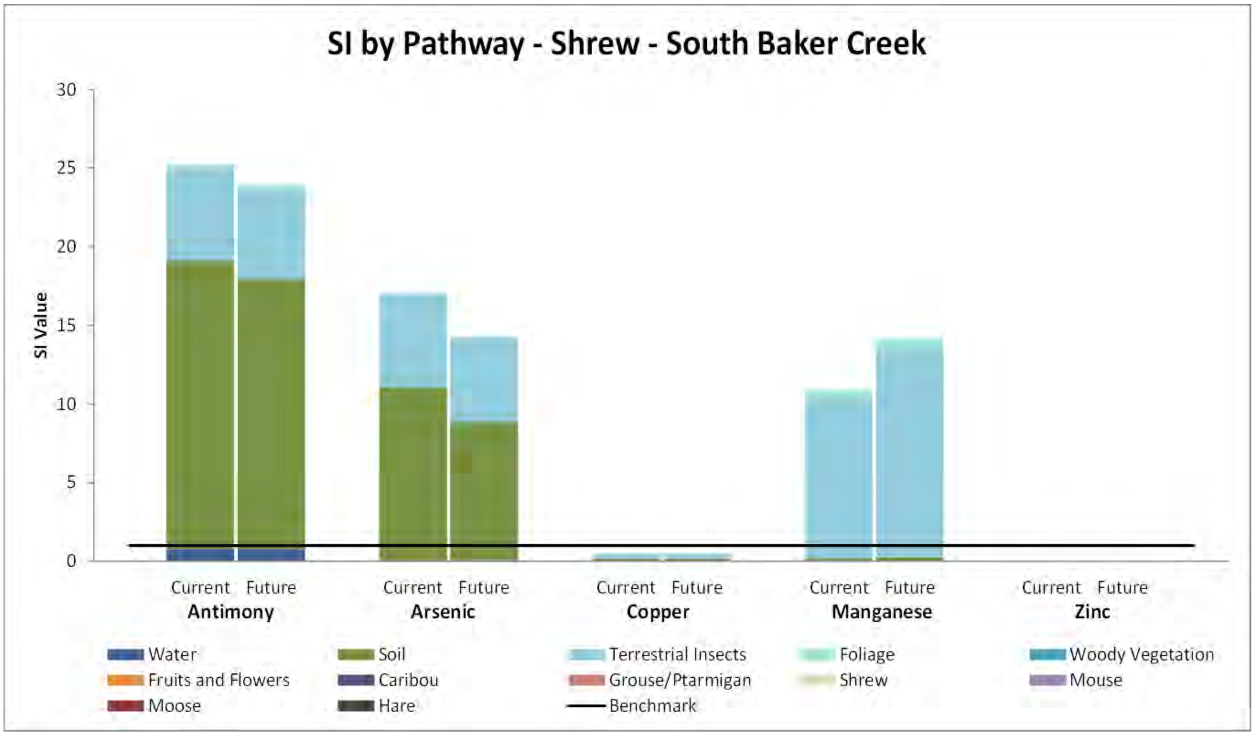


Figure 4.47 Predicted SI values for lynx – Giant Site

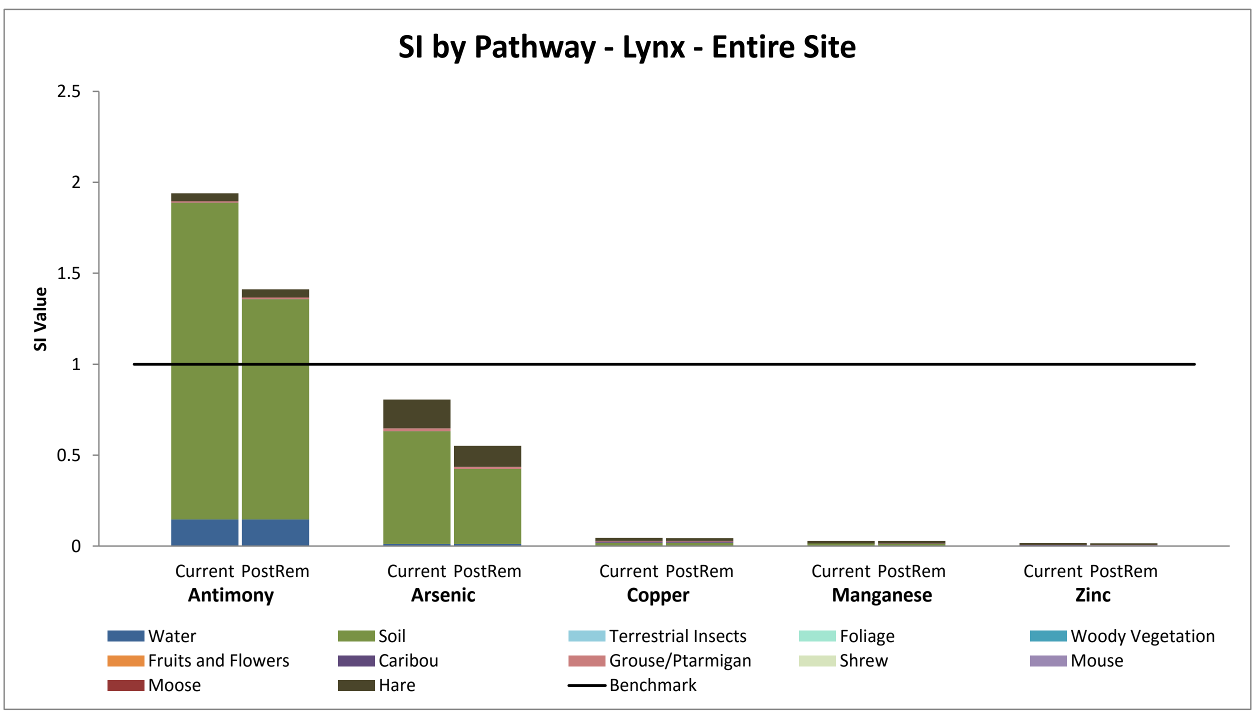
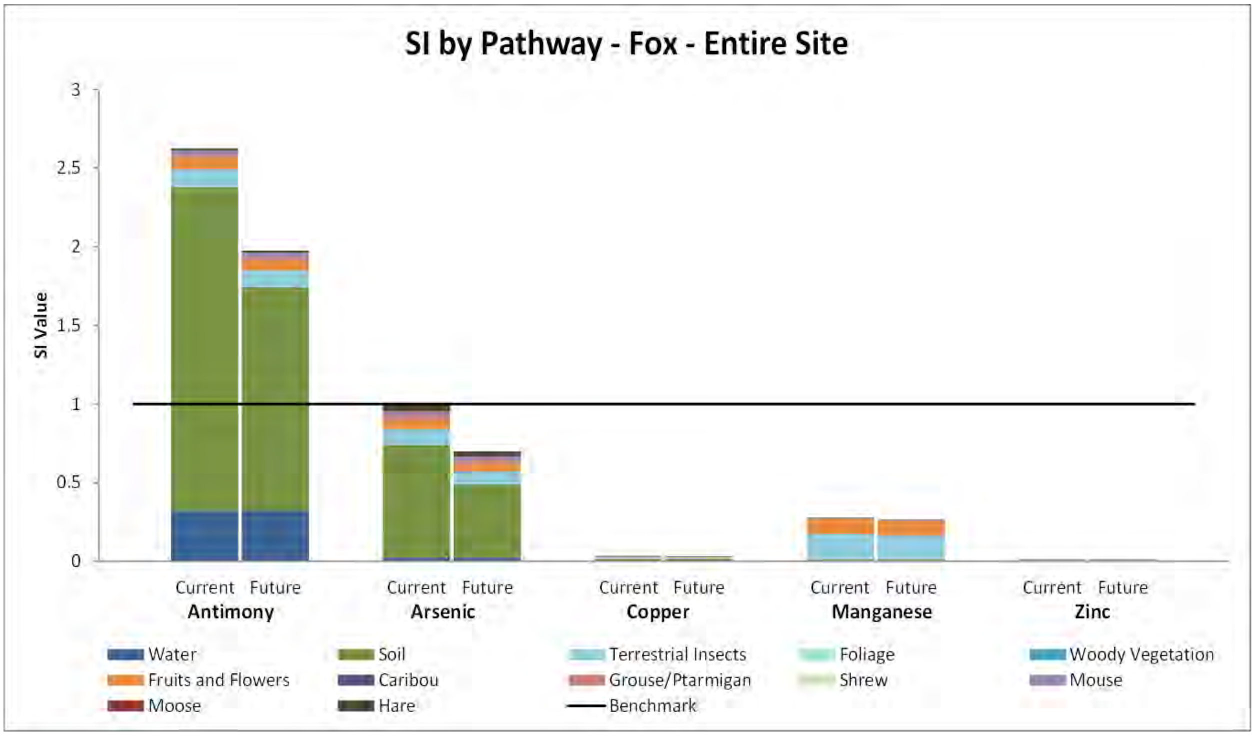


Figure 4.48 Predicted SI values for fox – Giant Site



Tissue Concentrations

Golder (2016) collected small mammals from across the Giant Mine to infill data gaps identified for this ERA. Species collected consisted of deer mouse, northern red-backed vole, and shrew. Summary statistics for whole body concentrations observed in small mammals collected from each of the Giant Mine quadrants are shown in Table 4.42, Table 4.43, Table 4.44, and Table 4.45 for Trapper Lake North, West of Baker Creek, East of Baker Creek, and South Baker Creek, respectively.

Available toxic tissue benchmarks were available for arsenic and copper for liver and kidney. No benchmarks were identified for other COPC or tissues. The use of organ benchmarks, however, is conservative in this case, as whole body concentrations include organs and bones, which are known to accumulate metals.

As can be seen, all copper measurements are well below the two benchmarks with the highest concentration at 4.9 mg/kg ww. Similarly, arsenic concentrations in small mammals from Trapper Lake North, East of Baker Creek, and South Baker Creek were below the arsenic toxic tissue concentrations. Out of the 18 mammals collected from West of Baker Creek, two were within the toxic tissue concentration ranges with concentrations of 28 mg/kg ww and 5.1 mg/kg ww. The maximum measured concentration of 28 mg/kg ww (sample 16-GIANT-RV-21) was collected from the same location as another vole (16-GIANT-RV-20) where the arsenic concentration was measured at 3.5 mg/kg ww. This shows the variability of COPC concentrations in tissues. It should be noted that there were no obvious signs of stress in the red vole with the elevated concentration, and it was one of the largest of the small mammal samples collected.

Table 4.42 Comparison of measured small mammal concentrations to toxic tissue concentrations – current – Trapper Lake North

COPC	Toxic Tissue Concentration [a]	Measured Whole Body Small Mammal Summary Statistics [b]								
		N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile	95% UCLM
	mg/kg ww									
Arsenic	6-28 liver 5-26 kidney	16	0	0.39	2.8	1.6	0.61	1.4	2.3	1.8
Copper	690 liver 23 kidney	16	0	2.1	4.9	2.8	0.72	2.7	4.1	3.1

Note: a – Source: Puls (1994).
b – Source: Golder (2016m).

Table 4.43 Comparison of measured small mammal concentrations to toxic tissue concentrations – West of Baker Creek

COPC	Toxic Tissue Concentration [a]	Measured Whole Body Small Mammal Summary Statistics [b]								
		N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile	95% UCLM
	mg/kg ww									
Arsenic	6-28 liver 5-26 kidney	18	0	1.3	28	4.4	6.1	3.0	12	6.2
Copper	690 liver 23 kidney	18	0	2.4	3.9	3.3	0.40	3.3	3.8	3.5

Note: a – Source: Puls (1994).
b – Source Golder (2016m).

Table 4.44 Comparison of measured small mammal concentrations to toxic tissue concentrations – East of Baker Creek

COPC	Toxic Tissue Concentration [a]	Measured Whole Body Small Mammal Summary Statistics [b]								
		N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile	95% UCLM
	mg/kg ww									
Arsenic	6-28 liver 5-26 kidney	3	0	2.1	3.1	2.6	-	2.5	-	-
Copper	690 liver 23 kidney	3	0	2.7	2.8	2.7	-	2.7	-	-

Note: a – Source: Puls (1994).
b – Source: Golder (2016m).

Table 4.45 Comparison of measured small mammal concentrations to toxic tissue concentrations – South Baker Creek

COPC	Toxic Tissue Concentration [a]	Measured Whole Body Small Mammal Summary Statistics [b]								
		N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile	95% UCLM
	mg/kg ww									
Arsenic	6-28 liver 5-26 kidney	9	0	0.15	2.8	1.0	0.83	0.72	2.3	-
Copper	690 liver 23 kidney	9	0	1.2	3.3	2.6	0.70	2.5	3.3	-

Note: a – Source: Puls (1994).
b – Source: Golder (2016m).

A similar comparison was made to toxic tissue concentration levels for the future using predicted small mammal (shrew and mouse) concentrations; this comparison is shown in Table 4.46. As can be seen, all arsenic and copper concentrations in small mammals are predicted to be below the toxic tissue concentrations.

Table 4.46 Comparison of measured small mammal concentrations to toxic tissue concentrations – future

COPC	Toxic Tissue Concentration [a]	Trapper Lake North [b]	West of Baker Creek [b]	East of Baker Creek [b]	South Baker Creek [b]
	mg/kg ww				
Arsenic	6-28 liver 5-26 kidney	2.3	3.4	3.0	3.5
Copper	690 liver 23 kidney	0.66	0.63	0.68	0.67

Note: a – Source: Puls (1994).
b – Predicted 95% UCLM concentrations for shrew/mouse.

Summary

Table 4.47 summarizes the information from the individual LOEs into an overall WOE evaluation. For many of the receptors, the food chain modelling is the only information available; however, for small mammals the tissue concentrations provide a valuable LOE. In addition to the LOEs identified, it is noted that the field program was able to obtain small mammals and no obvious signs of toxicity were noted. As this program was not a robust survey of the small mammal population it was not included as a formal LOE, but is considered as additional information.

It is also noted that a recent study examined biochemical responses to snowshoe hare in the area near Giant Mine compared to a reference location (Amuno et al. 2018b, 2018a).

Overall these two studies indicate that hares are exposed to arsenic and that there are biochemical changes. The endpoints examined in these studies however, are not suitable for evaluating population-level effects within an ERA. Appendix L provides some additional information on these studies.

Table 4.48 provides a summary of the expected future conditions. This is a predictive assessment, and the LOEs rely on estimates of soil concentrations that will be directly affected by the GMRP as well as anticipated changes to the concentrations in the biological environment.

Table 4.47 Summary of assessment of wildlife in terrestrial environment – current

Assessment Endpoint	Line of Evidence	Measurement Endpoint
Maintenance of the health and ecological integrity of wildlife that use the terrestrial resources on the site.	Food chain model	The food chain model indicated that antimony, arsenic, and manganese are at concentrations at the Giant Mine where effects in wildlife may occur. The potential for effects was identified in all four quadrants of the site. The animals with the greatest risk of an effect were small animals, including mice and hare, but were particularly a concern for those that consume terrestrial insects (shrew, bat, swallows). The potential effects are generally limited to the small animals, only antimony was predicted to be a potential issue for larger receptors such as lynx and fox.
	Tissue Concentrations	Comparison of measured concentrations in tissue of small mammal (whole body) to available toxic tissue concentrations showed that most values are well below the benchmarks with only a few exceptions.
Overall Assessment: There is the potential for the smaller animals at the site to be affected by COPC. This is a particular concern for those animals that consume insects. As animals can adapt to living in areas of high concentrations, the effects may not be as significant as predicted. The measured small mammal tissue showed that effects across the site are not expected, and small mammals were abundant at the site, supporting that the food chain model LOE is conservative.		

Table 4.48 Summary of assessment of wildlife in terrestrial environment – future

Assessment Endpoint	Line of Evidence	Measurement Endpoint
Maintenance of the health and ecological integrity of wildlife that use the terrestrial resources on the site.	Food chain model	Similar to for the current estimates, the food chain model indicates a potential concern for most receptors across the site for antimony, arsenic, and manganese in the future. The highest SI values were noted for the shrew and other small animals. With the implementation of the GMRP, the SI values for receptors in East of Baker Creek are the ones to show the largest improvement, but are still above 1.
	Tissue Concentrations	Comparison of predicted small mammal (shrew and mouse) concentrations to toxic tissue concentrations showed that predictions for all quadrants of the Giant Mine are expected to be below the benchmarks.
Overall Assessment: There is the potential for small animals to be affected by COPC levels at the site. This is a particular concern for those animals that consume insects. The measured small mammal tissue showed that effects across the site are not expected, indicating that the food chain model LOE is conservative.		

4.6.1.8 Overall Summary

Table 4.49 provides an overall summary of the WOEs for the assessment endpoints.

Table 4.49 Summary of results of ERA

Assessment Endpoint	Current	Future
Maintenance of the health and ecological integrity of the benthic invertebrate community.	The magnitude of the effect of elevated sediment COPC concentrations in Baker Creek on depositional benthic invertebrates can be qualitatively described as low. Benthic invertebrate communities in erosional habitats of Baker Creek do exhibit differences from communities in similar habitats in the Yellowknife River. Despite some elevated concentrations in sediment of Back Bay/North Yellowknife Bay, the benthic community of Yellowknife Bay is variable and reflects a relatively diverse benthic community but typically dominated by a few taxa. No population-level adverse effects due to the presence of COPC in sediment were observed.	The GMRP is expected to have a significant impact on benthic invertebrates. Once the community in Baker Creek has re-established, it is possible that there will be some minor effects on invertebrates in erosional habitats, but significant impacts on the benthic invertebrate community from the presence of COPC in sediment are not expected. The benthic community will be affected due to changes in the habitat (from dredging) and changes in flow within Baker Creek (may be periods of time during the summer that the creek is dry). The conditions in Yellowknife Bay are expected to improve over time, albeit slowly. The benthic community is not expected to change with the implementation of the GMRP outside of the limited areas near the Giant Mine where sediment remediation is planned.
Maintenance of the health and ecological integrity of the water column organisms.	It is expected that water column organisms (invertebrates and algae) in Baker Creek are currently being affected by the presence of COPC in the water. The potential for an effect is limited to Baker Creek as no adverse effects are expected in Yellowknife Bay.	With the implementation of the GMRP the conditions in Baker Creek are expected to improve. There is the potential for some effects due to the presence of antimony and arsenic, but this is expected to be minor. There are no potential effects expected in Yellowknife Bay, including consideration of moving the effluent release to Yellowknife Bay near the vicinity of the outlet of Baker Creek.
Maintenance of the health and ecological integrity of the fish populations.	It is expected that fish in Baker Creek are currently being affected by the presence of COPC in the water and sediment. The potential for an effect is limited to Baker Creek, as no adverse effects are expected in Yellowknife Bay. The level of the effect is difficult to determine and fish health surveys have not seen an obvious pattern of response.	With the implementation of the GMRP, it is anticipated that water and sediment quality in Baker Creek will improve. However, arsenic in the water of Baker Creek will continue to be elevated, and this may cause fish in Baker Creek to continue to be affected. The potential for an effect is limited to Baker Creek, as no adverse impacts are expected in Yellowknife Bay.
Maintenance of the health and ecological integrity of wildlife that use the aquatic resources on the site.	While COPC levels in the environment indicate that there is potential for adverse effects to wildlife in the aquatic environment near to the Giant Mine, evidence of this was not observed during the muskrat studies; however, data are limited.	The GMRP will improve the conditions in Baker Creek, although there is still the potential for adverse effects to wildlife in the aquatic environment near to the Giant Mine. The dredging of Baker Creek will affect the use of this watercourse in the short term, and changes in flow within Baker Creek (may be periods of time during the summer that the creek is dry) will also have an effect on the presence of wildlife and how they use the system.

Assessment Endpoint	Current	Future
Maintenance of the health and ecological integrity of vegetation communities on the site.	The data suggest that there may be some effects on terrestrial vegetation, particularly in the East of Baker Creek quadrant. High concentrations in vegetation were not necessarily associated with obvious signs of stress.	With the implementation of the GMRP, the soil quality at the Giant Mine is expected to improve. There is the possibility of some effects on terrestrial vegetation, but widespread effects are not expected.
Maintenance of the health and ecological integrity of wildlife that use the terrestrial areas on the site.	There is the potential for the smaller animals at the site to be affected by COPC. This is a particular concern for those animals that consume insects. As animals can adapt to living in areas of high concentrations, the effects may not be as significant as predicted. The measured small mammal tissue showed that effects across the site are not expected, supporting that the results from the food chain model are conservative.	With the implementation of the GMRP, there will continue to be the potential for small animals to be affected by COPC levels at the site. This is a particular concern for those animals that consume insects. The predicted small mammal tissue results show that effects across the site are not expected, indicating that the results from the food chain model are conservative.

4.6.2 Sensitivity Analyses

A sensitivity analysis was undertaken to look at the sensitivity of the ERA results to changes in some of the assumptions with higher associated uncertainty. As a conservative approach was taken in the assessment, the sensitivity analysis examined some of the assumptions to determine whether different assumptions would affect the conclusions of the assessment. The full sensitivity analysis discussion can be found in Appendix N. The sensitivity analysis looked at the following factors:

- Water/sediment model predictions (Case A) – Future water and sediment levels resulting from the Giant Mine Remediation plan were modelled, taking into account all available information. There was, however, uncertainty in some areas of the model where information was limited. In addition, factors such as climate change may have an impact on future water and sediment quality that was not accounted for in the predictions. In the DAR (INAC/GNWT 2010), the CCCSN assessment indicated that precipitation may increase by up to 15% over the next 50 years. As the future assessment was evaluating a 100 year scenario, it was assumed the change in precipitation could be as high as 30%. The effect of climate change on the future conditions at the Giant Mine is difficult to quantify (Appendix N provides further discussion on the potential changes to water and sediment quality due to climate change). For this reason, this sensitivity case looked at varying water and sediment predictions by 30% in Lower Baker Creek and 10% in Back Bay.
- Bioaccessibility and arsenobetaine assumptions (Case B)
    - Case B1 – All available arsenic data was used to derive bioaccessibility and arsenobetaine assumptions for use within the ERA. This is a reasonable approach, as not all arsenic in the environment is available or toxic. The sensitivity analysis examined the effect of using 100% bioaccessibility and 100% toxic for arsenic.
    - Case B2 – No bioaccessibility data were available for COPC besides arsenic. While it is not realistic, in the absence of information, bioaccessibility for antimony, copper, manganese, and zinc were assumed to be 100%. This sensitivity looked at setting soil antimony bioaccessibility to 30%. This value seemed reasonable based on information from other sites (Li et al. 2014).

- Basis for derivation of TRVs (Case C) – The TRVs selected for use in the ERA were taken from the FCSAP guidance and are based on NOAELs. This is a conservative approach that is protective of any species, including species-at-risk such as the little brown bat and barn swallow. This sensitivity analysis looked at the use of TRVs based on LOAELs. The use of LOAELs can be used to evaluate population-level effects and is supported by other regulatory agencies (e.g., MOECC have used LOAELs in the derivation of soil quality guidelines (MOE 2011)).
- Soil remediation assumptions (Case D) – Future soil concentrations for regions of the Giant Mine were developed based on the Giant Mine Remediation Plan. There is uncertainty in implementation details at this point and so this sensitivity analysis looked at if the concentrations in the remediated soils are 20% lower.
- Basis for terrestrial insect concentrations (Case E) – As there are no direct measurements of insects from the site, for this assessment, it was assumed that insects are present at the same concentration as vegetation. This sensitivity analysis looked at setting terrestrial insects equal to the bioavailable fraction of arsenic in foliage and not the entire amount of arsenic as was done in the ERA.

Selected examples illustrating the results of the sensitivity analysis are shown below in Figure 4.49, Figure 4.50, and Figure 4.51.

Figure 4.49 Sensitivity analysis results for muskrat in Baker Creek Reach 6 – 2120 - arsenic

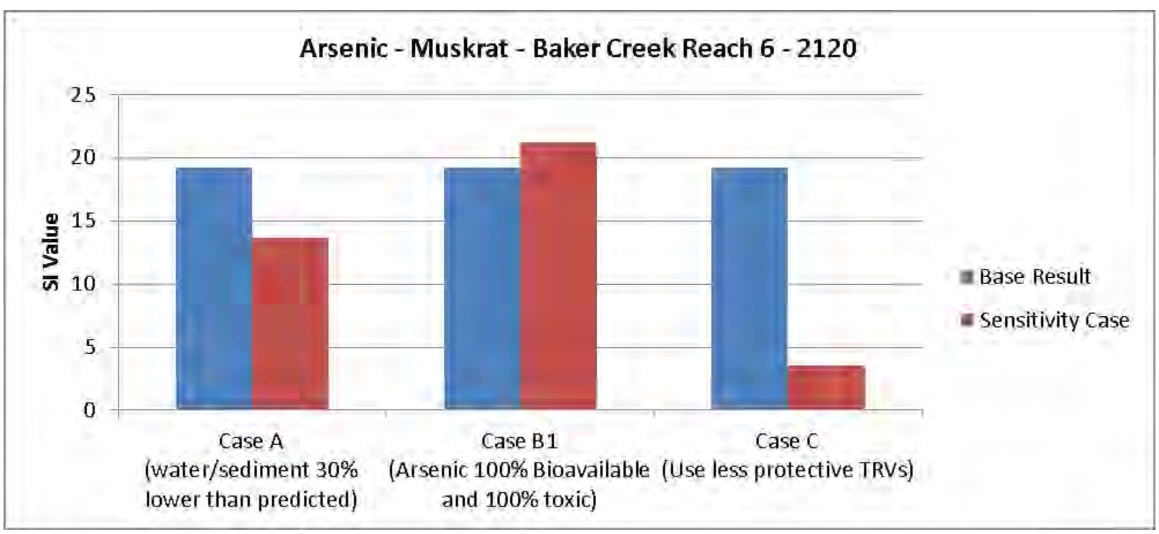


Figure 4.50 Sensitivity analysis results for shrew in East of Baker Creek – future – arsenic

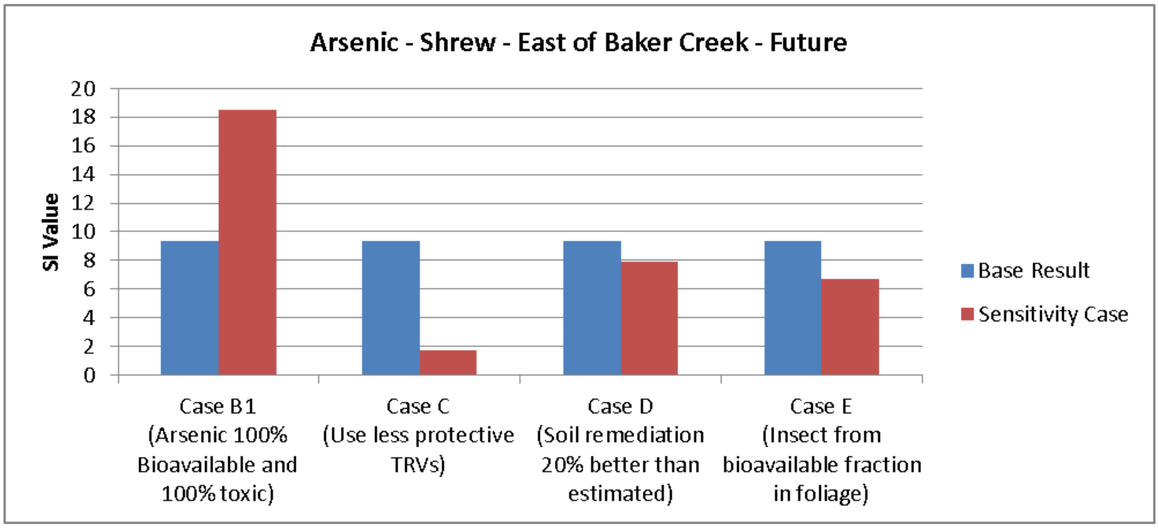
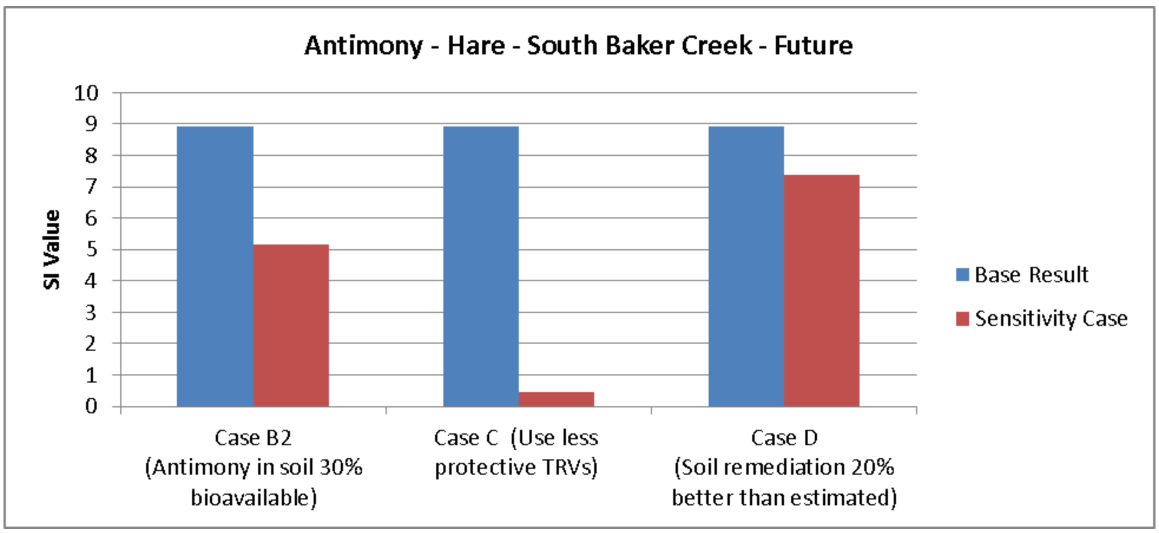


Figure 4.51 Sensitivity analysis results for hare in South Baker Creek – future – antimony



It was seen that changes to the water and sediment modelling (case A) and soil remediation (case D) are not expected to affect the conclusions of the ERA. Some receptors were seen to be sensitive to arsenic accessibility/toxicity assumptions (case B-1); however, the test assumptions are overly conservative and, as shown by the available data, not realistic.

Both reducing the antimony soil bioaccessibility to a number that is likely more realistic (case B-2) and changing the basis for terrestrial insect concentrations (case E) resulted in reduced SI values for some receptors; however, additional site data on bioaccessibility in COPC other than arsenic and insect concentrations would be needed prior to implementing more realistic assumptions such as these within the ERA.

The use of LOAELs for TRVs (case C) could potentially have a substantial impact on the calculated SI values. Despite this, however, there are still many receptors that have SI values above 1, indicating a potential for adverse effects. In addition, this approach may apply to all receptors, including species at risk such as the little brown bat and barn swallow.

Overall, the sensitivity analysis concluded that, while uncertainty in some factors may change predicted SI values for evaluated receptors, in every sensitivity case, SI values for many receptors and COPC remained well above the benchmark of 1. For this reason, uncertainty related to the examined factors is not expected to change the overall findings of the ERA. Additional information on the sensitivity analysis is provided in Appendix N.

4.6.3 Uncertainty Assessment

There are several areas of uncertainty in conducting a risk assessment due to the fact that assumptions have to be made throughout the assessment either due to data gaps, to environmental fate complexities, or in the generalization of characteristics related to behaviour and diet of ecological receptors. An accounting of the uncertainty is provided to be able to place a level of confidence in the results. The magnitude and type of uncertainty are important in determining the significance of the results. In recognition of these uncertainties, the ERA used cautious assumptions where possible to ensure that the potential for an adverse effect would not be underestimated. The major assumptions are outlined below.

The COPC concentrations used in the assessment were based on measured data, when available, from the aquatic and terrestrial environments from a variety of sampling programs. There is an extensive database of information on soil from the site. The use of reasonable maximum exposure concentrations, which were generally an upper estimate (95% UCLM) values of measured data result in reasonable yet conservative estimates of exposure. Even with the extensive amount of data available, there is still uncertainty with respect to appropriately representing the soil that would be accessible for ecological receptors. Golder (2015a) found that elevated arsenic concentrations are particularly pronounced in the outcrop terrain. Outcrop areas typically consist of bare, smooth rock surfaces with crevices, or hollows that collect soil. These crevices will limit the soil that is accessible to ecological receptors and, therefore, the assessment provided is conservative.

The assessment of aquatic resources in Baker Creek relied on information presented in a previous study (Golder 2013a). In this study, the uncertainty in parameters (chemistry, toxicity tests, benthic community evaluation) and in the structure of the assessment was evaluated. They found that uncertainties in these areas were unlikely to change the overall conclusions of the Baker Creek assessment.

Sediment COPC are somewhat mobile, as sediment moves within waterbodies and, over time, through sediment processes such as burial, sediment concentrations may decrease. Thus, the sediment concentrations as represented by the upper estimate (95% UCLM) may not represent the concentration of the COPC over the long term. Arsenic is known to be released from the sediments when there is not a lot of oxygen present and, in these cases, the arsenic becomes mobile and the concentrations in the sediment may increase. The assumption of long-term exposures to the upper estimate concentration for antimony is likely to have overestimated actual exposures. However, in the case of arsenic, it is difficult to determine whether it is an overestimate or an underestimate.

Concentrations of insects were required to assess the potential for effects on animals that use these as a source of food. In the absence of measured data, emergent aquatic insects were assumed to be related to benthic invertebrates since these insects begin their life cycle in the benthic community. For terrestrial insects, the concentration was assumed to be equal to measured vegetation. It is unclear how well this assumption represents concentrations of terrestrial insects. A sensitivity assessment was done in Section 4.6.2 that showed that this assumption is an important factor, especially for antimony, but is unlikely to affect the conclusions of the RA.

Many of the calculations, particularly for future conditions, used site-specific transfer factors (TFs) to estimate concentrations in the environment. There is always uncertainty in estimating concentrations; but the use of site-specific TFs is a reasonable approach and would be associated with less uncertainty than alternative methods such as the use of literature TFs.

Site-specific bioaccessibility and speciation data were not available for antimony, copper, manganese, and zinc; therefore, it was assumed that they were 100% available. In addition, the oral bioavailabilities of antimony, copper, manganese and zinc in soil, sediment and water were generally assumed to be equivalent to the highly bioavailable forms used in the toxicity studies. This assumption would lead to an overestimate of exposure. For arsenic, assumptions were made for the bioaccessibility in soil and sediments based on measured data for soils and sediments. In addition, for mammals and birds, it was assumed that the bioaccessibility was the same as the bioaccessibility measured in hare from the Yellowknife area based on a literature study (Koch et al. 2013). The assumption seemed reasonable; however, it is particularly uncertain for birds. As shown in Section 4.6.2, an assumption of 100% bioaccessibility was evaluated. This resulted in an increase in arsenic exposure; however, the conclusions were not affected.

The receptor characteristics are also a source of uncertainty, as receptors adjust and vary their diet according to the food sources available. The characteristics (e.g., body weight, food, soil consumption, etc.) of ecological receptors were obtained from the literature associated with animals in captivity and may not be fully representative of free-range animals in the wild. An underestimate of exposure might result from this, but there are other conservative assumptions that may compensate (i.e., time spent in area exposed to site contamination, sufficient food available at areas of highest contamination).

TRVs are obtained from reputable sources (e.g., ECCC, U.S. EPA); nonetheless, they are always associated with uncertainty due to the extrapolation of testing on lab species to field conditions as well as a range of receptors. There is uncertainty associated with the use of NOAEL and LOAEL values as TRVs, as these values are not directly related to biologically relevant thresholds and do not provide information about the actual magnitude of effects in the reported studies; however, they have widespread use in the risk assessment community, generally due to policy decisions (Allard et al. 2010). The TRVs used for wildlife in this assessment were NOAELs provided by in the FCSAP guidance (FCSAP 2015b).

The effect of multiple COPC on risk was not evaluated in this assessment. When dealing with more than one COPC, there is the potential interactions. There is insufficient information available to be able to evaluate these interactions.

Table 4.50 provides a summary of the uncertainties discussed above. It can be seen from the table that, in general, the uncertainties used in the assessment lead either to an overestimate of exposures or to no substantial change to the estimates, and, thus, the conclusions of the assessment remain unchanged.

Table 4.50 Summary of uncertainties in the ERA

Uncertainty	Overestimate	Possible Underestimate or Neutral Effect	Comment
Use of reasonable maximum exposure concentrations to characterize exposures.			The use of the 95% UCLM to represent exposures for most media may overestimate exposures by a factor up to two.
Use of upper bound concentrations of antimony in sediments.			Sediments are difficult to characterize accurately as even samples close to each other can be different. Generally sediment concentrations decrease over time. Much of the sediment data were collected over five years ago, thus may be overestimated. This is particularly relevant for antimony as arsenic is known to be maintained for a longer period of time in sediment due to geochemical processes. Overall, this is expected to be less than a factor of two.
Use of upper bound concentrations of arsenic in sediments.			
Limited data sets for some environmental media.			There are limited data available for some areas of the site (e.g. sediment in Reach 6) and in some media (e.g. aquatic plants). Conservative estimates were made but it is unknown the effect of this assumption.
Estimate emergent aquatic insects from benthic invertebrates.			In the absence of measured data, emergent aquatic insects were assumed to be related to benthic invertebrates since these insects begin their life cycle in the benthic community.
Estimate terrestrial insects from vegetation.			In the absence of measured data, terrestrial insects were assumed to be equal to terrestrial plants. Information on arsenic shows this may overestimate the exposure be a factor of two to 10.

Uncertainty	Overestimate	Possible Underestimate or Neutral Effect	Comment
Estimate concentrations using transfer factors.			Environmental concentrations were estimated using transfer factors that were derived based on site-specific information (small mammals, vegetation, fish, aquatic plants). There is a lot of variability in the data and the relationships are often weak, but this approach is associated with the least uncertainty of the options available.
Assumption of 100% bioaccessibility for antimony and manganese.			It is known that metals are not fully absorbed in the digestive system. This may overestimate exposure by a factor of two to 10.
Use of 50% arsenic bioaccessibility in hare to represent the bioaccessibility in wild game.			There is uncertainty in applying the bioaccessibility measurements in hare to other animals. A sensitivity analysis showed that different assumptions are not expected to change the conclusions.
Receptor characteristics for wildlife are unknown for site-specific conditions.			What animals eat and the amount of food is estimated based on available information. Consideration was given to local conditions but animals will change behavior depending on the habitat. They were assumed to reside entirely on the site, this is expected to be an overestimate for larger receptors such as fox and owl.
Use of NOAELs as the TRV.			Exceeding a no effects level does not necessarily mean that there will be an adverse effect. The use of lowest observed effect levels have been used to judge population-level effects. The use of NOAELs can overestimate risks by a factor between two and 10.
Interactions between COPC.			There may be synergism, potentiation, antagonism, or additivity of toxic effects. The use of multiple LOEs (e.g. benthic community surveys and toxicity tests) reduces the uncertainty in this knowledge gap.

5.0 INTEGRATED RESULTS/SUMMARY AND CONCLUSIONS

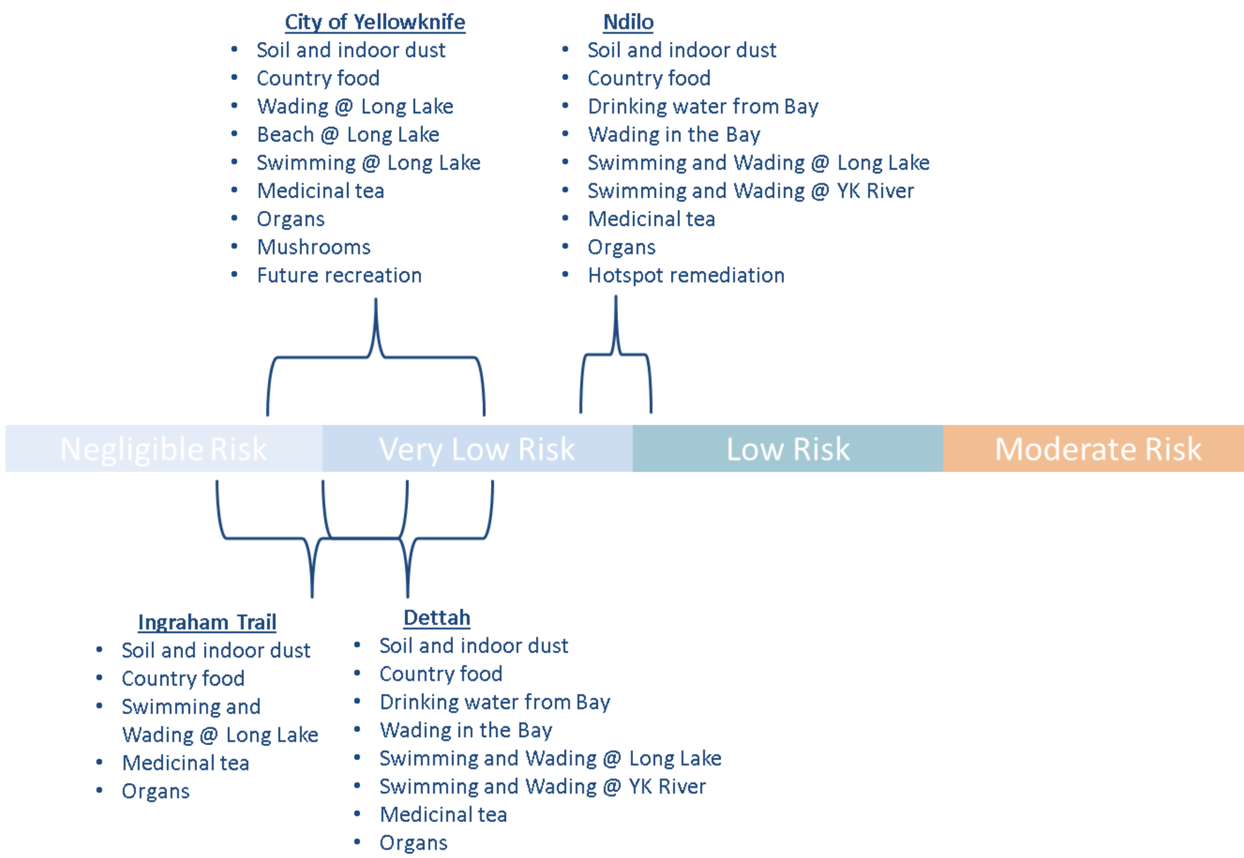
5.1 Human Health Risk Assessment

The following section provides a summary of the results for the HHRA, along with recommendations for future work.

The risks from COPC such as antimony, cadmium, lead, manganese, vanadium, and zinc were examined and found to be negligible now and in the future. The key concern from a health perspective is arsenic. Arsenic is considered to cause cancer and, therefore, the risk assessment evaluated the incremental, above-background risk from arsenic exposure in air, soils, indoor dust, water, sediment, and country foods in the area.

Figure 5.1 shows that the risks calculated are mainly within the negligible to very low risk range. These risks are equivalent to having dental x-rays or a chest x-ray. For Ndilo, the calculated risks are higher than for all other locations due to the higher arsenic concentrations in soil in the community due to historic contamination from when Giant Mine was in operation. The calculated risks are within the very low risk to the low risk range, which is equivalent to having x-rays or a CT scan. The risks for all other areas are similar and are dominated by soil and indoor dust exposure. Mushrooms within 10 km of Giant Mine have higher arsenic concentrations than background and results in risks in the very low range. Eating mushrooms collected from a distance greater than 25km from the Giant Mine results in negligible arsenic risk. The arsenic accumulating species *Tricholomatacae* collected within 10 km of the Giant Mine has very high arsenic concentrations and people should only eat small amounts of them.

Figure 5.1 Summary of estimated incremental lifetime cancer risks from arsenic



In terms of the population of the City of Yellowknife, which by the 2016 census was 19,569 people, about one additional person in the population in the Yellowknife area may develop cancer associated with arsenic exposure mostly associated with historical contamination across the Yellowknife area. It should be noted that the nature of risk assessment is to generally over-estimate actual exposures. Therefore, actual cancer incidence associated with the Giant Mine may be less than indicated here.

For the future, after the Giant Mine has been remediated, the risks will not be changed substantially, as the remedial actions at the Giant Mine will not alter the arsenic exposure across the Yellowknife area. At the former Townsite location, the remedial activities will reduce arsenic concentrations and, under a residential scenario (most restrictive land use), the risks are considered to be very low.

A number of sensitivity assessments were completed to examine the impacts of various assumptions used in the HHRA on the conclusions; the results indicated that the conclusion that there are low risks from arsenic exposure is considered valid.

Consideration of climate change indicated that, in the future, the risks from exposure to arsenic following remedial activities at the Giant Mine and under a potential climate change scenario will be within the low risk range.

Recommendations

There were uncertainties associated with some of the assumptions for the assessment; however, it is unlikely that additional data would change the conclusions of the risk assessment.

It is recommended to complete post-remediation sampling to confirm that concentrations in the future Townsite are similar to the values used in the risk assessment.

In addition, as the risks in Ndilo are higher than other areas and the result of historical activities when the Giant Mine was in operation, consideration should be given to developing a remedial action plan for soil clean-up in the community. The sensitivity analysis demonstrated that soil clean-up will reduce risks in Ndilo. Additional soil sampling should be carried out at Latham Island to determine whether the concentrations in the soil are similar to those assumed in the risk assessment.

Finally, it is recommended to use the results of the HHRA to inform the Health Effects Monitoring Program.

5.2 Ecological Risk Assessment

The following section provides a summary of the results for the ERA, along with recommendations for future work.

There are elevated levels of arsenic in the sediment of Yellowknife Bay, especially in Back Bay. Although there is remediation planned for sediment along the shore near the Giant Mine, this will have limited impact on the future sediment concentrations in Yellowknife Bay. However, the conditions in Yellowknife Bay are expected to improve over time, albeit slowly.

The ERA found that there are effects on aquatic biota, such as invertebrates and fish, in Baker Creek currently. There will be some improvement with remediation, but there is a large upstream load that will continue to result in elevated concentration of arsenic and antimony in Baker Creek. Dredging of sediments will destroy this habitat, but it will recover over time. However, the relocation of the treatment plant effluent to the mouth of

Baker Creek will change the flow, and Baker Creek may be dry during the summer months. The activities will affect how the creek will be used by fish and wildlife.

At the Giant Mine, the assessment determined that there is the potential for the smaller animals at the site to be affected by arsenic and antimony. This is a particular concern for those animals that consume insects. As animals can adapt to living in areas of high concentrations, the effects may not be as significant as predicted. The remediation will improve the situation, but adverse effects are still predicted in the future.

A number of sensitivity assessments were completed to examine the impact of various assumptions used in the ERA on the conclusions; the results indicated that the conclusions of the ERA would remain unchanged, including consideration of potential effects of climate change.

Recommendations

Based on the results of the ERA, the following activities are recommended:

- completion of biological studies to examine the health of vegetation at the site;
- collection of insect data to verify assessment assumptions; and
- examination of any differences in abundance and diversity of vegetation and mammals, particularly small mammals (shrews at terrestrial sites and muskrat in aquatic environments) by conducting biological surveys at the site compared to an appropriate reference area.

Significant changes are expected to habitats at the site due to remedial activities. It is recommended to update the wildlife surveys, including the presence of species at risk, after the remediation activities are completed. It is also recommended to complete post-remediation monitoring to determine whether any adverse effects are occurring in ecological species.

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LIST OF APPENDICES

APPENDIX A

LIST OF AVAILABLE REPORTS AND STUDIES

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APPENDIX A: LIST OF AVAILABLE REPORTS

This Appendix provides a list of all the reports that were relied on in the risk assessment report. Some of the reports had data that were extracted and used in the calculations and others had information that was considered in the fate and transport modelling or in weight–of–evidence analysis for the ecological risk assessment.

A.1 List of Reports Consulted for Characterization

The reports that have been consulted related to the aquatic environment are as follows:

- *City of Yellowknife drinking water data.*
- *Contango 2016 Wetland Field Investigation Report for Giant Mine. November.*
- *Cott et al. 2015 Arsenic and mercury in lake whitefish and burbot near the abandoned Giant Mine on Great Slave Lake. (contains data from 2010, 2012).*
- *Deton'Cho/Nuna Joint Venture MMER data from 2008 – 2009.*
- *Deton'Cho/Nuna Joint Venture 2014 Giant Mine remediation project – Surveillance Network Program (SNP) 2014 annual report.*
- *Deton'Cho/Nuna Joint Venture 2014 Giant Mine Remediation Project - Surveillance Network Program 2014 Annual Report.*
- *Deton'Cho/Nuna Joint Venture 2015 SNP report for December 2015.*
- *Deton'Cho/Nuna Joint Venture 2016 SNP report for February 2016.*
- *ECCC 2015 Metal concentrations in sediments and surface waters adjacent to Ndilo and Dettah in Yellowknife Bay. (contains data from 2014).*
- *ECCC 2016 Metal concentrations in sediments and surface waters adjacent to Ndilo and Dettah in Yellowknife Bay. Update from 2015. (contains data from 2015).*
- *Galloway et al. 2015 Geochemistry of lakes across ecozones in the Northwest Territories and implications for the distribution of arsenic in the Yellowknife Region. (contains data from 2012 and 2014).*

- *GNWT 2016 NWT Open File 2015-06 The Concentration of Arsenic in Lake Waters of the Yellowknife Area.*
- *Golder MMER data from 2011 – 2015 (Back Bay data).*
- *Golder MMER data from 2011 – 2015.*
- *Golder 2011 INAC Baker Creek grayling project.*
- *Golder 2012 Technical Memo: Baseline Data Collection for Snow Depth, Ice Thickness, and Water Quality for Hydrodynamic Modelling of Yellowknife Bay, Great Slave Lake, NWT.*
- *Golder MMER data from 2012.*
- *Golder 2013 2011 Baker Creek assessment, Giant Mine, Yellowknife, NWT. (contains data from 2010 and 2011).*
- *Golder 2015 Assessment of arsenic in sediments/surface water in Upper Baker Creek, Giant Mine lease and adjacent lands. (contains data from 2014).*
- *Golder 2015 Water Quality Sampling Program - Baker Creek.*
- *Golder 2016 2015 Runoff Sampling Program - Giant Mine.*
- *Golder 2016 Giant Mine Data Report – Human Health and Ecological Risk Assessment Data Gaps.*
- *Golder 2017 Task 5 Draft Report- Remedial Options and Scenarios Report, Baker Creek and Baker Pond, Giant Mine Project, NT.*
- *Houben 2016 Factors Affecting Elevated Arsenic and Methyl Mercury Concentrations in Small Shield Lakes Surrounding Gold Mines near the Yellowknife NT Region.*
- *Jacques Whitford 2006 Sediment investigation of Baker Creek, Giant Mine, Yellowknife, NT. (contains data from 2005).*
- *Palmer 2016 Back Bay Sediment and Surface Water data.*

- *Schuh and Jamieson 2015 Poster – Spatial variations in arsenic geochemistry in sediments and their associated porewaters from lakes in the Yellowknife region.*
- *SENES 2006 Tier 2 risk assessment – Giant Mine remediation plan.*
- *Stantec 2014 Analysis of contaminants in tissues of fish captured in the Yellowknife Bay area, NT Final Report. (contains data from 2010, 2011, 2012, 2013).*
- *Stantec 2014 Aquatic data collection in Lower Martin Lake, Upper Baker Creek and Trapper Creek. (contains data from 2013).*
- *Stantec 2014 Technical data report for the Yellowknife Bay baseline studies Volume 1: Aquatics final report. (contains data from 2004, 2012, 2013).*
- *Stantec 2015 Sediment and porewater study of the Baker Creek Outlet, Draft interpretive report. (contains data from 2015).*
- *Stantec 2015 Technical data report for aquatics and fisheries studies in Gar Lake, Trapper Lake, Upper Shot Lake and Lower Shot Lake. (contains data from 2014).*

The reports consulted for the terrestrial environment were as follows:

- *AECOM 2016 Contaminated Soils Task 2C: North Tailings Pond - Preliminary Results for 2016 Field Investigation.*
- *Contango 2016 Wetland Field Investigation Report for Giant Mine. November.*
- *ESG 2001 Arsenic levels in the Yellowknife Area: Distinguishing between natural and anthropogenic inputs.*
- *GNWT 2015 Contaminant Survey of Sahtu and South Slave Moose, Sahtu Mountain Caribou and Barren–Ground Caribou: A Plain Language Summary. (contains moose and caribou liver and kidney data from 2010 to 2015).*
- *Golder 2014 Revised letter report on shallow soil sampling programs. (contains data from 2013).*
- *Golder 2015 Assessment of regional soil quality, Giant Mine, Yellowknife, NT. (contains data from 2014).*

- *Golder 2016 Arsenic characterization – disturbed Areas, Giant Mine, Yellowknife, NT. (contains data from 2015).*

- *Golder 2016 Arsenic characterization – undisturbed areas, Giant Mine, Yellowknife, NT. (contains data from 2014, 2015).*

- *Golder 2016 Roaster complex soil and vegetation sampling Giant Mine, Yellowknife, NT. (contains data from 2015 for soils, aster, fireweed, grasses/forbs, foxtail barley, goldenrod, Labrador tea/black spruce (50/50), red–osier dogwood, wheat grass, white spruce/shrub species (60/40), wild red raspberry, and willow from the Giant Mine site and two background locations).*

- *Golder 2016 Giant Mine Data Report – Human Health and Ecological Risk Assessment Data Gaps.*

- *Golder 2016 Task 2A-Potential Remedial Strategy - Town Site and Shoreline Lands.*

- *Golder 2016 Preliminary Findings Memo - Task 2B - Proposed Core Industrial Area.*

- *Hough 2001 Characterization of arsenic in a short terrestrial food chain Yellowknife, Northwest Territories. (contains data for deer mice from the Giant Mine Site, Con Mine Site, and Yellowknife from 2000).*

- *Kerr 2001 Till geochemistry, Yellowknife area, NWT. Natural Resources Canada, Ottawa. http://geochem.nrcan.gc.ca/cdogs/content/svy/svy210026_e.htm.*

- *Koch et al. 2005 Arsenic speciation in terrestrial birds from Yellowknife, Northwest Territories, Canada: The unexpected finding of arsenobetaine.*

- *Koch et al. 2013 Bioaccessibility and speciation of arsenic in country foods from contaminated sites in Canada. (contains data from 2000, 2004, and 2010 for mushrooms, cranberries, and Labrador tea from a contaminated area in Yellowknife; contains data for hare from Yellowknife from 2000 and 2010).*

- *NCPP 1999 Risk Characterization of Arsenic Exposure to Berries in Akaitcho Territory.*

- *Obst 2014 Heavy metals in soil and edible mushrooms in the North Slave Region, Northwest Territories, Canada, and assessment of the potential human health risk from the consumption of edible wild mushrooms. (contains data from 1997 to 2009 for edible mushrooms from the Giant Mine site, the Con Mine site, City of Yellowknife, and a background location).*

- *Ollson 2000 Arsenic Contamination of the Terrestrial and Freshwater Environmnet Impacted by Gold Mining Operations Yellowknife, N.W.T.*

- *Queen's (Bromstad) The characterization, persistence, and bioaccessibility of roaster–derived arsenic in surface soils at Giant Mine, Yellowknife, NT. (Thesis) (contains data from 2010).*

- *Queen's (Wrye) Distinguishing between natural and anthropogenic sources of arsenic in soils from the Giant Mine, Northwest Territories and the North Brookfield Mine, Nova Scotia. (contains data from 2007).*

- *Ripley 2012 Yellowknife centralized composting pilot project final report. (contains data on two batches of finished compost from 2011 and 2012).*

- *RMC 2001 Characterization of the potential human health risk from consumption of garden produce in Yellowknife, NWT. (Health Risk from Garden Produce – RMC ESG 2001) (contains data from 2001).*

- *RMC 2013 Arsenic in Ndilo, NT: 2012 sampling. (contains data from 2012 for unidentified plant species in Ndilo).*

- *SENES 2006 Tier 2 Risk Assessment – Giant Mine Remediation Plan – used to supplement data.*

- *SENES 2007 Air Quality Monitoring at Giant Mine Site - Yellowknife A Baseline Study (Volume 3 - 2006).*

- *SENES 2013 Air Quality Monitoring at Giant Mine Site - Yellowknife. A Baseline Study (Volume 8 - 2011).*

- *Stantec 2014 Characterization of arsenic concentrations in soils in Ndilo, Northwest Territories.*

- *Stantec 2014 Preliminary Investigation of soil and vegetation near the roaster complex at the Giant Mine. (contains data from 2013 for soils, beaked willow, Canada buffaloberry, fireweed, foxtail barley, goldenrod, northern gooseberry, and wheat grass species from the Giant Mine site and a background location).*

- *Stevens 2015 A preliminary assessment of plant community structure along Baker Creek, Yellowknife NWT. (contains data from 2014).*

- *YCGC 2012 Garden soils from Yellowknife Community Garden Collective. (contains data from 2012).*

A.2 Other Reports Relied Upon in Assessment

- *Cygnus Environmental 2005 Giant Mine migratory bird survey.*

- *Golder 2013 Memo – Giant Mine Bird Survey. May.*

- *Golder 2014 Giant Mine Risk to Birds. Draft. November.*

- *Golder 2015 Memo – Water Quality Modelling Results for Baker and Shot Creeks and Yellowknife Bay. June.*

- *Golder 2016 2015 Giant Mine Bird Activity Surveys. January.*

- *Golder 2016 Memo – Land Cover Classification – Giant Mine. February.*

- *Golder 2016 Winter Wildlife Monitoring at Giant Mine, 2016. Draft. March.*

- *Golder 2016 Long Term Environmental Monitoring Information Consolidation, Giant Mine, Yellowknife. Draft. June.*

- *Golder 2016 Memo – Present Day Arsenic Loading to Baker Creek and Yellowknife Bay. November. (information on arsenic for fate and transport modelling).*

- *INAC and GNWT 2010 Giant Mine Remediation Project Developer's and Assessment Report. October.*

- *Stantec 2015 Aquatic Habitat Survey in the Foreshore Tailings Area, Yellowknife Bay, NT.*

- *Stevens, K., L. Clairmont, R. Hamp, and K. MacColl 2015 A Preliminary Assessment of Plant Community Structure Along Baker Creek, Yellowknife NWT. Draft.*

A.3 Summary of Previous Ecological Risk Assessments

There are two different ecological assessments that are considered as the foundation for the development of the Problem Formulation. These studies, summarized in the following sections, include:

- Ecological Risk Assessment for Giant Mine (SENES 2006)
- Assessment of Aquatic Resources in Baker Creek (Golder 2013)

A.3.1 Previous Ecological Risk Assessment (SENES 2006)

A Tier 2 Risk Assessment of the Giant Mine site was conducted previously (SENES 2006). The assessment was used to support the evaluation of proposed remedial options for the contamination on the surface of the Giant Mine site as well as possible future releases of arsenic from the underground workings. In addition, the results of the risk assessment were used within the Environmental Assessment Report that was submitted to the Mackenzie Land and Water Board. The summary in this section focusses on the ecological risk assessment component of the Tier 2 Risk Assessment.

The mandate of the assessment was only to evaluate exposure to arsenic; thus this is the only COPC that was considered in the assessment.

Aquatic receptors were selected to represent a typical food chain that would be found in Baker Creek, Back Bay and Yellowknife Bay and included:

Primary Producers	• Aquatic plants and benthic algae
Primary Consumers	• Benthic invertebrates
Secondary consumers	• Bottom feeding fish (e.g., lake whitefish and sucker)
Tertiary consumers	• Predatory fish (e.g., northern pike, lake trout)

The receptors evaluated in the terrestrial environment included:

Herbivores	• Barren ground caribou • Moose • Muskrat • Snowshoe hare • Spruce grouse

Omnivores	• Black bear
	• Waterfowl as represented by:
	  o Mallard
	  o Merganser
	  o Scaup

Carnivores	• Mink • Wolf

Exposure pathways considered were direct contact with COPC in surface water and sediment and ingestion of dietary items with elevated COPC concentration. These pathways were linked to either the aquatic environment of Baker Creek, Back Bay and Yellowknife Bay or the terrestrial environment including the Giant Mine site and lower Baker Creek watershed.

The assessment considered a remediation case which involved predictive modelling in the aquatic environment to develop future arsenic concentrations in water and sediment. Transfer factors were used to develop concentrations in other environmental compartments. For the terrestrial environment it was assumed that the entire site was remediated to GNWT industrial criteria and transfer factors were used to derive concentrations in the other terrestrial components. It was assumed that the sediments in Baker Creek would not be dredged.

Screening index values were calculated that compared the exposure to a toxicity reference value (TRV). This was the primary line of evidence in the ERA; however, other information (e.g. fish surveys, muskrat surveys) was also considered in the discussion of overall results.

It was found that no adverse effects are expected on the aquatic plants and fish of Back Bay and Yellowknife Bay after remediation. There was some potential for fish to be impacted within Baker Creek but more biological sampling was recommended to allow for a weight of evidence approach. Further studies of Baker Creek sediments were also recommended to whether historical arsenic contamination in Baker Creek sediment caused a reduction in benthic community diversity. The diversity of benthic communities in parts of Back Bay and North Yellowknife Bay may also be affected by existing levels but it was noted that this situation will gradually improve as sediments with elevated arsenic levels are buried over time and covered with cleaner material.

The results of the risk assessment for terrestrial receptors showed that, with the exception of hare and mammals that have a diet in the aquatic environment of Baker Creek (mink and muskrat), no adverse effects were expected (including bear, caribou, grouse and wolf). Likewise, the arsenic intakes predicted for the three duck species were well below the TRVs. Cautious assumptions were adopted (e.g. time spent on–site).

The intake of terrestrial vegetation was found to be the significant pathway for the hare. For the muskrat and mink the arsenic exposure was primarily from water, sediment and aquatic plants. A field investigation for muskrat was undertaken on Baker Creek to support the assessment. Based on the measured tissue levels and field evidence from the biological survey which indicates that there are active dens that support a substantial population of muskrat on Baker Creek, it is unlikely that the presence of arsenic in the sediments of Baker Creek is causing serious adverse effects on populations of small terrestrial mammals that have a significant aquatic based diet.

A.3.2 Assessment of Aquatic Resources in Baker Creek

Golder completed an assessment of the aquatic community in Baker Creek (Golder 2013). The overall objective of the report was to support decision–making activities with respect to the remediation options for Baker Creek.

The COPCs included in the assessment were aluminum, antimony, arsenic, beryllium, cadmium, chloride, chromium, copper, cyanide, iron, lead, manganese, mercury, nickel, nitrate, selenium, silver thallium, and zinc.

Aquatic receptors were selected to provide a representation for each ecosystem component in Baker Creek including:

- Phytoplankton community
- Zooplankton
- Benthic invertebrates; and,
- Fish: small–bodied fish (such as slimy sculpin and ninespine stickleback) and large–bodied fish (such as northern pike and arctic grayling)

Exposure pathways considered were direct contact with COPC in surface water and sediment and ingestion of dietary items with elevated COPC concentration.

The overall assessment endpoint was the maintenance of productive and diverse populations and communities of aquatic biota (both invertebrates and fish) in Baker Creek that were not adversely affected by COPCs in water, sediments or their tissues.

The study considered the available data (e.g. water quality) in addition to information that was collected specifically to support the study including:

- Additional surface water and sediment samples
- Benthic invertebrate sampling (with enumeration, taxonomy and chemical analysis)
- Fish tissue samples
- Fish community surveys in Trapper Lake and Lower Martin Lake

Baker Creek was divided into 7 reaches, namely Reaches 0 to 6 as well as Upper Baker Creek and Trapper Creek which is an upstream tributary to Baker Creek. A weight of evidence approach was used to integrate the data from Baker Creek into a determination as to whether there were unacceptable adverse ecological effects. This approach incorporated lines of evidence such as sediment chemistry, benthic community structure, and surface water and sediment toxicity test results. Fish community and chemistry were considered separately as they were not available for all reaches and fish were expected to move throughout the creek.

Receptor	Assessment Endpoint	Measurement Endpoints (Lines of Evidence)
Benthic invertebrate community	Maintenance of the health and ecological integrity of the infaunal benthic invertebrate community	• Compare sediment chemistry to CCME guidelines. Determine bioavailability • Sediment toxicity tests • Surface water toxicity tests • Benthic invertebrate community
Water column organisms	Maintenance of the health and ecological integrity of water column organisms that form part of the fish food chain	• Compare water chemistry to CCME guidelines and other benchmarks. • Surface water toxicity tests
Fish community	Maintenance of the health and ecological integrity of the fish populations	• Compare water chemistry to CCME guidelines and other benchmarks. • Compare tissue chemistry to guidelines and other relevant benchmarks

It was found that approximately 30% of the locations examined were classified as having significant adverse effects, 45% of the locations had potential adverse effects and 25% of the locations had negligible adverse effects. There was no gradient of potential effects and toxicity "hot spots" were located throughout Baker Creek. It was found that benthic invertebrates were found at all locations, even those with elevated concentrations; thus recolonization of sediments by benthic invertebrates is occurring. The elevated concentrations in the sediment are available to fish and other organisms in Baker Creek.

This is a key study that will be relied upon extensively in ERA to assess current conditions for aquatic biota in Baker Creek and provide additional information on the lines of evidence within the ecological risk assessment.

A.4 Literature Cited

Golder Associates (Golder). 2013. 2011 Baker Creek assessment Giant Mine, Yellowknife, NWT. Project number 09-1427-0006/9000/9600, March.

SENES Consultants Limited (SENES). 2006. Tier 2 risk assessment, Giant Mine remediation project. Final report prepared for Department of Indian Affairs and Northern Development, January.

APPENDIX B

SUMMARY OF AVAILABLE DATA

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APPENDIX B: SUMMARY OF AVAILABLE DATA

A summary of available data for each of the media considered in the human health and ecological risk assessment is presented below along with maps of the sampling locations. The full dataset containing all samples and all sample locations for aquatic and terrestrial media is provided in Appendix O. Additionally, a summary of the results of voluntary sampling program which took place from September 2016 to January 2017 is provided below.

The Giant Mine Remediation Program (GMRP) has conducted numerous studies at the Giant Mine in order to get a good understanding of the conditions of the soils, sediments and surface water on and around the site. These studies are all being considered in the risk assessment as well as in the development of the remedial action plans for the Giant Mine.

Several off-site sampling programs have been conducted as studies for the Cumulative Impact Monitoring Program (CIMP), the Yellowknives Dene First Nation (YKDFN) or the Government of the Northwest Territories (GNWT). The historic soil samples focused on arsenic whereas the current programs analyzed a wider suite of constituents of potential concern (COPC).

B.1 Air

Ambient air quality is monitored year-round under the Giant Mine Ambient Air Monitoring Program at the following community locations:

- Marina Station – Great Slave Sailing Club, near the Giant Mine public dock (Station YCC).
- Ndilo Station – Central Ndilo (Station NDL).
- Yellowknife Station – Downtown Yellowknife City (Station NAPS).

Additional atmospheric monitoring programs record conditions at six fence line stations as well as at a number of stations on the Giant Mine property.

Air quality data collected over the 2015 calendar year at the community, fence line and Giant Mine stations were used to represent current conditions. Sample locations are presented in Figure B.1 and a summary of the data is presented in Table B.1.

Figure B.1 Air sampling locations around Giant Mine

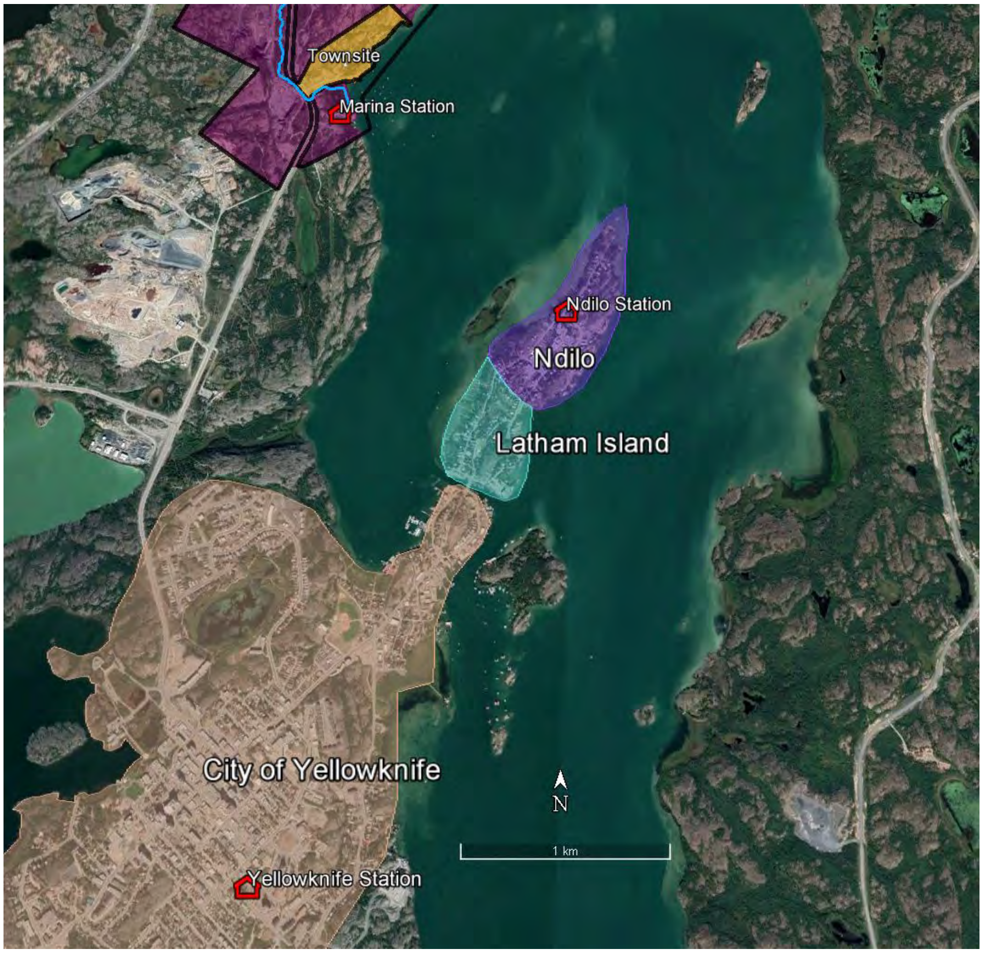

Table B.1 Summary of air concentrations from Ndilo, Yellowknife, and Marina Stations

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
PM10	µg/m^3	2674	113	0	110	5.3	11
TSP	µg/m^3	317	35	1.0	368	24	37
Arsenic (PM10)	µg/m^3	327	303	0	0.03	2.1×10^{-3}	2.4×10^{-3}
Antimony (TSP)	µg/m^3	317	314	1.6×10^{-3}	0.01	2.3×10^{-3}	7.6×10^{-4}
Arsenic (TSP)	µg/m^3	317	249	9.5×10^{-4}	0.10	3.9×10^{-3}	9.9×10^{-3}
Iron (TSP)	µg/m^3	317	17	0.01	11	0.65	1.2
Lead (TSP)	µg/m^3	317	248	4.9×10^{-4}	8.6×10^{-3}	1.1×10^{-3}	1.2×10^{-3}
Nickel (TSP)	µg/m^3	317	246	4.9×10^{-4}	0.02	1.3×10^{-3}	1.8×10^{-3}
PM2.5	µg/m^3	723	0	0	93	5.1	8.5

B.2 Soil

B.2.1 Giant Mine

There have been a number of soil studies (1999 through 2016) carried out at the Giant Mine which have focussed on the disturbed and undisturbed soils and there are over 300 recent soil samples collected at the Giant Mine. The following studies were included in the characterization of Giant Mine soils:

- *AECOM* (2016) *Contaminated soils task 2C: North Tailings pond - historical tailings release preliminary results for 2016 field investigation. Memorandum to D. Hango, Public Services and Procurement Canada, October 7 2016.*

- *Contango* (2016) *Wetland field investigation report for Giant Mine. Document # 003_1116_04A prepared for Golder Associates, November.*

- *ESG* (2001) *Arsenic levels in the Yellowknife Area: Distinguishing between natural and anthropogenic inputs.*

- *Golder* (2014) *Revised letter report on shallow soil sampling programs Giant Mine, Yellowknife, Northwest Territories. Project No. 13-1377-0147, February.*

- *Golder* (2016a) *Arsenic Characterization Disturbed Areas Giant Mine, Yellowknife, NT.*

- *Golder* (2016b) *Draft report on arsenic characterization undisturbed areas Giant Mine, Yellowknife, NT.*

- *Golder* (2016c) *Task 2A - potential remedial strategy Town Site and shoreline lands, Giant Mine project, NWT. Report number 13-1377-0044, submitted to Public Works and Government Services Canada. Draft report, September.*

- *Golder* (2016d) *Preliminary findings memo - Task 2B: Development of institutional/engineering control strategy proposed core industrial area, Giant Mine project, NWT. Technical memorandum to D. Hango, Public Services and Procurement Canada, October 7 2016.*

- *Golder* (2016e) *Giant Mine data report - human health and ecological risk assessment data gaps.*

- *Golder* (2016f) *Roaster Complex soil and vegetation sampling Giant Mine, Yellowknife, NT.*

- *Kerr* (2001) *Till geochemistry, Yellowknife area, NWT. Natural Resources Canada, Ottawa. http://geochem.nrcan.gc.ca/cdogs/content/svy/svy210026_e.htm.*

- *Stantec* (2014a) *Analysis of contaminants in tissues of fish captured in the Yellowknife Bay area, NT. Task authorization 700263428, prepared for Public Works and Government Services Canada. Final report, March.*

- *Queens Bromstad* (2011) *The characterization, persistence and bioaccessibility of roaster-derived arsenic in surface soils at Giant mine Yellowknife NT. Master of Science thesis, Department of Geological Sciences and Geological Engineering, Queen's University.*

- *Queens Wrye* (2008) *Distinguishing between natural and anthropogenic sources of arsenic in soils from the Giant Mine, Northwest Territories and the North Brookfield Mine, Nova Scotia. Queen's University.*

Of the samples used to characterize Giant Mine soils, 58 were obtained as a part of the Golder (2016e) Giant Mine Data Gaps Report in support of the human health and ecological risk assessment (see ATTACHMENT B.1). Sample locations are presented in Figure B.2 and a summary of the data is presented in Table B.2. As seen in the figure, there are an adequate number of samples to characterize the soils at the Giant Mine.

Figure B.2 Soil sampling locations on the Giant Mine Property

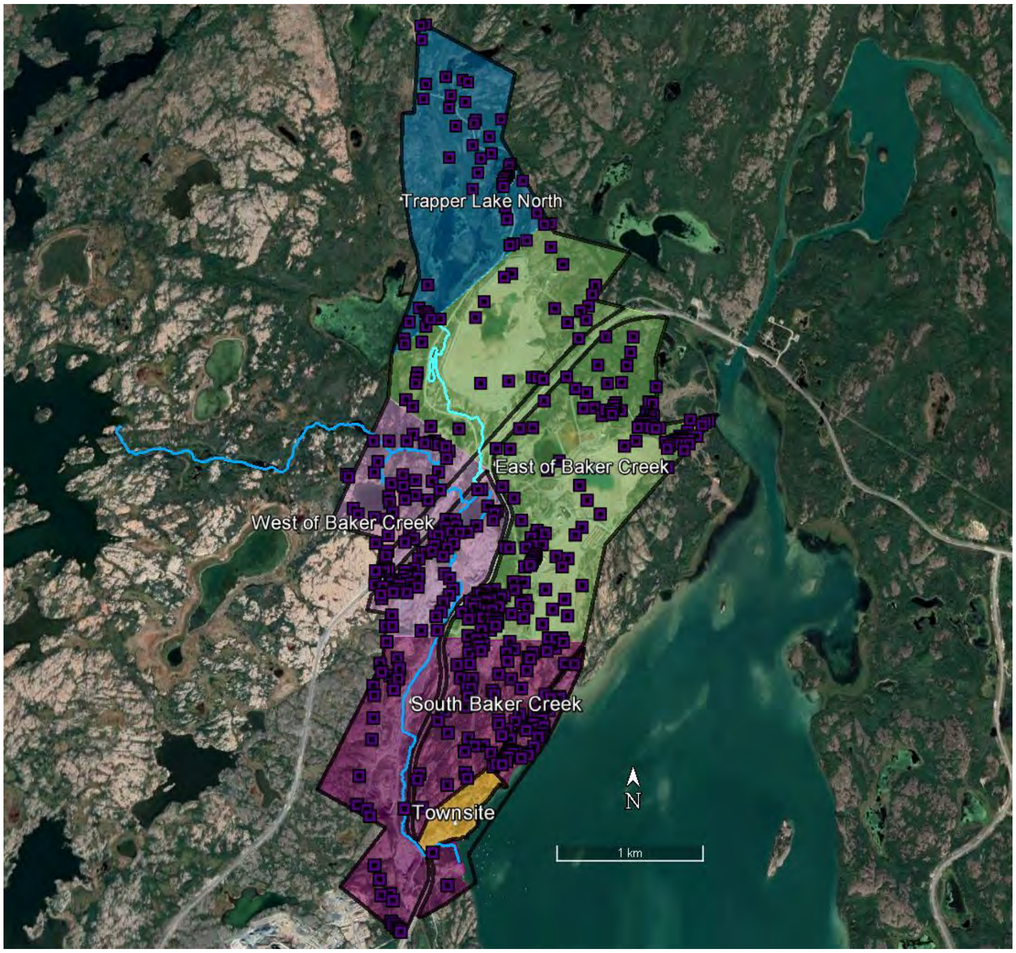

Table B.2 Summary of soil concentrations on the Giant Mine

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Giant Mine Property - East Baker Creek							
Aluminum	mg/kg	226	0	2,100	3.8×10^4	1.8×10^4	7,250
Antimony	mg/kg	243	24	0.50	1.1×10^4	194	771
Arsenic	mg/kg	140	0	20	8.7×10^4	2,443	7,592
Barium	mg/kg	223	12	2.5	390	103	87
Beryllium	mg/kg	223	223	2.0	2.0	2.0	NA
Boron	mg/kg	223	205	10	37	11	5.0
Cadmium	mg/kg	223	132	0.50	8.6	1.0	1.0
Calcium	mg/kg	238	0	1,300	6.5×10^4	2.4×10^4	2.1×10^4
Chromium	mg/kg	223	31	10	140	44	21
Cobalt	mg/kg	226	17	2.5	90	22	14

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Copper	mg/kg	231	0	11	2,543	105	261
Gold	mg/kg	228	47	$5.0x10^{-3}$	48	1.0	4.0
Iron	mg/kg	243	0	2,500	$1.7x10^{5}$	$3.5x10^{4}$	$2.0x10^{4}$
Lead	mg/kg	226	42	5.0	860	87	138
Magnesium	mg/kg	223	0	890	$3.5x10^{4}$	$1.4x10^{4}$	9,898
Manganese	mg/kg	243	0	11	9,500	737	882
Molybdenum	mg/kg	226	217	0.66	5.5	1.0	NA
Nickel	mg/kg	231	2	2.5	1,455	58	132
Phosphorus	mg/kg	226	0	140	2,800	590	416
Potassium	mg/kg	228	0	140	$7.8x10^{4}$	2,121	5,450
Selenium	mg/kg	223	223	5.0	5.0	5.0	NA
Silicon	mg/kg	9	9	5.0	5.0	5.0	NA
Silver	mg/kg	226	205	0.35	16	1.2	1.1
Sodium	mg/kg	228	16	38	$7.2x10^{4}$	724	4,797
Strontium	mg/kg	223	1	2.5	170	39	23
Thallium	mg/kg	223	220	0.50	2.8	1.0	NA
Tin	mg/kg	223	223	1.0	1.0	1.0	NA
Titanium	mg/kg	223	0	41	2,600	608	519
Uranium	mg/kg	226	220	0.50	72	5.0	5.0
Vanadium	mg/kg	223	6	5.0	165	54	26
Zinc	mg/kg	231	5	7.5	2,300	179	238
Giant Mine Property - South Baker Creek							
Aluminum	mg/kg	144	0	610	$4.5x10^{4}$	$1.8x10^{4}$	$1.1x10^{4}$
Antimony	mg/kg	150	30	0.40	900	61	106
Arsenic	mg/kg	84	0	29	$1.7x10^{4}$	2,285	3,189
Barium	mg/kg	117	0	5.7	526	120	89
Beryllium	mg/kg	117	117	2.0	2.0	2.0	NA
Boron	mg/kg	117	102	10	38	12	6.0
Cadmium	mg/kg	117	90	0.50	5.2	1.0	1.0
Calcium	mg/kg	148	0	890	$5.6x10^{4}$	$1.5x10^{4}$	$1.5x10^{4}$
Chromium	mg/kg	117	23	10	236	42	28
Cobalt	mg/kg	144	21	1.7	67	18	15
Copper	mg/kg	146	0	8.3	432	69	72
Gold	mg/kg	137	37	$2.9x10^{-3}$	6.1	1.0	1.0
Iron	mg/kg	150	0	745	$1.1x10^{5}$	$2.9x10^{4}$	$2.0x10^{4}$
Lead	mg/kg	144	49	4.8	360	35	52
Magnesium	mg/kg	117	0	1,390	$3.6x10^{4}$	9,547	7,480
Manganese	mg/kg	149	0	20	9,400	788	1,391
Molybdenum	mg/kg	144	116	0.22	4.4	1.0	NA
Nickel	mg/kg	146	5	2.5	1,169	44	111

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Phosphorus	mg/kg	144	0	140	3,900	740	583
Potassium	mg/kg	119	0	119	$2.7x10^4$	1,850	2,950
Selenium	mg/kg	117	117	5.0	5.0	5.0	NA
Silicon	mg/kg	41	41	5.0	5.0	5.0	NA
Silver	mg/kg	144	110	0.02	6.0	1.0	0.67
Sodium	mg/kg	119	7	38	$1.1x10^4$	403	1,239
Strontium	mg/kg	117	2	2.5	90	32	19
Thallium	mg/kg	117	111	0.50	5.6	1.0	1.0
Tin	mg/kg	117	116	1.0	18	1.0	2.0
Titanium	mg/kg	117	1	5.0	2,400	654	442
Uranium	mg/kg	144	116	0.20	21	5.0	2.0
Vanadium	mg/kg	117	10	5.0	210	57	43
Zinc	mg/kg	146	10	7.5	800	102	117
Giant Mine Property - Trapper Lake North							
Aluminum	mg/kg	93	0	1,800	$4.0x10^4$	$1.5x10^4$	9,242
Antimony	mg/kg	96	25	0.39	165	16	26
Arsenic	mg/kg	48	0	35	3,600	669	750
Barium	mg/kg	90	0	10	400	92	68
Beryllium	mg/kg	90	90	2.0	2.0	2.0	NA
Boron	mg/kg	90	86	10	24	11	3.0
Cadmium	mg/kg	90	80	0.50	2.1	1.0	NA
Calcium	mg/kg	96	0	600	$8.1x10^4$	9,787	$1.4x10^4$
Chromium	mg/kg	90	14	10	120	41	26
Cobalt	mg/kg	93	11	2.5	49	14	11
Copper	mg/kg	93	1	2.5	490	55	77
Gold	mg/kg	93	32	$5.0x10^{-3}$	0.39	NA	NA
Iron	mg/kg	96	0	2,800	$7.8x10^4$	$2.4x10^4$	$1.7x10^4$
Lead	mg/kg	93	45	4.1	420	16	44
Magnesium	mg/kg	90	0	1,300	$2.7x10^4$	6,932	5,144
Manganese	mg/kg	96	0	58	6,000	590	896
Molybdenum	mg/kg	93	81	0.30	3.4	1.0	1.0
Nickel	mg/kg	93	0	6.2	69	25	15
Phosphorus	mg/kg	93	0	76	2,500	623	419
Potassium	mg/kg	90	0	160	4,400	904	865
Selenium	mg/kg	90	90	5.0	5.0	5.0	NA
Silver	mg/kg	93	90	$5.0x10^{-3}$	1.0	0.97	0.16
Sodium	mg/kg	90	5	38	670	183	111
Strontium	mg/kg	90	4	2.5	78	23	19
Thallium	mg/kg	90	86	0.50	4.6	1.0	1.0
Tin	mg/kg	90	90	1.0	1.0	1.0	NA
Titanium	mg/kg	90	0	32	3,600	836	710

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Uranium	mg/kg	93	90	0.50	5.0	5.0	1.0
Vanadium	mg/kg	90	5	5.0	170	55	42
Zinc	mg/kg	93	2	7.5	250	68	56
Giant Mine Property - West Baker Creek							
Aluminum	mg/kg	121	0	893	$5.6x10^4$	$1.5x10^4$	$1.0x10^4$
Antimony	mg/kg	124	31	0.09	506	62	95
Arsenic	mg/kg	65	0	26	7,000	1,164	1,419
Barium	mg/kg	85	0	19	464	113	72
Beryllium	mg/kg	85	85	2.0	2.0	2.0	NA
Boron	mg/kg	85	74	10	36	12	6.0
Cadmium	mg/kg	91	81	0.38	1.6	1.0	NA
Calcium	mg/kg	124	0	200	$3.2x10^4$	9,611	8,556
Chromium	mg/kg	85	37	10	60	24	14
Cobalt	mg/kg	121	23	0.80	35	8.0	6.0
Copper	mg/kg	121	3	2.5	181	38	35
Gold	mg/kg	107	42	$2.1x10^{-3}$	19	1.0	2.0
Iron	mg/kg	124	0	1,030	$5.7x10^4$	$1.6x10^4$	$1.0x10^4$
Lead	mg/kg	121	51	1.0	229	26	38
Magnesium	mg/kg	85	0	280	$1.4x10^4$	5,401	2,689
Manganese	mg/kg	124	0	2.0	4,960	343	564
Molybdenum	mg/kg	121	67	0.26	16	2.0	3.0
Nickel	mg/kg	121	4	1.9	89	18	12
Phosphorus	mg/kg	121	0	100	8,380	981	1,282
Potassium	mg/kg	85	0	194	5,710	1,622	1,355
Selenium	mg/kg	85	85	5.0	5.0	5.0	NA
Silicon	mg/kg	46	46	5.0	5.0	5.0	NA
Silver	mg/kg	121	85	0.02	1.6	0.84	0.34
Sodium	mg/kg	85	7	38	740	261	178
Strontium	mg/kg	85	0	6.2	80	34	21
Thallium	mg/kg	85	83	0.50	2.9	1.0	NA
Tin	mg/kg	85	85	1.0	1.0	1.0	NA
Titanium	mg/kg	85	0	27	1,300	519	338
Uranium	mg/kg	121	78	0.50	334	20	42
Vanadium	mg/kg	85	9	5.0	140	33	21
Zinc	mg/kg	121	8	1.8	265	59	51

B.2.2 Former Townsite

There have been four soil studies in recent years collected in 2007, 2014, 2016 carried out at the former Townsite (Wrye 2008; Golder 2015a, 2016c, 2016e). More than 90 soil samples are available and are considered to be adequate to characterize exposure at the former Townsite. Of the samples used to characterize the former Townsite soils, 4 were obtained as a part of the Golder (2016e) Giant Mine Data Gaps Report in support of the human health risk assessment (see ATTACHMENT B.1). Sample locations are presented in Figure B.3 and a summary of the data is presented in Table B.3.

Figure B.3 Soil sampling locations on the Former Giant Townsite

Table B.3 Summary of soil concentrations on the former Giant Townsite

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Aluminum	mg/kg	90	0	1,460	4.9×10^4	1.8×10^4	9,507
Antimony	mg/kg	95	11	0.25	315	31	48
Arsenic	mg/kg	100	0	6.6	6,160	607	896
Barium	mg/kg	90	0	6.4	560	105	84
Beryllium	mg/kg	90	38	0.05	2.0	1.0	0.82
Bismuth	mg/kg	54	34	0.10	0.44	0.17	0.09
Boron	mg/kg	90	65	2.5	27	7.9	5.3
Cadmium	mg/kg	90	30	0.03	3.4	0.52	0.58
Calcium	mg/kg	90	0	570	6.3×10^4	1.4×10^4	1.4×10^4
Carbon	mg/kg	25	4	0.50	41	14	13
Chromium	mg/kg	90	5	4.9	264	53	47
Cobalt	mg/kg	90	4	2.5	64	19	15
Copper	mg/kg	90	0	14	340	62	59
Gold	mg/kg	31	14	5.0×10^{-3}	2.5	0.56	0.98
Iron	mg/kg	94	0	1,660	1.3×10^5	3.1×10^4	2.3×10^4
Lead	mg/kg	90	13	2.6	150	24	29
Lithium	mg/kg	54	1	1.0	54	26	12
Magnesium	mg/kg	94	0	1,400	3.6×10^4	1.0×10^4	7,642
Manganese	mg/kg	91	0	57	8,100	702	986
Mercury	mg/kg	54	0	0.01	1.3	0.15	0.22
Molybdenum	mg/kg	91	35	0.22	1,010	12	106
Nickel	mg/kg	90	0	6.5	96	33	20
Organic Carbon	mg/kg	12	0	0.50	38	15	13
Phosphorus	mg/kg	90	0	264	2,800	649	379
Potassium	mg/kg	90	0	170	6,260	1,369	1,442
Selenium	mg/kg	90	61	0.10	5.0	2.2	2.3
Silicon	mg/kg	11	11	5.0	5.0	5.0	0.0
Silver	mg/kg	90	52	0.05	1.2	0.56	0.42
Sodium	mg/kg	90	19	25	710	186	180
Strontium	mg/kg	90	1	2.0	83	24	18
Sulfur	mg/kg	25	6	100	3,500	934	922
Sulphur	mg/kg	16	0	89	2,500	1,113	960
Thallium	mg/kg	90	48	0.03	1.8	0.27	0.26
Tin	mg/kg	90	88	0.50	4.3	1.0	0.38
Titanium	mg/kg	95	0	21	1,900	490	378
Uranium	mg/kg	90	36	0.07	18	3.0	2.7
Vanadium	mg/kg	90	0	6.6	191	63	43
Zinc	mg/kg	95	0	11	571	98	92
Zirconium	mg/kg	54	9	0.50	28	5.3	6.8

B.2.3 City of Yellowknife

There have been six soil studies conducted in the City of Yellowknife (ESG 2000; Kerr 2001; NCP 1999; Ollson 2000; Obst 2014; SENES 2006). The majority of samples were collected at surficial soil depths and were sufficient for characterizing City of Yellowknife soils. Sample locations are presented in Figure B.4 and a summary of the data is presented in Table B.4. It should be noted that the sample locations presented on the figure only represent locations where co-ordinates are available. As seen from Table B.4 there are over 250 soil samples for arsenic in the City of Yellowknife which are considered to be adequate to characterize exposure in the City of Yellowknife.

Figure B.4 Soil sampling locations for the City of Yellowknife

Table B.4 Summary of soil concentrations from City of Yellowknife

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Aluminum	mg/kg	9	0	4,800	$1.8x10^4$	$1.1x10^4$	3,617
Antimony	mg/kg	63	4	0.10	17	1.4	2.6
Arsenic	mg/kg	289	0	3.0	1,190	83	130
Barium	mg/kg	13	0	48	600	194	176
Beryllium	mg/kg	9	2	0.20	0.40	0.36	0.09
Bismuth	mg/kg	5	0	0.20	0.20	0.20	$2.6x10^{-9}$
Cadmium	mg/kg	11	3	0.05	2.5	0.82	0.99
Calcium	mg/kg	2	0	2.0	2.0	2.0	0.0
Cesium	mg/kg	13	0	0.60	3.8	1.4	0.98
Chromium	mg/kg	13	0	13	125	53	36
Cobalt	mg/kg	13	0	2.6	27	11	8.4
Copper	mg/kg	59	0	4.0	62	17	12
Gold	mg/kg	54	23	$1.0x10^{-3}$	0.26	0.02	0.04
Iron	mg/kg	63	0	2.4	$3.6x10^4$	$1.3x10^4$	6,531
Lead	mg/kg	9	0	4.0	126	39	41
Lithium	mg/kg	9	0	3.6	18	13	4.4
Manganese	mg/kg	59	0	1.6	1,890	159	336
Mercury	mg/kg	11	4	$2.5x10^{-3}$	0.50	0.15	0.19
Molybdenum	mg/kg	13	3	0.40	9.4	1.8	2.5
Nickel	mg/kg	63	1	2.5	190	34	37
Potassium	mg/kg	50	1	1,500	$3.3x10^4$	$1.5x10^4$	4,642
Rubidium	mg/kg	13	0	5.5	100	30	28
Selenium	mg/kg	13	6	1.0	2.5	1.8	0.47
Silver	mg/kg	13	7	0.10	2.5	0.67	0.87
Sodium	mg/kg	54	1	2.1	$3.9x10^4$	$2.0x10^4$	8,808
Strontium	mg/kg	9	0	9.9	56	23	16
Thallium	mg/kg	9	4	0.20	0.30	0.24	0.05
Thorium	mg/kg	4	0	9.7	18	14	4.1
Tin	mg/kg	2	2	50	50	50	0.0
Titanium	mg/kg	9	0	1.1	1,310	353	441
Uranium	mg/kg	13	0	0.40	9.4	2.5	2.5
Vanadium	mg/kg	9	0	10	60	25	14
Zinc	mg/kg	63	6	5.0	1,294	84	169
Zirconium	mg/kg	2	1	100	290	195	134

B.2.4 Ndilo

For the community of Ndilo, there are three studies that contains soil sampling in the first 10 cm and they are listed below:

- *ESG* (2001)*, Arsenic Levels in the Yellowknife Area: Distinguishing Between Natural and Anthropogenic Inputs.*
- *RMC* (2013)*, Arsenic in Ndilo, NT: 2012 sampling. (contains data from 2012).*
- *SENES ,* (2006) *Tier 2 Risk Assessment Giant Mine Remediation.*

There are 25 surficial samples collected in this study. There was another study conducted in 2014 by Stantec, which collected 90 samples at depths ranging from 10 to 30 cm to represent tilled material. The report is as follows:

- *Stantec* (2014)*, Characterization of arsenic concentrations in soils in Ndilo, Northwest Territories.*

Over 100 samples are available for arsenic as well as antimony. Soil sampling locations are presented in Figure B.5 and a summary of the data is presented in Table B.5. From the figure it can be seen that the soils samples are adequate enough to characterize the soils in Ndilo. It should be noted that in the development of EPCs for Ndilo, only surficial soil samples from the first 10 cm were used.

Figure B.5 Soil sampling locations for Ndilo

Table B.5 Summary of soil concentrations from Ndilo

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Aluminum	mg/kg	90	0	388	2.9×10^4	1.0×10^4	4,830
Antimony	mg/kg	100	0	0.13	79	8.7	13
Arsenate(AsV)	mg/kg	90	1	0.10	149	15	21
Arsenic	mg/kg	139	0	5.0	1,060	194	230
Arsenite(AsIII)	mg/kg	90	67	0.10	4.5	0.32	0.73
Barium	mg/kg	90	0	8.2	158	64	36
Beryllium	mg/kg	90	79	0.20	0.61	0.23	0.09
Bismuth	mg/kg	90	12	0.05	10	0.30	1.1
Cadmium	mg/kg	90	2	0.03	2.8	0.29	0.36
Calcium	mg/kg	90	0	921	5.7×10^4	6,577	7,001
Chromium	mg/kg	90	1	0.50	107	34	17
Cobalt	mg/kg	90	0	0.70	50	9.3	7.5
Copper	mg/kg	100	0	3.0	185	33	28
Gold	mg/kg	10	0	5.0×10^{-3}	1.6	0.48	0.52
Iron	mg/kg	100	0	600	5.0×10^4	1.7×10^4	7,976
Lead	mg/kg	90	0	1.3	158	11	18
Magnesium	mg/kg	90	0	633	2.6×10^4	5,630	3,391
Manganese	mg/kg	100	0	6.1	2,360	205	258
Mercury	mg/kg	90	67	0.03	0.29	0.04	0.04
Molybdenum	mg/kg	90	0	0.17	3.4	0.75	0.51
Nickel	mg/kg	100	0	1.5	953	50	107
Phosphorus	mg/kg	90	0	114	2,930	646	418
Potassium	mg/kg	100	0	168	4.4×10^4	2,392	5,286
Selenium	mg/kg	90	84	0.25	1.1	0.28	0.14
Silver	mg/kg	90	27	0.03	1.5	0.10	0.17
Sodium	mg/kg	100	19	50	2.9×10^4	1,456	4,958
Strontium	mg/kg	90	0	3.1	53	18	11
Thallium	mg/kg	90	14	0.03	0.21	0.09	0.05
Tin	mg/kg	90	5	0.05	5.2	0.66	0.72
Titanium	mg/kg	90	0	4.9	1,480	399	227
Vanadium	mg/kg	90	1	1.0	105	31	16
Zinc	mg/kg	100	0	6.1	265	54	44
Zirconium	mg/kg	90	4	0.25	18	3.5	3.3

B.2.5 Latham Island

There have been very little data collected in the community on Latham Island with only two samples available for most constituents. There were four studies available that contained information on soil sampling (ESG 2000; NCP 1999; Ollson 2000; SENES 2006). In the ESG (2000) and Ollson (2000) studies, only 10 constituents were analysed and each contributed one sample per study. The NCP (1999) and SENES (2006) contributed one and four samples with arsenic concentrations, respectively. Sample locations are presented in Figure B.6 and a summary of the data is presented in Table B.6. Sample locations from NCP (1999) and SENES (2006) were unavailable. These samples were combined with samples from Ndilo to represent the same geographical area and used in the HHRA.

Figure B.6 Soil sampling locations for Latham Island

Table B.6 Summary of soil concentrations from Latham Island

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Antimony	mg/kg	2	0	0.37	1.9	1.1	1.1
Arsenic	mg/kg	7	0	5.9	50	22	16
Copper	mg/kg	2	0	18	19	19	0.71
Gold	mg/kg	2	0	6.0×10^{-3}	0.02	0.01	9.9×10^{-3}
Iron	mg/kg	2	0	10,000	1.7×10^{4}	1.4×10^{4}	4,950
Manganese	mg/kg	2	0	8.4	49	29	29
Nickel	mg/kg	2	0	19	80	50	43
Potassium	mg/kg	2	0	1.5×10^{4}	1.7×10^{4}	1.6×10^{4}	1,414
Zinc	mg/kg	2	0	8.8	334	171	230

B.2.6 Ingraham Trail

There have been very little data collected in the community on Ingraham Trail with fewer than 10 samples available for most constituents. There were three studies available that contained information on soil sampling (ESG 2001; Kerr 2000; Obst 2014). All samples were obtained at surficial depths except for one from Kerr (2000). Sample locations are presented in

Figure B.7 and a summary of the data is presented in Table B.7. These are the only data available and therefore were used in the assessment. There are 12 samples for arsenic, which is the main COPC identified.

Figure B.7 Soil sampling locations for Ingraham Trail

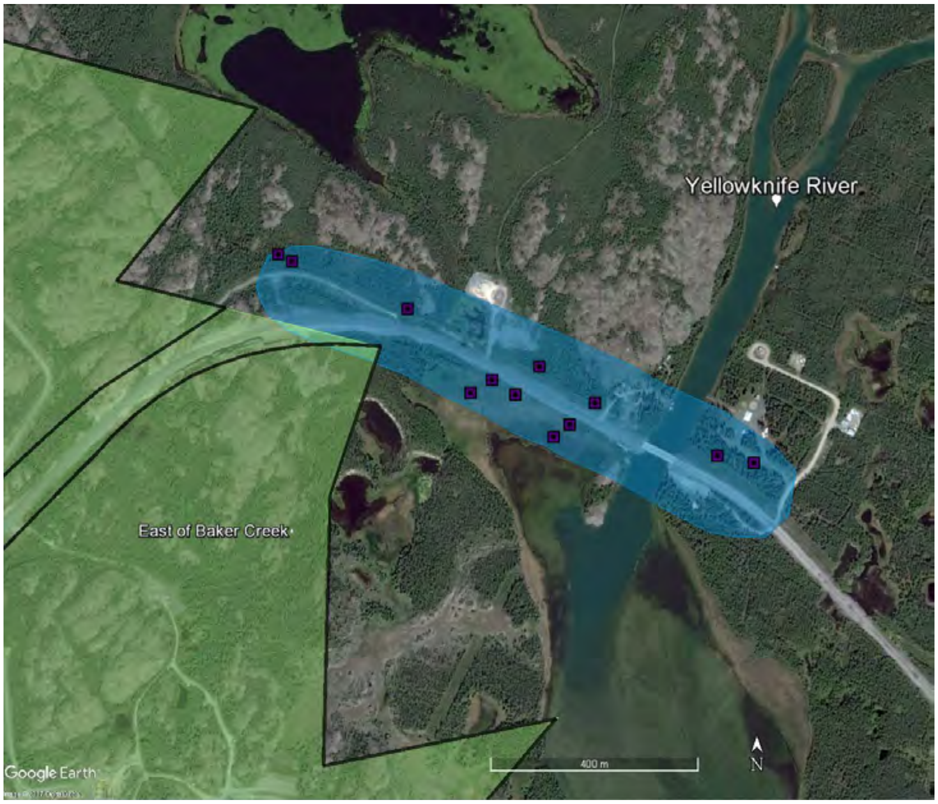

Table B.7 Summary of soil concentrations from Ingraham Trail

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Aluminum	mg/kg	2	0	2,500	6,100	4,300	2,546
Antimony	mg/kg	13	0	0.40	69	8.0	19
Arsenic	mg/kg	13	0	7.1	127	31	33
Barium	mg/kg	3	0	35	300	132	146
Beryllium	mg/kg	2	0	0.40	0.40	0.40	0.0
Bismuth	mg/kg	2	0	0.20	0.20	0.20	0.0
Cadmium	mg/kg	2	0	0.20	0.50	0.35	0.21
Calcium	mg/kg	1	0	1.0	1.0	NA	NA
Cesium	mg/kg	3	0	0.40	2.0	1.1	0.83
Chromium	mg/kg	3	0	8.0	60	28	28
Cobalt	mg/kg	3	0	4.5	11	8.4	3.4
Copper	mg/kg	12	0	7.9	186	65	45
Gold	mg/kg	11	0	1.5×10^{-3}	0.27	0.04	0.08
Iron	mg/kg	13	0	2.2	5.6×10^{4}	2.5×10^{4}	1.5×10^{4}
Lead	mg/kg	2	0	22	122	72	71
Lithium	mg/kg	2	0	2.4	12	7.3	6.9
Manganese	mg/kg	12	0	15	500	79	135
Mercury	mg/kg	3	1	0.01	0.50	0.23	0.25
Molybdenum	mg/kg	3	1	0.50	2.1	1.0	0.92
Nickel	mg/kg	13	1	10	849	295	228
Potassium	mg/kg	10	0	7,000	2.6×10^{4}	1.7×10^{4}	6,570
Rubidium	mg/kg	3	0	7.0	38	19	17
Selenium	mg/kg	3	1	1.5	2.0	1.8	0.29
Silver	mg/kg	3	1	0.20	2.5	0.97	1.3
Sodium	mg/kg	11	0	2.2	2.2×10^{4}	1.5×10^{4}	7,044
Strontium	mg/kg	2	0	15	57	36	30
Thallium	mg/kg	2	0	0.20	0.20	0.20	0.0
Thorium	mg/kg	1	0	9.2	9.2	NA	NA
Titanium	mg/kg	2	0	72	456	264	271
Uranium	mg/kg	3	0	0.90	1.6	1.3	0.36
Vanadium	mg/kg	2	0	10	20	15	7.1
Zinc	mg/kg	13	1	17	142	38	36

B.2.7 Fred Henne Campground

The Fred Henne Campground was identified as an area of concern for people from Yellowknife who go there to camp. Thus this was recognized as a data gap; as such, 11 samples were collected in 2016 by Golder (2016e) to support the data gaps analysis as described in ATTACHMENT B.1. An additional sample from Ollson (2000) was also used to characterize soils. The samples were collected from areas where people are known to use tents. Sample locations are presented in Figure B.8 and a summary of the data is presented in Table B.8.

Figure B.8 Soil sampling locations for Fred Henne Campground

Table B.8 Summary of soil concentrations from Fred Henne Campground

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Aluminum	mg/kg	11	0	507	1.8×10^4	6,690	4,277
Antimony	mg/kg	11	0	0.46	18	5.2	5.1
Arsenic	mg/kg	16	0	11	210	80	59
BAArsenic	mg/kg	10	0	19	89	42	19
Barium	mg/kg	11	0	5.1	160	53	40
Beryllium	mg/kg	11	3	0.05	0.49	0.16	0.13
Bismuth	mg/kg	11	8	0.10	0.48	0.16	0.12
Boron	mg/kg	11	7	2.5	14	4.6	3.6
Cadmium	mg/kg	11	0	0.09	11	1.6	3.4
Calcium	mg/kg	11	0	469	1.7×10^4	6,704	5,149
Chromium	mg/kg	11	0	0.60	104	31	30
Cobalt	mg/kg	11	0	0.65	12	6.2	3.5
Copper	mg/kg	11	0	1.2	86	35	28
Iron	mg/kg	11	0	324	1.8×10^4	1.0×10^4	5,019
Lead	mg/kg	11	1	0.25	500	71	150
Lithium	mg/kg	11	1	1.0	13	8.4	3.6
Magnesium	mg/kg	11	0	1,470	5,530	3,442	1,210
Manganese	mg/kg	11	0	29	663	248	197
Mercury	mg/kg	11	0	0.02	0.13	0.06	0.04
Molybdenum	mg/kg	11	0	0.15	2.3	0.76	0.63
Nickel	mg/kg	11	0	1.2	45	19	13
Phosphorus	mg/kg	11	0	200	2,400	657	605
Potassium	mg/kg	11	0	170	1,520	821	508
Selenium	mg/kg	11	9	0.10	0.25	0.13	0.06
Silver	mg/kg	11	7	0.05	0.25	0.11	0.09
Sodium	mg/kg	11	0	70	470	229	130
Strontium	mg/kg	11	0	4.2	62	18	16
Thallium	mg/kg	11	8	0.03	0.11	0.04	0.03
Tin	mg/kg	11	8	1.0	33	5.7	10
Titanium	mg/kg	11	0	8.5	258	189	71
Uranium	mg/kg	11	1	0.03	2.9	0.93	0.76
Vanadium	mg/kg	11	0	0.64	38	18	9.3
Zinc	mg/kg	11	0	14	216	70	59
Zirconium	mg/kg	11	6	0.50	2.3	0.97	0.62

B.2.8 Dettah

There have been very little data collected in the community of Dettah. There were two studies that contained information on soil sampling:

- *ESG* (2001)*, Arsenic Levels in the Yellowknife Area: Distinguishing Between Natural and Anthropogenic Inputs.*
- *NCP* (1999)*, Risk Characterization of Arsenic Exposure to Berries in Akaitcho Territory.*

In the ESG (2001) study, only 10 constituents were analysed in a total of eight samples. The NCP (1999) contributed one sample analysed for arsenic. Sample locations are presented in Figure B.9 and a summary of the data is presented in Table B.9. These are the only data available and therefore were used in the assessment. It is acknowledged that adequate coverage has not been provided in Dettah but it is the only data available.

Figure B.9 Soil sampling locations for Dettah

Table B.9 Summary of soil concentrations from Dettah

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Antimony	mg/kg	8	0	0.17	6.2	2.4	2.4
Arsenic	mg/kg	9	0	7.2	144	44	50
Copper	mg/kg	8	0	30	136	70	44
Gold	mg/kg	8	0	2.0×10^{-3}	0.06	0.01	0.02
Iron	mg/kg	8	0	6,000	3.8×10^{4}	2.1×10^{4}	1.1×10^{4}
Manganese	mg/kg	8	0	5.8	59	28	17
Nickel	mg/kg	8	0	10	903	285	277
Potassium	mg/kg	8	0	1,100	1.8×10^{4}	1.2×10^{4}	5,949
Sodium	mg/kg	8	0	470	2.7×10^{4}	1.4×10^{4}	9,407
Zinc	mg/kg	8	0	8.2	37	24	10

B.3 Surface Water

Surface water samples are available from various areas around Yellowknife Bay, Baker Creek, and the Upper Baker Creek Watershed.

B.3.1 Baker Creek

From all the studies on Baker Creek, it can be seen that there are a large amount of surface water samples available for Baker Creek (> 300 samples). The samples were obtained from 10 studies (Golder 2013a, 2013b, Stantec 2014b, 2014c, Golder 2015b, 2015c, 2016g, 2016h, 2016i; Contango 2016) and collected from 2011 through 2016. Sample locations are presented in Figure B.10 and a summary of the data is presented in Table B.10. There are sufficient surface water samples available to adequately characterize Baker Creek.

Figure B.10 Surface water sampling locations in Baker Creek

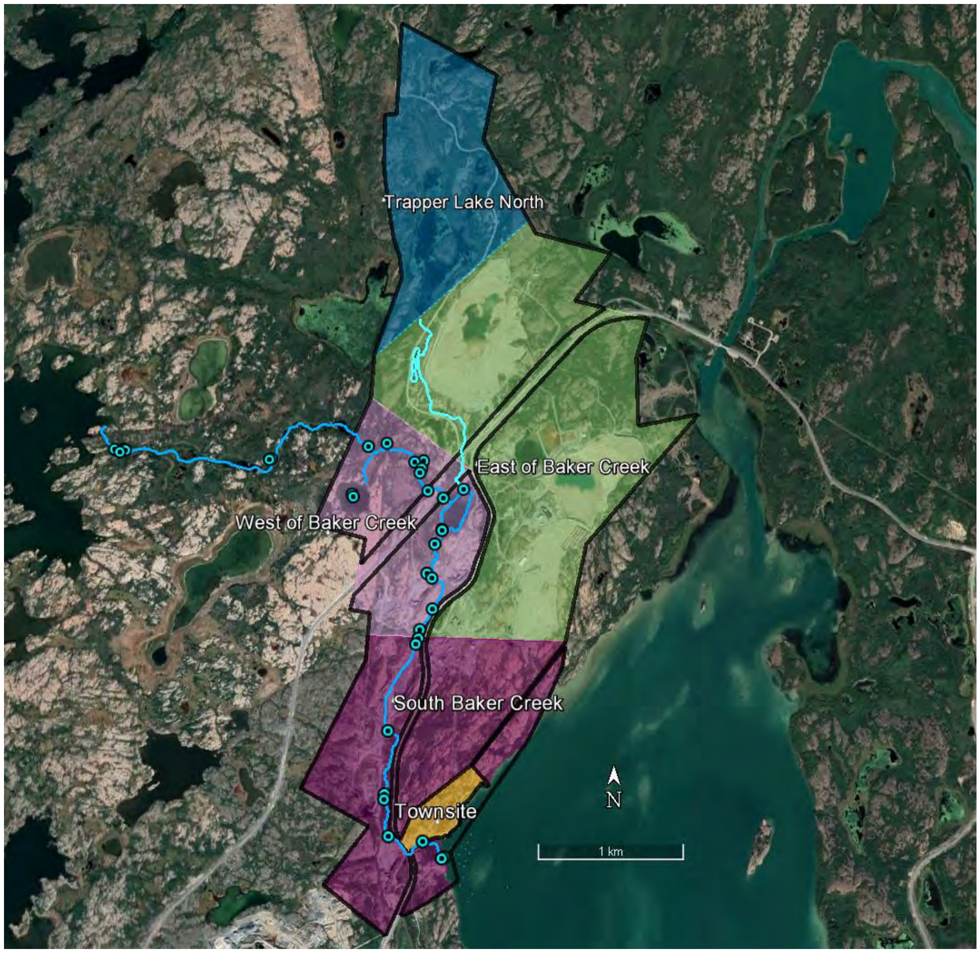

Table B.10 Summary of surface water concentrations in Baker Creek

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
General Water Chemistry							
Calcium	mg/L	324	0	4.6	469	123	152
Chloride	mg/L	50	0	1.9	496	121	167
Conductivity	µS/cm	312	0	54	3,400	899	1,095
Hardness (as CaCO3)	mg/L	320	0	21	1,550	420	510
Magnesium	mg/L	324	0	1.7	110	30	36
Potassium	mg/L	324	148	0.84	14	4.3	4.4
Sodium	mg/L	324	0	1.7	219	53	70
Sulphate	mg/L	50	0	2.2	1,200	333	449
Total Dissolved Solids	mg/L	320	2	0.50	2,610	646	854

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Nutrients							
Ammonia-N, total	mg/L	300	82	$2.5x10^{-3}$	0.47	0.02	0.05
Nitrate+Nitrite-N	mg/L	56	10	$2.6x10^{-3}$	5.9	0.48	0.93
Nitrate-N	mg/L	50	12	$2.5x10^{-3}$	2.0	0.47	0.63
Nitrite-N	mg/L	50	32	$5.0x10^{-4}$	0.05	0.01	0.01
Phosphorus	mg/L	309	266	$6.2x10^{-3}$	0.45	0.13	0.05
Metals and Trace Elements							
Aluminum	mg/L	321	6	$3.0x10^{-3}$	4.3	0.11	0.29
Antimony	mg/L	321	7	$1.7x10^{-4}$	1.4	0.09	0.14
Arsenic	mg/L	316	2	$3.5x10^{-4}$	8.5	0.14	0.49
Barium	mg/L	321	49	$4.2x10^{-3}$	0.09	0.02	0.02
Beryllium	mg/L	321	317	$2.5x10^{-6}$	0.50	$5.4x10^{-3}$	0.04
Bismuth	mg/L	293	292	$2.5x10^{-6}$	0.30	0.09	0.04
Boron	mg/L	321	189	0.01	0.41	0.12	0.11
Cadmium	mg/L	321	241	$2.5x10^{-6}$	0.01	$1.0x10^{-4}$	$7.9x10^{-4}$
Chromium	mg/L	321	289	$5.0x10^{-5}$	0.50	$7.4x10^{-3}$	0.04
Cobalt	mg/L	321	273	$5.0x10^{-5}$	0.15	$5.7x10^{-3}$	0.01
Copper	mg/L	324	16	$2.5x10^{-4}$	0.10	$6.0x10^{-3}$	$8.8x10^{-3}$
Iron	mg/L	321	3	$5.0x10^{-3}$	7.6	0.20	0.46
Lead	mg/L	324	56	$1.1x10^{-5}$	0.10	$1.4x10^{-3}$	$9.6x10^{-3}$
Lithium	mg/L	321	194	$1.9x10^{-3}$	0.05	0.01	0.01
Manganese	mg/L	321	65	$1.0x10^{-3}$	0.86	0.04	0.08
Mercury	mg/L	300	288	$2.5x10^{-7}$	$5.1x10^{-5}$	$5.2x10^{-6}$	$4.5x10^{-6}$
Molybdenum	mg/L	321	11	$1.4x10^{-4}$	0.10	$5.8x10^{-3}$	$9.8x10^{-3}$
Nickel	mg/L	324	34	$2.2x10^{-4}$	0.25	$7.3x10^{-3}$	0.02
Selenium	mg/L	321	147	$2.0x10^{-5}$	0.10	$8.8x10^{-4}$	$7.9x10^{-3}$
Silicon	mg/L	310	0	0.16	6.4	0.79	0.57
Silver	mg/L	321	296	$2.5x10^{-6}$	0.05	$4.3x10^{-3}$	$4.2x10^{-3}$
Strontium	mg/L	310	0	0.03	4.9	1.1	1.4
Tellurium	mg/L	3	3	$5.0x10^{-6}$	$3.0x10^{-4}$	$2.0x10^{-4}$	$1.7x10^{-4}$
Thallium	mg/L	321	305	$1.0x10^{-6}$	0.30	0.08	0.04
Thorium	mg/L	1	0	$9.9x10^{-6}$	$9.9x10^{-6}$	$9.9x10^{-6}$	NA
Tin	mg/L	321	317	$5.0x10^{-6}$	0.50	0.02	0.04
Titanium	mg/L	321	241	$1.5x10^{-4}$	0.50	0.01	0.04
Tungsten	mg/L	3	3	$5.0x10^{-6}$	$1.0x10^{-3}$	$6.7x10^{-4}$	$5.7x10^{-4}$
Uranium	mg/L	321	4	$1.3x10^{-4}$	0.05	$1.6x10^{-3}$	$4.1x10^{-3}$
Vanadium	mg/L	321	307	$8.8x10^{-5}$	0.50	0.02	0.04
Zinc	mg/L	324	191	$1.4x10^{-3}$	1.5	0.02	0.12

B.3.2 Yellowknife Bay

For the purposes of the risk assessment, Yellowknife Bay was subdivided into three areas: (1) Back Bay which receives inputs from Baker Creek, (2) north Yellowknife Bay which interacts with Back Bay, and (3) south Yellowknife Bay. Yellowknife Bay (Back Bay, North Yellowknife Bay and South Yellowknife Bay) has been well characterized, with > 150 samples collected in recent years (2012 through 2016) for most constituents. Surface water samples were obtained from five studies (Golder 2012; Stantec 2014c; Palmer 2016; Contango 2016; Chételat 2016). Sample locations are presented in Figure B.11 and a summary of the data is presented in Table B.11.

Figure B.11 Surface water sampling locations from Yellowknife Bay

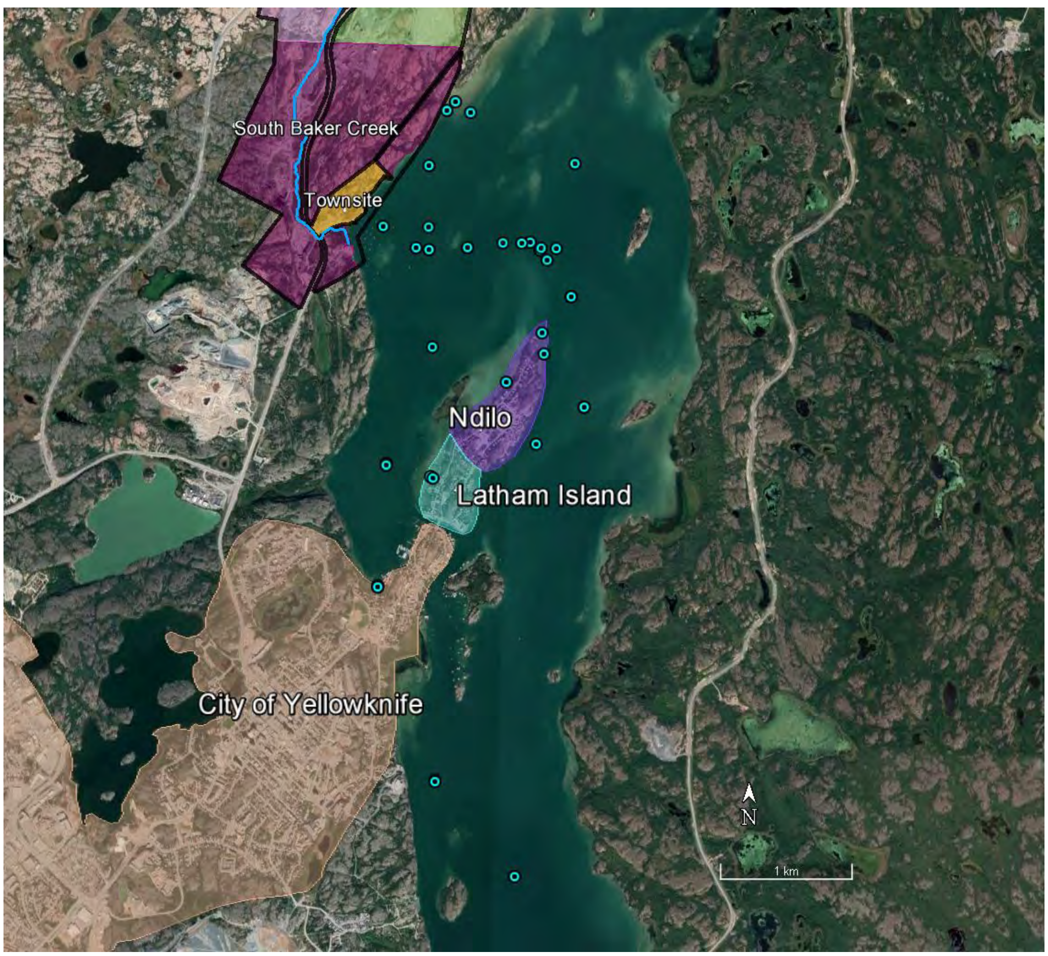

Table B.11 Summary of surface water concentrations in Yellowknife Bay

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
General Water Chemistry							
Calcium	mg/L	211	0	4.7	28	14	7.6
Chloride	mg/L	177	0	1.7	8.1	3.8	1.8
Conductivity	µS/cm	177	0	55	227	115	57
Hardness (as CaCO3)	mg/L	177	0	21	112	47	24
Magnesium	mg/L	211	0	1.9	6.6	3.7	1.5
Potassium	mg/L	211	6	0.72	1.2	1.0	0.08
Sodium	mg/L	211	0	1.8	7.5	4.1	1.9
Sulphate	mg/L	177	0	2.8	23	10	6.4
TDS	mg/L	271	0	28	173	59	29
Nutrients							
Ammonia-N, total	mg/L	177	174	2.5×10^{-3}	0.03	0.02	6.1×10^{-3}
Nitrate+Nitrite-N	mg/L	162	131	0.03	0.22	0.04	0.03
Nitrate-N	mg/L	143	101	0.03	0.17	0.04	0.03
Nitrite-N	mg/L	143	143	5.0×10^{-4}	0.03	0.02	7.5×10^{-3}
Phosphorus	mg/L	149	144	5.0×10^{-3}	0.15	0.02	0.04
Metals and Trace Elements							
Aluminum	mg/L	181	12	0.007	0.23	0.054	0.035
Antimony	mg/L	181	125	2.5×10^{-5}	1.2×10^{-3}	2.2×10^{-4}	1.4×10^{-4}
Arsenic	mg/L	219	0	3.0×10^{-4}	7.5×10^{-3}	1.7×10^{-3}	1.1×10^{-3}
Barium	mg/L	181	1	1.0×10^{-4}	0.05	0.02	0.01
Beryllium	mg/L	181	181	5.0×10^{-6}	5.0×10^{-4}	3.6×10^{-4}	2.1×10^{-4}
Bismuth	mg/L	50	46	5.0×10^{-5}	2.5×10^{-4}	1.2×10^{-4}	9.2×10^{-5}
Boron	mg/L	177	127	5.0×10^{-3}	0.03	0.02	6.5×10^{-3}
Cadmium	mg/L	181	132	3.0×10^{-6}	8.0×10^{-5}	7.6×10^{-6}	7.8×10^{-6}
Chromium	mg/L	181	129	5.0×10^{-5}	9.0×10^{-4}	4.3×10^{-4}	1.4×10^{-4}
Cobalt	mg/L	181	147	6.0×10^{-6}	1.0×10^{-3}	6.9×10^{-4}	4.5×10^{-4}
Copper	mg/L	215	68	5.0×10^{-4}	2.4×10^{-3}	9.6×10^{-4}	3.8×10^{-4}
Iron	mg/L	215	49	5.0×10^{-3}	0.20	0.04	0.03
Lead	mg/L	181	119	5.0×10^{-6}	7.5×10^{-4}	6.6×10^{-5}	7.7×10^{-5}
Lithium	mg/L	181	143	2.4×10^{-3}	5.0×10^{-3}	4.3×10^{-3}	1.0×10^{-3}
Manganese	mg/L	215	99	2.0×10^{-4}	5.6×10^{-3}	2.0×10^{-3}	1.0×10^{-3}
Mercury	mg/L	271	225	2.5×10^{-7}	1.2×10^{-5}	5.5×10^{-6}	4.6×10^{-6}
Molybdenum	mg/L	181	122	1.1×10^{-4}	2.5×10^{-3}	1.8×10^{-3}	1.0×10^{-3}
Nickel	mg/L	181	123	2.5×10^{-4}	1.2×10^{-3}	9.1×10^{-4}	1.7×10^{-4}
Selenium	mg/L	181	181	5.0×10^{-5}	5.0×10^{-4}	2.1×10^{-4}	7.3×10^{-5}
Silicon	mg/L	16	0	0.42	1.4	0.60	0.30
Silver	mg/L	181	181	2.5×10^{-6}	5.0×10^{-5}	8.9×10^{-6}	6.9×10^{-6}
Strontium	mg/L	54	0	0.02	0.14	0.08	0.04
Tellurium	mg/L	34	34	5.0×10^{-5}	5.0×10^{-5}	5.0×10^{-5}	2.0×10^{-12}

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Thallium	mg/L	181	181	$2.5x10^{-5}$	$5.0x10^{-5}$	$4.3x10^{-5}$	$1.1x10^{-5}$
Tin	mg/L	177	162	$5.0x10^{-5}$	0.03	0.02	0.01
Titanium	mg/L	147	46	$5.0x10^{-4}$	$6.2x10^{-3}$	$2.3x10^{-3}$	$1.5x10^{-3}$
Uranium	mg/L	181	0	$1.4x10^{-4}$	$4.3x10^{-4}$	$2.7x10^{-4}$	$6.8x10^{-5}$
Vanadium	mg/L	181	128	$6.0x10^{-5}$	$6.0x10^{-4}$	$4.1x10^{-4}$	$1.5x10^{-4}$
Zinc	mg/L	215	120	$5.0x10^{-5}$	0.03	$2.8x10^{-3}$	$3.8x10^{-3}$

B.3.3 Long Lake

There were also concerns raised about children wading and playing in the shallow sediments in Long Lake. This was identified as a data gap and in 2016 Golder (2016e) collected samples to address this data gap. Water samples were collected from the beach area, day use area, and from the marina (see ATTACHMENT B.1). Sample locations are presented in Figure B.12 and a summary of the data is presented in Table B.12.

Figure B.12 Surface water sampling locations from Long Lake Campground

Table B.12 Summary of surface water concentrations in Long Lake

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
General Water Chemistry							
Calcium	mg/L	14	0	14	35	30	4.8
Chloride	mg/L	1	0	58	58	NA	NA
Hardness (as CaCO3)	mg/L	15	0	55	142	123	20
Magnesium	mg/L	14	0	5.8	14	12	1.8
Potassium	mg/L	13	0	2.3	3.4	3.2	0.29
Sodium	mg/L	14	0	9.8	30	27	5.1
Sulphate	mg/L	1	0	14	14	NA	NA
TDS	mg/L	2	0	86	200	143	81
Nutrients							
Ammonia-N, total	mg/L	1	0	$6.0x10^{-3}$	$6.0x10^{-3}$	NA	NA
Nitrate+Nitrite-N	mg/L	2	2	$5.0x10^{-3}$	0.01	$7.5x10^{-3}$	$3.5x10^{-3}$
Nitrate-N	mg/L	1	0	0.09	0.09	NA	NA
Metals and Trace Elements							
Aluminum	mg/L	13	1	$1.5x10^{-3}$	1.5	0.27	0.48
Antimony	mg/L	13	1	$1.5x10^{-3}$	0.30	0.02	0.08
Arsenic	mg/L	13	1	0.04	0.10	0.05	0.02
Barium	mg/L	13	0	0.02	0.05	0.04	$5.6x10^{-3}$
Beryllium	mg/L	13	2	$1.2x10^{-5}$	0.50	0.04	0.14
Boron	mg/L	13	2	0.01	0.03	0.02	$3.1x10^{-3}$
Cadmium	mg/L	13	2	$2.5x10^{-6}$	0.01	$7.8x10^{-4}$	$2.8x10^{-3}$
Chromium	mg/L	13	2	$5.0x10^{-5}$	0.50	0.04	0.14
Cobalt	mg/L	13	2	$5.0x10^{-5}$	0.15	0.01	0.04
Copper	mg/L	13	2	$2.5x10^{-4}$	0.10	$8.5x10^{-3}$	0.03
Iron	mg/L	13	0	0.02	1.5	0.29	0.49
Lead	mg/L	13	2	$2.5x10^{-5}$	0.10	$8.1x10^{-3}$	0.03
Lithium	mg/L	13	1	$2.8x10^{-3}$	0.01	$4.3x10^{-3}$	$2.0x10^{-3}$
Manganese	mg/L	13	0	0.01	0.30	0.08	0.10
Mercury	mg/L	11	1	$2.5x10^{-6}$	$2.5x10^{-6}$	$2.5x10^{-6}$	$5.1x10^{-14}$
Molybdenum	mg/L	13	1	$3.5x10^{-4}$	0.10	$8.2x10^{-3}$	0.03
Nickel	mg/L	13	1	$5.0x10^{-4}$	0.25	0.02	0.07
Selenium	mg/L	13	3	$2.0x10^{-5}$	0.10	$7.7x10^{-3}$	0.03
Silver	mg/L	13	3	$2.5x10^{-6}$	0.05	$3.9x10^{-3}$	0.01
Thallium	mg/L	13	2	$3.0x10^{-6}$	0.10	$7.7x10^{-3}$	0.03
Tin	mg/L	13	2	$5.0x10^{-5}$	0.50	0.04	0.14
Titanium	mg/L	13	2	$1.5x10^{-4}$	0.50	0.04	0.14
Uranium	mg/L	13	1	$4.5x10^{-4}$	0.05	$4.7x10^{-3}$	0.01
Vanadium	mg/L	13	2	$2.5x10^{-4}$	0.50	0.04	0.14
Zinc	mg/L	13	2	$1.5x10^{-3}$	1.5	0.12	0.42

B.3.4 Municipal Drinking Water

Municipal drinking water samples were obtained from wells (Wet Well PH#1 Station and Bay Well Station), residents, Yellowknife River, and treated locations (PH#1 Treated Water) from years 2002 until 2016. The data are summarized in Table B.13.

Table B.13 Summary of municipal drinking water concentrations

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
General Water Chemistry							
Alkalinity	mg/L	20	0	14	35	17	4.3
Hardness (as CaCO3)	mg/L	10	0	23	45	28	6.5
TDS	mg/L	21	0	22	68	35	10
Sodium	mg/L	21	0	1.7	3.6	2.2	0.41
Sulphate	mg/L	21	0	2.6	8.0	3.8	1.1
Nutrients							
Nitrate-N	mg/L	10	0	0.04	0.21	0.09	0.05
Metals and Trace Elements							
Aluminum	mg/L	21	0	0.01	0.20	0.07	0.04
Arsenic	mg/L	130	1	$2.0x10^{-4}$	$7.4x10^{-3}$	$1.2x10^{-3}$	$9.6x10^{-4}$
Barium	mg/L	21	0	$3.9x10^{-3}$	0.01	$5.5x10^{-3}$	$2.0x10^{-3}$
Cadmium	mg/L	21	20	$2.5x10^{-5}$	$1.0x10^{-4}$	$4.5x10^{-5}$	$1.7x10^{-5}$
Chloride	mg/L	21	0	1.8	5.4	4.0	0.79
Chromium	mg/L	21	4	$5.0x10^{-5}$	$2.5x10^{-3}$	$4.7x10^{-4}$	$6.3x10^{-4}$
Copper	mg/L	21	0	$2.0x10^{-4}$	0.21	0.08	0.05
Cyanide	mg/L	11	8	$1.0x10^{-3}$	$3.0x10^{-3}$	$1.4x10^{-3}$	$6.7x10^{-4}$
Iron	mg/L	21	0	0.01	0.11	0.06	0.02
Lead	mg/L	21	4	$5.0x10^{-5}$	$7.4x10^{-3}$	$6.0x10^{-4}$	$1.6x10^{-3}$
Manganese	mg/L	21	1	$5.0x10^{-4}$	$6.0x10^{-3}$	$2.2x10^{-3}$	$1.1x10^{-3}$
Mercury	mg/L	17	13	$5.0x10^{-6}$	$4.0x10^{-5}$	$9.1x10^{-6}$	$9.4x10^{-6}$
Selenium	mg/L	21	20	$1.5x10^{-4}$	$4.0x10^{-4}$	$2.2x10^{-4}$	$6.0x10^{-5}$
Uranium	mg/L	21	0	$2.0x10^{-4}$	$3.0x10^{-4}$	$2.1x10^{-4}$	$3.0x10^{-5}$
Zinc	mg/L	21	12	$2.0x10^{-4}$	0.01	$3.2x10^{-3}$	$3.5x10^{-3}$

B.4 Sediment

There have been a number of sediment studies in recent years that have been carried out in Yellowknife Bay and in Baker Creek. For the purposes of the human health risk assessment sediments close to the shore are the focus of the as people could be exposed to COPC while wading along the shoreline. For the ecological risk assessment, shoreline sediments and sediments found at deeper depths were considered. Only sediment data from samples collected from the top 10 cm were selected as it benthic invertebrates are unlikely to colonize the deeper sediments.

B.4.1 Baker Creek

A total of 11 sediment sampling programs between 2005 and 2016 were available to characterize Baker Creek sediments (Galloway et al. 2015; Golder 2013a; 2013b; Golder 2015b; Golder 2016b; 2016e; Golder 2017; Jacques Whitford 2006; Stantec 2012; 2014a; 2015). There are more than three hundred sediment samples collected across Baker Creek. Therefore, the creek is adequately characterized. Of the samples used to characterize the sediments in Baker Creek, 29 were obtained as a part of the Golder (2016e) Giant Mine Data Gaps Report in support of the ecological risk assessment (see ATTACHMENT B.1). Sample locations are presented in Figure B.13 and a summary of the data is presented in Table B.14.

Figure B.13 Sediment sampling locations from Baker Creek

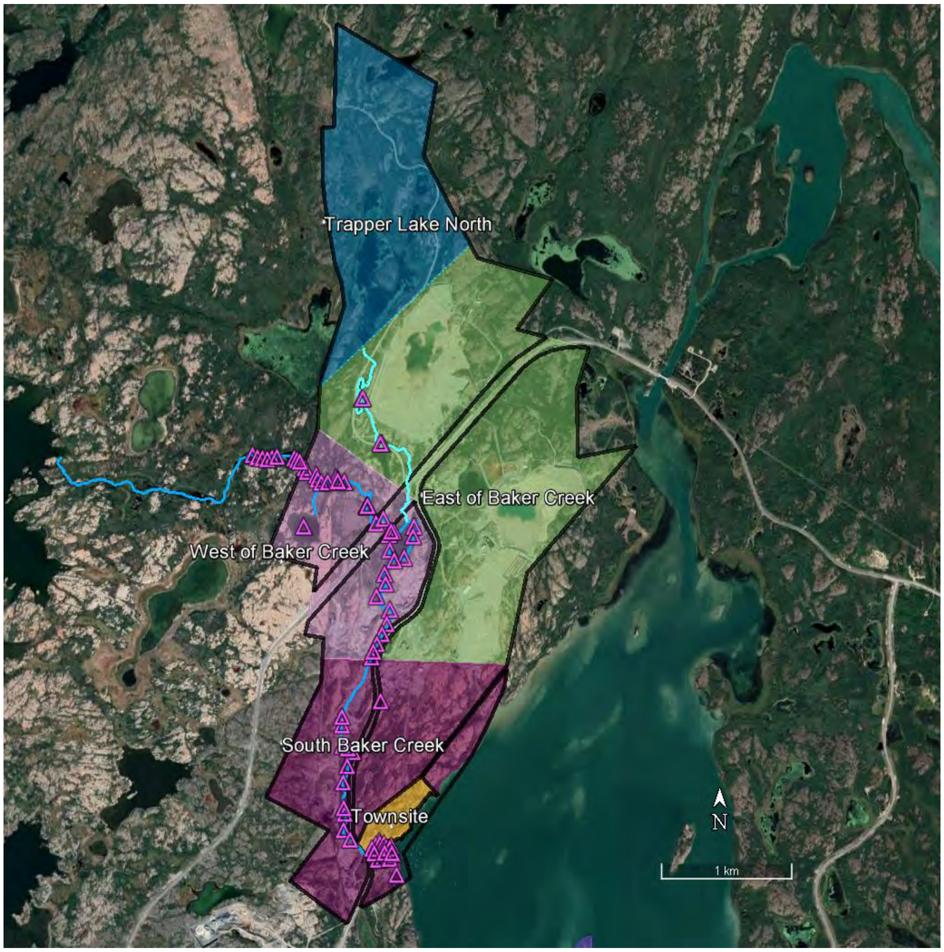

Table B.14 Summary of sediment concentrations in Baker Creek

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Aluminum	µg/g	293	0	3,530	$3.7x10^4$	$1.7x10^4$	5,522
Antimony	µg/g	321	54	0.10	3,140	139	403
Arsenic	µg/g	321	0	4.5	$2.1x10^4$	1,163	2,183
Barium	µg/g	321	0	10	280	117	65
Beryllium	µg/g	321	84	0.05	1.4	0.52	0.26
Bismuth	µg/g	190	73	0.10	4.5	0.39	0.62
Boron	µg/g	147	7	1.0	45	8.9	6.7
Cadmium	µg/g	321	38	0.03	24	1.2	3.2
Calcium	µg/g	293	0	1,050	$7.4x10^4$	$1.1x10^4$	$1.2x10^4$
Chromium	µg/g	321	0	8.2	135	42	15
Cobalt	µg/g	321	0	2.9	281	24	34
Copper	µg/g	321	0	8.6	5,470	340	716
Iron	µg/g	316	0	7,000	$3.3x10^5$	$3.3x10^4$	$3.6x10^4$
Lead	µg/g	321	2	2.5	4,050	154	491
Lithium	µg/g	239	6	2.0	55	27	9.8
Magnesium	µg/g	293	0	2,090	$3.5x10^4$	$1.0x10^4$	5,271
Manganese	µg/g	316	0	69	7,110	481	511
Mercury	µg/g	267	79	$5.8x10^{-3}$	1.1	0.10	0.17
Molybdenum	µg/g	321	50	0.20	24	1.8	2.5
Nickel	µg/g	321	0	6.9	589	63	76
Nitrogen	µg/g	9	0	0.06	1.4	0.38	0.41
Phosphorus	µg/g	293	1	7.5	1,720	535	172
Potassium	µg/g	239	0	440	6,400	2,747	1,457
Selenium	µg/g	321	131	0.10	8.6	0.84	1.1
Silicon	µg/g	54	0	140	685	260	103
Silver	µg/g	321	134	0.05	28	2.5	4.4
Sodium	µg/g	239	0	120	1,810	418	235
Strontium	µg/g	298	7	4.7	130	40	19
Sulphide	µg/g	143	29	0.25	3,660	113	505
Sulphur	µg/g	108	0	78	$1.4x10^4$	1,885	2,816
Thallium	µg/g	316	137	0.05	0.69	0.21	0.10
Thorium	µg/g	5	0	0.80	1.2	1.0	0.16
Tin	µg/g	316	205	0.50	7.6	1.2	0.73
Titanium	µg/g	185	0	34	1,070	495	253
Uranium	µg/g	267	2	0.09	38	4.9	6.5
Vanadium	µg/g	321	0	10	138	44	18
Zinc	µg/g	321	0	19	4,180	286	603
Zirconium	µg/g	34	0	2.4	24	11	7.4

B.4.2 Yellowknife Bay

The various areas of Yellowknife Bay (Back Bay, North Yellowknife Bay and South Yellowknife Bay) have been well characterized, with > 150 samples collected in recent years (2004 through 2016) for most constituents. A total of five sediment sampling programs between 2005 and 2016 were available to characterize Yellowknife Bay sediment (ECCC 2015a, 2015b; Golder 2016e; Palmer 2016; Stantec 2014c). The majority of samples (approximately 150) were collected at surficial depths. From a human health perspective, shallow sediments at Ndilo and Dettah were used to characterize exposure for a wading scenario. Additionally, Mike Palmer collected some samples in Back Bay where concerns were raised about children wading in the areas near docks. There are about 20 sediment samples in Yellowknife Bay available to characterize shallow sediments. Over 60 sediment samples have been used to characterize exposure in Yellowknife Bay from an ecological perspective. Sample locations are presented in Figure B.14. A summary of the data considered for the human health assessment is presented in Table B.15 while one for the ecological assessment is presented in Table B.16.

Figure B.14 Sediment sampling locations from Yellowknife Bay

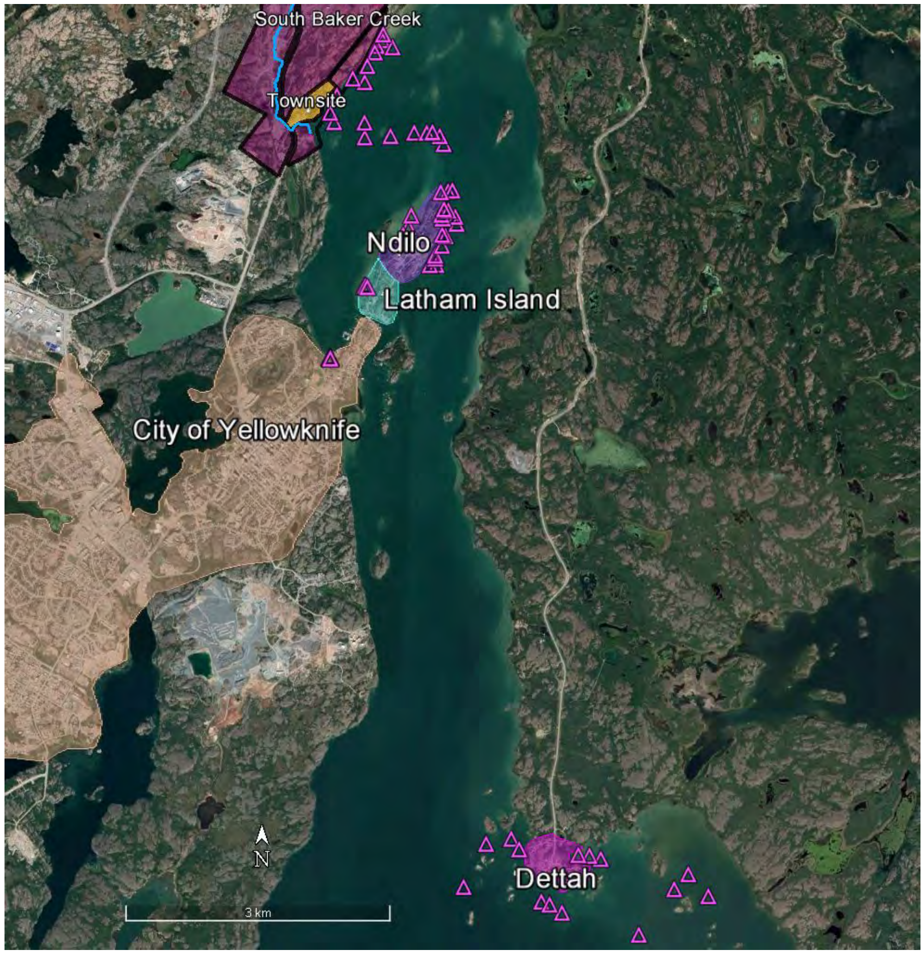

Table B.15 Summary of sediment concentrations in Yellowknife Bay – Human Health

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Aluminum	mg/kg	20	0	0.24	$2.2x10^{4}$	2,696	6,887
Antimony	mg/kg	20	0	0.03	2.7	0.67	0.66
Arsenic	mg/kg	20	0	0.90	32	13	11
Barium	mg/kg	20	0	11	220	74	72
Beryllium	mg/kg	3	0	0.40	1.0	0.77	0.32
Bismuth	mg/kg	20	3	0.04	0.50	0.19	0.17
Boron	mg/kg	20	0	1.0	14	5.4	3.8
Cadmium	mg/kg	20	0	0.01	0.21	0.09	0.07
Calcium	mg/kg	20	0	0.11	4,560	577	1,434
Chromium	mg/kg	20	0	6.4	57	22	16
Cobalt	mg/kg	20	0	1.2	15	6.0	4.7
Copper	mg/kg	20	0	1.9	44	18	14
Iron	mg/kg	20	0	0.34	$2.8x10^{4}$	3,441	8,725
Lead	mg/kg	20	0	1.2	14	7.2	4.7
Lithium	mg/kg	3	0	21	39	33	10
Magnesium	mg/kg	20	0	0.13	9,760	1,207	3,046
Manganese	mg/kg	20	0	41	544	192	168
Mercury	mg/kg	17	6	$2.5x10^{-3}$	0.03	$9.2x10^{-3}$	$8.6x10^{-3}$
Molybdenum	mg/kg	20	0	0.09	0.73	0.30	0.20
Nickel	mg/kg	20	0	3.6	38	15	11
Phosphorus	mg/kg	17	0	0.03	0.07	0.05	0.01
Potassium	mg/kg	20	0	0.02	4,800	559	1,446
Rubidium	mg/kg	3	0	19	43	34	13
Scandium	mg/kg	17	0	0.50	6.3	2.1	1.8
Selenium	mg/kg	20	15	0.05	0.50	0.13	0.13
Silver	mg/kg	20	3	$7.0x10^{-3}$	0.26	0.07	0.07
Sodium	mg/kg	20	0	$5.0x10^{-3}$	430	53	133
Strontium	mg/kg	20	0	3.1	56	16	15
Sulphur	mg/kg	17	13	0.01	0.12	0.02	0.03
Tellurium	mg/kg	20	20	0.01	0.05	0.02	0.01
Thallium	mg/kg	20	8	0.01	0.30	0.10	0.10
Thorium	mg/kg	17	0	4.4	15	8.6	3.3
Tin	mg/kg	3	3	0.50	0.50	0.50	0.0
Titanium	mg/kg	17	0	0.01	0.11	0.04	0.03
Tungsten	mg/kg	17	0	0.10	1.7	0.42	0.36
Uranium	mg/kg	20	0	0.60	3.9	1.7	1.0
Vanadium	mg/kg	20	0	6.0	55	22	17
Zinc	mg/kg	20	0	7.2	73	38	25

Table B.16 Summary of sediment concentrations in Yellowknife Bay – ERA

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Aluminum	mg/kg	30	4	1.3	2.2×10^4	1.3×10^4	7,065
Antimony	mg/kg	62	1	0.67	226	33	35
Arsenic	mg/kg	69	1	18	2,250	839	485
Barium	mg/kg	62	4	2.8	296	163	105
Beryllium	mg/kg	62	39	0.10	1.0	0.47	0.23
Bismuth	mg/kg	26	11	0.20	0.50	0.35	0.11
Boron	mg/kg	20	4	2.5	14	8.1	5.0
Cadmium	mg/kg	62	30	0.09	3.2	0.45	0.43
Calcium	mg/kg	26	1	2,920	6.8×10^4	2.8×10^4	2.3×10^4
Chromium	mg/kg	62	1	23	52	42	8.8
Cobalt	mg/kg	62	4	7.5	23	14	4.2
Copper	mg/kg	62	3	21	231	80	57
Iron	mg/kg	62	0	4.0	4.0×10^4	3.2×10^4	9,613
Lead	mg/kg	62	2	8.2	615	50	77
Lithium	mg/kg	30	1	19	39	27	7.1
Magnesium	mg/kg	26	2	5,320	3.2×10^4	1.8×10^4	8,757
Manganese	mg/kg	62	3	200	5,530	1,590	1,029
Mercury	mg/kg	54	4	0.02	0.84	0.11	0.15
Molybdenum	mg/kg	62	13	0.30	2.2	1.00	0.46
Nickel	mg/kg	62	1	20	58	36	10.0
Phosphorus	mg/kg	18	4	224	588	351	120
Potassium	mg/kg	26	2	78	4,800	1,858	1,759
Rubidium	mg/kg	12	0	3.9	43	31	11
Selenium	mg/kg	62	20	0.10	2.0	0.57	0.46
Silver	mg/kg	62	20	0.05	5.8	1.4	1.0
Sodium	mg/kg	26	10	50	430	201	153
Strontium	mg/kg	30	2	18	56	32	11
Tellurium	mg/kg	8	8	0.05	0.05	0.05	1.0×10^{-9}
Thallium	mg/kg	62	41	0.03	0.30	0.20	0.10
Tin	mg/kg	58	48	0.50	2.5	1.8	0.84
Titanium	mg/kg	22	3	34	861	266	299
Uranium	mg/kg	62	9	0.03	5.6	2.9	1.8
Vanadium	mg/kg	62	2	30	61	48	7.2
Zinc	mg/kg	62	3	47	500	131	62
Zirconium	mg/kg	12	1	1.2	11	3.9	3.4

B.4.3 Long Lake

There were also concerns raised about children wading and playing in the shallow sediments in Long Lake. This was identified as a data gap and, as such, in 2016 Golder (2016e) collected samples to address this data gap. Sediment samples were collected from the beach area, day use area, and from the boat launch (see ATTACHMENT B.1). Sample locations are presented in Figure B.15 and a summary of the data is presented in Table B.17.

Figure B.15 Sediment sampling locations from Long Lake Campground

Table B.17 Summary of sediment concentrations from Long Lake Campground

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Aluminum	mg/kg	11	0	2,170	6,900	3,459	1,313
Antimony	mg/kg	11	0	0.05	2.2	0.47	0.63
Arsenic	mg/kg	16	0	7.5	100	28	30
Barium	mg/kg	11	0	11	61	21	15
Beryllium	mg/kg	11	0	0.05	0.21	0.10	0.06
Bismuth	mg/kg	11	0	0.10	0.10	0.10	$2.6x10^{-9}$
Boron	mg/kg	11	0	2.5	2.5	2.5	0.0
Cadmium	mg/kg	11	0	0.01	0.11	0.04	0.03
Calcium	mg/kg	11	0	704	1,940	1,106	395
Chromium	mg/kg	11	0	6.5	27	12	5.8
Cobalt	mg/kg	11	0	1.2	6.1	2.4	1.4
Copper	mg/kg	11	0	2.0	36	7.3	9.9
Iron	mg/kg	11	0	3,130	$1.2x10^{4}$	5,800	2,792
Lead	mg/kg	11	0	0.81	13	3.1	3.5
Lithium	mg/kg	11	0	5.5	18	9.5	3.3
Magnesium	mg/kg	11	0	1,260	5,420	2,149	1,157
Manganese	mg/kg	11	0	40	313	98	80
Mercury	mg/kg	11	0	$2.5x10^{-3}$	0.02	$4.3x10^{-3}$	$4.7x10^{-3}$
Molybdenum	mg/kg	11	0	0.05	2.8	0.45	0.79
Nickel	mg/kg	11	0	4.0	23	7.7	5.5
Potassium	mg/kg	11	0	200	1,020	387	238
Selenium	mg/kg	11	0	0.10	0.10	0.10	$2.6x10^{-9}$
Silver	mg/kg	11	0	0.05	0.05	0.05	$1.3x10^{-9}$
Sodium	mg/kg	11	0	50	148	76	28
Strontium	mg/kg	11	0	2.2	8.4	3.6	1.8
Thallium	mg/kg	11	0	0.03	0.06	0.03	0.01
Tin	mg/kg	11	0	1.0	17	2.5	4.9
Titanium	mg/kg	11	0	92	369	168	79
Uranium	mg/kg	11	0	0.38	1.4	0.70	0.31
Vanadium	mg/kg	11	0	5.3	23	10	5.1
Zinc	mg/kg	11	0	8.7	68	21	18
Zirconium	mg/kg	11	0	0.50	2.0	1.0	0.49

B.5 Vegetation on Giant Mine

B.5.1 Aquatic Vegetation

Two aquatic plant sampling programs were conducted on the Giant Mine in 2016 with more than 20 samples per constituent (Contango 2016; Golder 2016e). Cattails and various species of sedges were collected for analysis to represent aquatic plants on the Giant Mine. Of the samples used to characterize the aquatic plants in Baker Creek, 22 were obtained as a part of the Golder (2016e) Giant Mine Data gaps report in support of the human health risk assessment (see ATTACHMENT B.1). Sample locations are presented in Figure B.16 and a summary of the data is presented in Table B.18.

Figure B.16 Aquatic plant sampling locations from Giant Mine

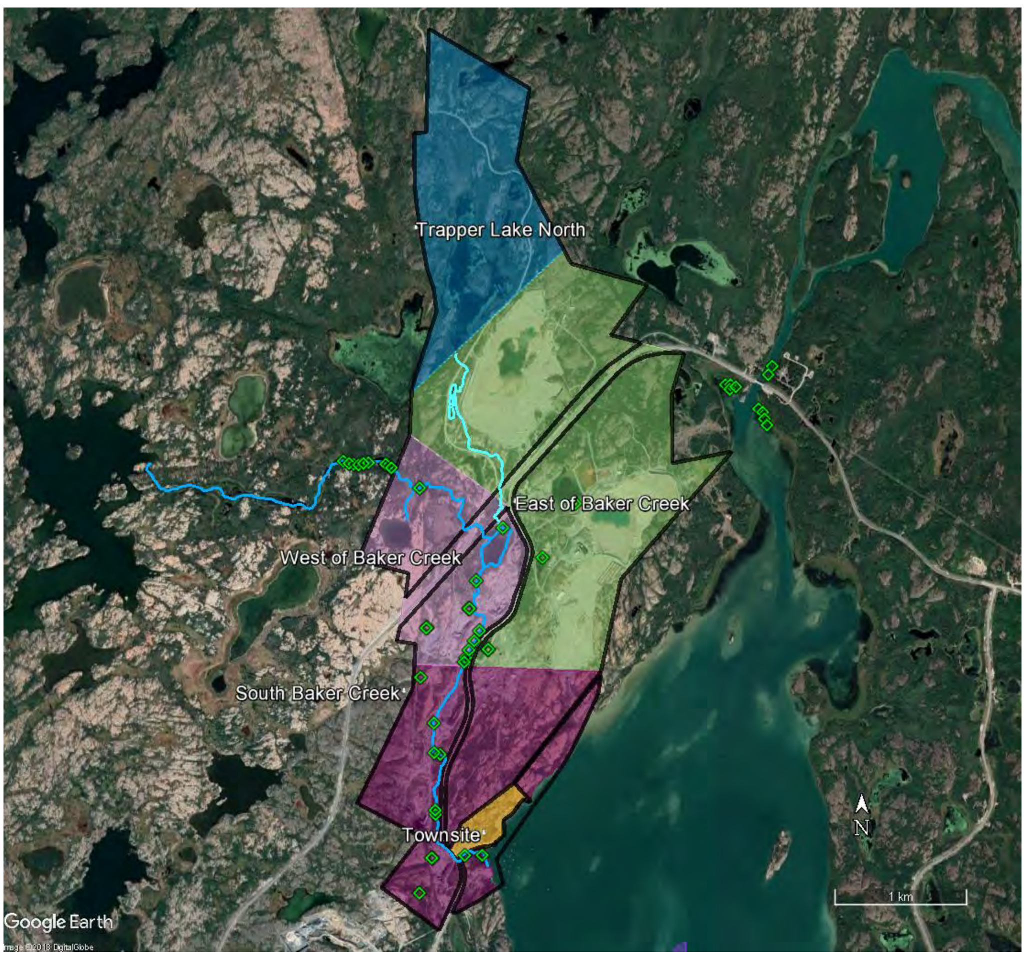

Table B.18 Summary of concentrations in aquatic plants on Giant Mine

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Aluminum	mg/kg ww	22		2.9	220	26	46
Antimony	mg/kg ww	34	2	0.01	6.6	0.46	1.1
Arsenic	mg/kg ww	36	0	0.40	40	4.0	6.7
Barium	mg/kg ww	34	1	0.15	65	8.2	11
Beryllium	mg/kg ww	34	12	$1.0x10^{-3}$	0.03	$9.6x10^{-3}$	0.01
Bismuth	mg/kg ww	34	12	$1.0x10^{-3}$	0.03	$9.6x10^{-3}$	0.01
Boron	mg/kg ww	34	0	2.2	19	7.6	4.3
Cadmium	mg/kg ww	34	12	$5.0x10^{-4}$	0.03	$7.0x10^{-3}$	$6.5x10^{-3}$
Calcium	mg/kg ww	34	0	1,150	5,150	3,292	1,099
Chromium	mg/kg ww	34	11	$5.0x10^{-3}$	0.69	0.12	0.14
Cobalt	mg/kg ww	34	0	$7.0x10^{-3}$	1.5	0.10	0.26
Copper	mg/kg ww	34	0	0.21	4.8	1.0	0.80
Iron	mg/kg ww	34	0	11	536	60	89
Lead	mg/kg ww	34	6	$6.8x10^{-3}$	0.65	0.05	0.11
Lithium	mg/kg ww	22		0.11	0.69	0.30	0.17
Magnesium	mg/kg ww	34	0	313	2,000	833	417
Manganese	mg/kg ww	34	0	39	868	209	163
Mercury	mg/kg ww	22		$1.3x10^{-3}$	$4.1x10^{-3}$	$2.6x10^{-3}$	$7.8x10^{-4}$
Molybdenum	mg/kg ww	34	0	0.07	4.0	0.72	0.80
Nickel	mg/kg ww	34	1	0.02	2.9	0.37	0.57
Phosphorus	mg/kg ww	34	0	180	652	406	121
Potassium	mg/kg ww	34	0	1,690	8,430	4,067	1,554
Selenium	mg/kg ww	34	12	$5.0x10^{-3}$	0.11	0.03	0.02
Silver	mg/kg ww	34	12	$5.0x10^{-4}$	0.03	0.01	0.01
Sodium	mg/kg ww	34	0	20	2,880	455	522
Strontium	mg/kg ww	34	0	4.3	48	20	13
Tellurium	mg/kg ww	22		$2.0x10^{-3}$	0.01	$3.7x10^{-3}$	$3.0x10^{-3}$
Thallium	mg/kg ww	34	11	$2.0x10^{-4}$	$6.2x10^{-3}$	$1.6x10^{-3}$	$1.3x10^{-3}$
Tin	mg/kg ww	34	12	0.01	0.15	0.06	0.07
Titanium	mg/kg ww	12	8	0.25	1.4	0.46	0.37
Uranium	mg/kg ww	34	6	$7.8x10^{-4}$	0.12	0.01	0.02
Vanadium	mg/kg ww	34	10	0.01	0.82	0.07	0.14
Zinc	mg/kg ww	34	1	1.0	28	7.2	5.5

B.5.2 Terrestrial Vegetation

Four terrestrial wild plant sampling programs were conducted on the Giant Mine in 2016 with more than 90 samples (Contango 2016; Golder 2016f, 2016e; Stantec 2014d). Foliage, fruits and flowers, lichen and moss, and woody vegetation samples were collected for analysis to represent terrestrial wild plants on the Giant Mine. Of the samples used to characterize the terrestrial plants on Giant Mine, 87 were obtained as a part of the Golder (2016e) Giant Mine Data Gaps Report in support of the human health and ecological risk assessment (see ATTACHMENT B.1). Sample locations are presented in Figure B.17 and a summary of the data is presented in Table B.19.

Figure B.17 Terrestrial plant sampling locations from Giant Mine

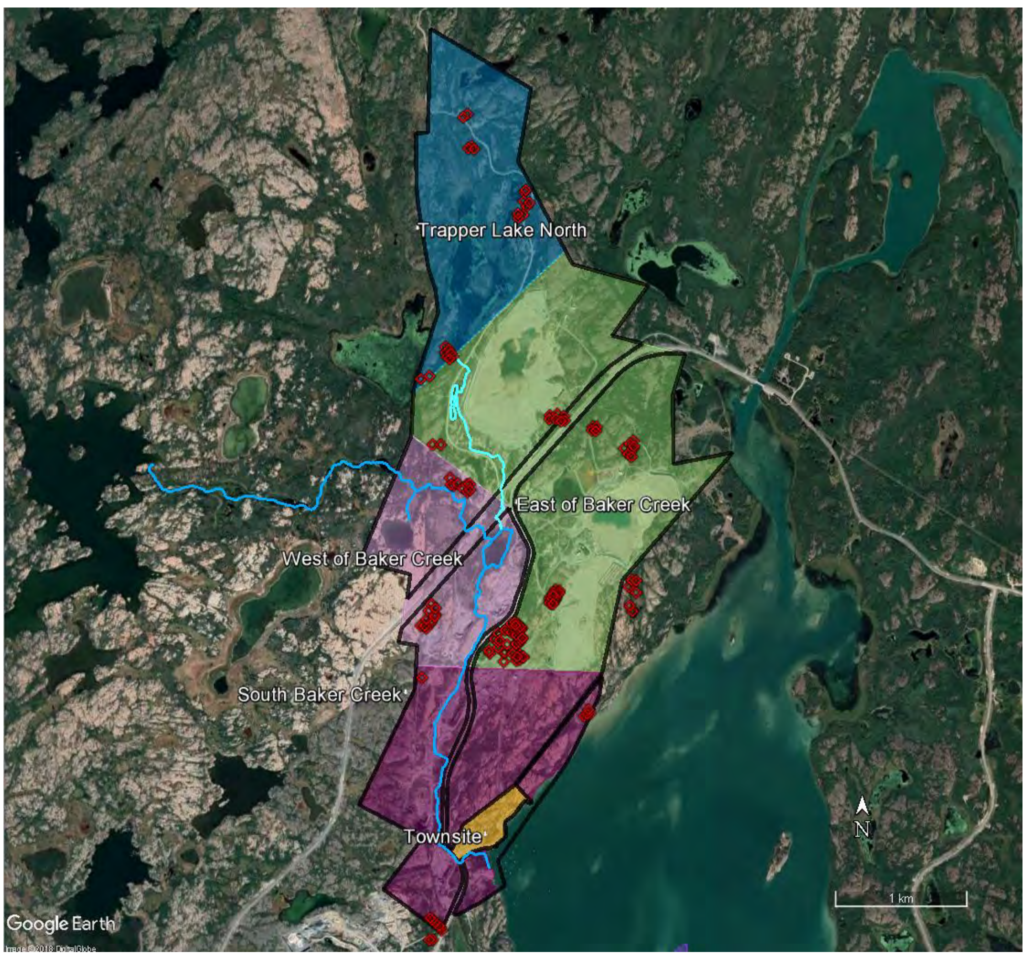

Table B.19 Summary of concentrations in terrestrial plants on Giant Mine

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Giant Mine Property - East of Baker Creek							
Aluminum	mg/kg ww	38	0	15	190	61	41
Antimony	mg/kg ww	39	0	0.03	3.4	0.55	0.65
Arsenic	mg/kg ww	85	0	0.41	284	15	35
BAArsenic	mg/kg ww	12	0	0.87	38	14	13
Barium	mg/kg ww	39	0	1.1	38	12	9.8
Beryllium	mg/kg ww	39	28	1.0×10^{-3}	0.03	2.3×10^{-3}	4.0×10^{-3}
Bismuth	mg/kg ww	39	37	1.0×10^{-3}	0.03	1.7×10^{-3}	3.9×10^{-3}
Boron	mg/kg ww	39	0	1.0	27	5.1	4.5
Cadmium	mg/kg ww	39	3	5.0×10^{-4}	0.10	8.1×10^{-3}	0.02
Calcium	mg/kg ww	39	0	1,650	3.7×10^{4}	4,753	5,442
Cesium	mg/kg ww	38	0	1.3×10^{-3}	0.09	0.01	0.02
Chromium	mg/kg ww	39	1	0.03	0.45	0.15	0.11
Cobalt	mg/kg ww	39	0	0.02	4.1	0.50	0.74
Copper	mg/kg ww	39	0	0.58	3.3	1.4	0.55
Iron	mg/kg ww	39	0	28	437	150	118
Lead	mg/kg ww	39	0	0.03	1.5	0.37	0.35
Lithium	mg/kg ww	38	25	0.05	0.27	0.09	0.06
Magnesium	mg/kg ww	39	0	304	1,580	858	298
Manganese	mg/kg ww	39	0	14	529	100	113
Mercury	mg/kg ww	38	0	2.3×10^{-3}	9.8×10^{-3}	5.5×10^{-3}	1.9×10^{-3}
Moisture	%	86	0	15	88	54	19
Molybdenum	mg/kg ww	39	0	4.5×10^{-3}	0.10	0.02	0.02
Nickel	mg/kg ww	39	0	0.09	9.4	0.91	1.5
Phosphorus	mg/kg ww	39	0	108	563	286	94
Potassium	mg/kg ww	39	0	309	4,490	1,495	914
Rubidium	mg/kg ww	38	0	0.16	7.2	1.7	1.5
Selenium	mg/kg ww	39	26	5.0×10^{-3}	0.20	0.02	0.03
Silver	mg/kg ww	39	9	5.0×10^{-4}	0.03	3.2×10^{-3}	4.2×10^{-3}
Sodium	mg/kg ww	39	25	2.0	142	7.1	22
Strontium	mg/kg ww	39	0	1.6	41	5.5	6.2
Tellurium	mg/kg ww	38	38	2.0×10^{-3}	2.0×10^{-3}	2.0×10^{-3}	NA
Thallium	mg/kg ww	39	9	2.0×10^{-4}	2.7×10^{-3}	7.9×10^{-4}	5.4×10^{-4}
Tin	mg/kg ww	39	39	0.01	0.15	0.01	0.02
Titanium	mg/kg ww	1	0	2.5	2.5	2.5	NA
Uranium	mg/kg ww	39	0	6.3×10^{-4}	0.09	4.6×10^{-3}	0.01
Vanadium	mg/kg ww	39	1	0.01	0.59	0.19	0.15
Zinc	mg/kg ww	39	0	2.5	19	5.5	3.0
Zirconium	mg/kg ww	38	27	0.02	0.09	0.03	0.02

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Giant Mine Property - South Baker Creek							
Aluminum	mg/kg ww	9	0	25	61	44	13
Antimony	mg/kg ww	10	0	0.01	1.3	0.16	0.42
Arsenic	mg/kg ww	14	0	0.22	324	24	86
Barium	mg/kg ww	10	0	1.7	36	11	12
Beryllium	mg/kg ww	10	7	$1.0x10^{-3}$	0.03	$6.8x10^{-3}$	$8.5x10^{-3}$
Bismuth	mg/kg ww	10	10	$1.0x10^{-3}$	0.03	$3.4x10^{-3}$	$7.6x10^{-3}$
Boron	mg/kg ww	10	0	1.3	9.1	4.3	2.8
Cadmium	mg/kg ww	10	2	$5.0x10^{-4}$	0.02	$3.7x10^{-3}$	$5.8x10^{-3}$
Calcium	mg/kg ww	10	0	2,120	5,720	3,500	1,358
Cesium	mg/kg ww	9	0	0.01	0.14	0.04	0.04
Chromium	mg/kg ww	10	0	0.06	1.2	0.23	0.34
Cobalt	mg/kg ww	10	0	0.12	7.1	1.6	2.3
Copper	mg/kg ww	10	0	1.2	2.6	1.6	0.43
Iron	mg/kg ww	10	0	44	1,480	209	447
Lead	mg/kg ww	10	0	0.04	0.61	0.11	0.18
Lithium	mg/kg ww	9	6	0.05	0.23	0.10	0.08
Magnesium	mg/kg ww	10	0	538	1,410	927	340
Manganese	mg/kg ww	10	0	56	259	133	76
Mercury	mg/kg ww	9	0	$2.8x10^{-3}$	$5.1x10^{-3}$	$3.9x10^{-3}$	$7.2x10^{-4}$
Moisture	%	14	0	15	89	58	17
Molybdenum	mg/kg ww	10	0	$6.3x10^{-3}$	0.09	0.02	0.03
Nickel	mg/kg ww	10	0	0.20	2.6	1.3	1.0
Phosphorus	mg/kg ww	10	0	209	477	367	75
Potassium	mg/kg ww	10	0	879	2,880	1,701	602
Rubidium	mg/kg ww	9	0	2.6	13	4.7	3.4
Selenium	mg/kg ww	10	9	$5.0x10^{-3}$	0.05	0.01	0.01
Silver	mg/kg ww	10	8	$5.0x10^{-4}$	0.03	$3.1x10^{-3}$	$7.7x10^{-3}$
Sodium	mg/kg ww	10	3	2.0	72	13	22
Strontium	mg/kg ww	10	0	4.0	7.1	5.4	1.1
Tellurium	mg/kg ww	9	9	$2.0x10^{-3}$	$2.0x10^{-3}$	$2.0x10^{-3}$	NA
Thallium	mg/kg ww	10	4	$2.0x10^{-4}$	$1.5x10^{-3}$	$5.2x10^{-4}$	$4.0x10^{-4}$
Tin	mg/kg ww	10	10	0.01	0.15	0.02	0.04
Titanium	mg/kg ww	1	0	8.8	8.8	8.8	NA
Uranium	mg/kg ww	10	0	$1.9x10^{-3}$	0.13	0.02	0.04
Vanadium	mg/kg ww	10	0	0.08	1.7	0.27	0.49
Zinc	mg/kg ww	10	0	3.1	8.5	5.1	2.0
Zirconium	mg/kg ww	9	9	0.02	0.02	0.02	$3.3x10^{-10}$

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Giant Mine Property - Trapper Lake North							
Aluminum	mg/kg ww	21	0	23	145	69	38
Antimony	mg/kg ww	21	0	0.01	0.77	0.15	0.16
Arsenic	mg/kg ww	23	0	0.43	5.1	1.4	1.0
BAArsenic	mg/kg ww	4	0	0.50	56	25	29
Barium	mg/kg ww	21	0	1.1	29	12	9.5
Beryllium	mg/kg ww	21	10	1.0×10^{-3}	0.04	4.6×10^{-3}	8.4×10^{-3}
Bismuth	mg/kg ww	21	19	1.0×10^{-3}	2.3×10^{-3}	1.1×10^{-3}	3.5×10^{-4}
Boron	mg/kg ww	21	0	0.50	11	5.1	3.2
Cadmium	mg/kg ww	21	7	5.0×10^{-4}	0.04	4.3×10^{-3}	8.0×10^{-3}
Calcium	mg/kg ww	21	0	2,200	6,630	3,710	1,282
Cesium	mg/kg ww	21	0	4.6×10^{-3}	0.13	0.03	0.03
Chromium	mg/kg ww	21	0	0.04	0.36	0.15	0.09
Cobalt	mg/kg ww	21	0	0.04	1.7	0.43	0.49
Copper	mg/kg ww	21	0	0.74	2.5	1.4	0.48
Iron	mg/kg ww	21	0	36	216	98	47
Lead	mg/kg ww	21	0	0.03	0.55	0.13	0.12
Lithium	mg/kg ww	21	5	0.05	0.45	0.18	0.11
Magnesium	mg/kg ww	21	0	469	1,510	910	241
Manganese	mg/kg ww	21	0	23	707	144	206
Mercury	mg/kg ww	21	0	3.2×10^{-3}	9.4×10^{-3}	5.4×10^{-3}	2.1×10^{-3}
Moisture	%	23	0	44	64	56	4.9
Molybdenum	mg/kg ww	21	0	0.01	0.16	0.03	0.04
Nickel	mg/kg ww	21	0	0.12	1.8	0.67	0.46
Phosphorus	mg/kg ww	21	0	146	1,100	408	222
Potassium	mg/kg ww	21	0	844	3,030	1,684	587
Rubidium	mg/kg ww	21	0	0.23	11	2.6	2.9
Selenium	mg/kg ww	21	15	5.0×10^{-3}	0.04	9.8×10^{-3}	9.4×10^{-3}
Silver	mg/kg ww	21	4	5.0×10^{-4}	9.1×10^{-3}	1.8×10^{-3}	1.8×10^{-3}
Sodium	mg/kg ww	21	14	2.0	9.3	3.6	2.5
Strontium	mg/kg ww	21	0	2.5	16	7.1	3.7
Tellurium	mg/kg ww	21	21	2.0×10^{-3}	2.0×10^{-3}	2.0×10^{-3}	NA
Thallium	mg/kg ww	21	2	2.0×10^{-4}	2.2×10^{-3}	9.3×10^{-4}	5.2×10^{-4}
Tin	mg/kg ww	21	21	0.01	0.01	0.01	0.0
Uranium	mg/kg ww	21	0	3.5×10^{-3}	0.03	0.01	6.6×10^{-3}
Vanadium	mg/kg ww	21	0	0.04	0.36	0.16	0.09
Zinc	mg/kg ww	21	0	2.7	7.3	4.7	1.2
Zirconium	mg/kg ww	21	12	0.02	0.07	0.03	0.02

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Giant Mine Property - West of Baker Creek							
Aluminum	mg/kg ww	17	0	8.7	101	37	27
Antimony	mg/kg ww	17	0	0.03	0.25	0.09	0.05
Arsenic	mg/kg ww	20	0	0.38	5.5	1.5	1.1
BAArsenic	mg/kg ww	4	0	0.60	44	23	24
Barium	mg/kg ww	17	0	3.4	45	14	13
Beryllium	mg/kg ww	17	6	$1.0x10^{-3}$	$9.8x10^{-3}$	$3.5x10^{-3}$	$2.5x10^{-3}$
Bismuth	mg/kg ww	17	17	$1.0x10^{-3}$	$1.0x10^{-3}$	$1.0x10^{-3}$	NA
Boron	mg/kg ww	17	0	0.73	11	4.7	3.0
Cadmium	mg/kg ww	17	7	$5.0x10^{-4}$	$7.3x10^{-3}$	$2.0x10^{-3}$	$2.0x10^{-3}$
Calcium	mg/kg ww	17	0	1,630	7,020	4,123	1,581
Cesium	mg/kg ww	17	0	$2.8x10^{-3}$	0.28	0.06	0.08
Chromium	mg/kg ww	17	0	0.03	0.25	0.09	0.06
Cobalt	mg/kg ww	17	0	0.03	1.2	0.30	0.31
Copper	mg/kg ww	17	0	0.77	2.8	1.6	0.48
Iron	mg/kg ww	17	0	16	143	59	30
Lead	mg/kg ww	17	0	0.03	0.24	0.09	0.06
Lithium	mg/kg ww	17	11	0.05	0.51	0.13	0.16
Magnesium	mg/kg ww	17	0	290	1,620	935	368
Manganese	mg/kg ww	17	0	24	953	223	281
Mercury	mg/kg ww	17	0	$2.4x10^{-3}$	$8.7x10^{-3}$	$4.4x10^{-3}$	$1.6x10^{-3}$
Moisture	%	19	0	51	74	60	5.4
Molybdenum	mg/kg ww	17	0	$8.8x10^{-3}$	0.23	0.05	0.07
Nickel	mg/kg ww	17	0	0.22	5.0	0.99	1.1
Phosphorus	mg/kg ww	17	0	249	715	354	118
Potassium	mg/kg ww	17	0	658	2,340	1,196	446
Rubidium	mg/kg ww	17	0	0.52	18	4.3	4.3
Selenium	mg/kg ww	17	10	$5.0x10^{-3}$	0.06	0.01	0.01
Silver	mg/kg ww	17	9	$5.0x10^{-4}$	$2.7x10^{-3}$	$1.1x10^{-3}$	$8.0x10^{-4}$
Sodium	mg/kg ww	17	13	2.0	6.5	2.8	1.5
Strontium	mg/kg ww	17	0	2.9	17	7.4	4.0
Tellurium	mg/kg ww	17	17	$2.0x10^{-3}$	$2.0x10^{-3}$	$2.0x10^{-3}$	NA
Thallium	mg/kg ww	17	4	$2.0x10^{-4}$	$6.0x10^{-3}$	$1.2x10^{-3}$	$1.6x10^{-3}$
Tin	mg/kg ww	17	17	0.01	0.01	0.01	$1.2x10^{-10}$
Uranium	mg/kg ww	17	0	$1.2x10^{-3}$	0.04	$7.6x10^{-3}$	$9.9x10^{-3}$
Vanadium	mg/kg ww	17	0	0.03	0.26	0.09	0.06
Zinc	mg/kg ww	17	0	1.8	6.9	4.2	1.4
Zirconium	mg/kg ww	17	14	0.02	0.07	0.03	0.02

B.6 Small Mammals

The data gaps exercise identified that there was a lack of small mammal data at the Giant Mine. Therefore Golder (2016e) undertook a program to characterize terrestrial small mammals on the Giant Mine and former Townsite (see ATTACHMENT B.1). A total of 50 northern red backed vole, deer mice or shrew samples were obtained for analysis. Sample locations are presented in Figure B.18 and a summary of the data is presented in Table B.20 for the Giant Mine and Table B.21 for the former Townsite.

Figure B.18 Small mammal sampling locations from Giant Mine and former Townsite

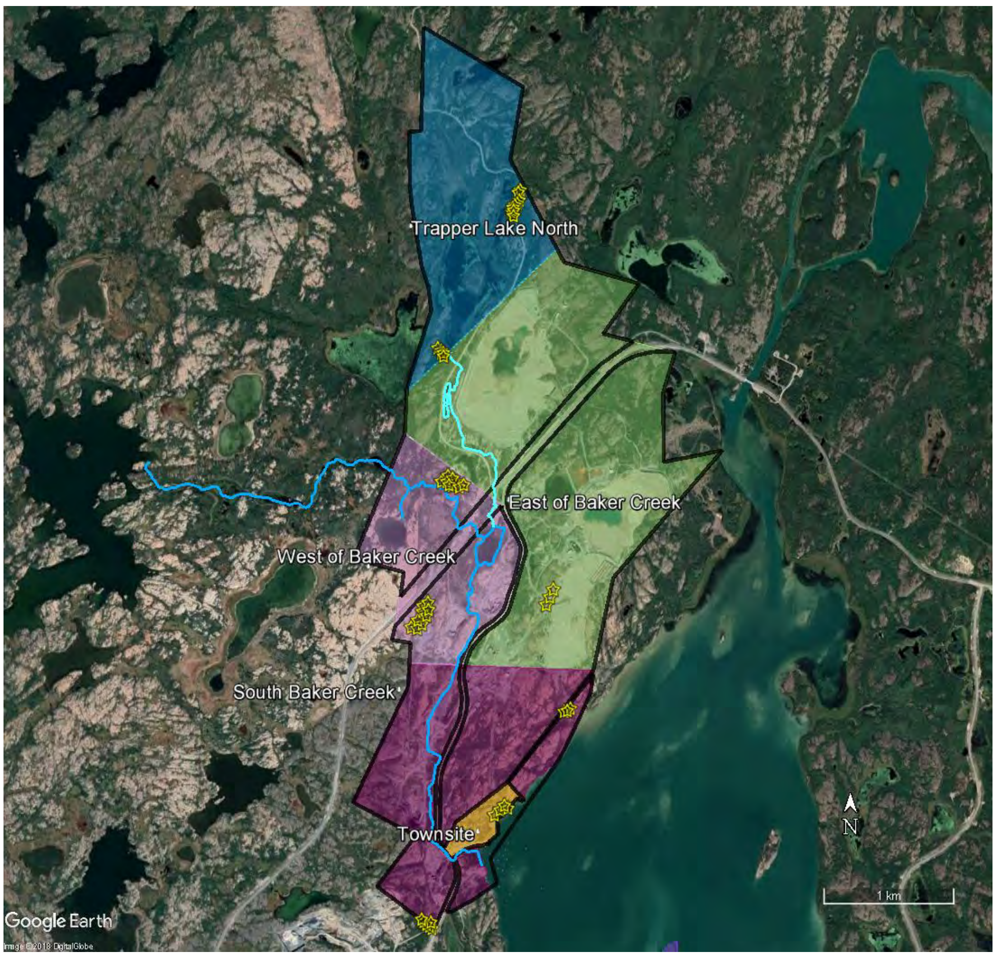

Table B.20 Summary of concentrations in small mammals on Giant Mine

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Giant Mine Property - East of Baker Creek							
Aluminum	mg/kg ww	3	0	29	63	42	18
Antimony	mg/kg ww	3	0	0.14	0.19	0.17	0.02
Arsenic	mg/kg ww	3	0	2.1	3.1	2.6	0.48
Barium	mg/kg ww	3	0	0.81	2.0	1.5	0.62
Beryllium	mg/kg ww	3	3	1.0×10^{-3}	1.0×10^{-3}	1.0×10^{-3}	NA
Bismuth	mg/kg ww	3	3	1.0×10^{-3}	1.0×10^{-3}	1.0×10^{-3}	NA
Boron	mg/kg ww	3	0	0.81	0.95	0.87	0.07
Cadmium	mg/kg ww	3	0	0.01	0.06	0.03	0.03
Calcium	mg/kg ww	3	0	7,430	8,790	8,047	689
Cesium	mg/kg ww	3	0	8.5×10^{-3}	0.51	0.18	0.28
Chromium	mg/kg ww	3	0	0.30	0.47	0.38	0.09
Cobalt	mg/kg ww	3	0	0.09	0.19	0.13	0.05
Copper	mg/kg ww	3	0	2.7	2.8	2.7	0.09
Iron	mg/kg ww	3	0	106	179	136	38
Lead	mg/kg ww	3	0	0.25	0.30	0.27	0.03
Lithium	mg/kg ww	3	3	0.05	0.05	0.05	NA
Magnesium	mg/kg ww	3	0	472	498	484	13
Manganese	mg/kg ww	3	0	3.5	13	7.0	5.6
Mercury	mg/kg ww	3	0	2.1×10^{-3}	0.02	8.8×10^{-3}	0.01
Moisture	%	3	0	67	77	72	4.8
Molybdenum	mg/kg ww	3	0	0.17	0.27	0.22	0.05
Nickel	mg/kg ww	3	0	0.42	0.48	0.45	0.03
Phosphorus	mg/kg ww	3	0	6,150	6,980	6,633	432
Potassium	mg/kg ww	3	0	3,090	3,410	3,203	179
Rubidium	mg/kg ww	3	0	3.2	6.6	4.8	1.7
Selenium	mg/kg ww	3	0	0.20	0.26	0.23	0.03
Silver	mg/kg ww	3	0	2.2×10^{-3}	0.02	9.2×10^{-3}	0.01
Sodium	mg/kg ww	3	0	1,230	1,390	1,333	90
Strontium	mg/kg ww	3	0	2.2	4.0	3.0	0.89
Thallium	mg/kg ww	3	1	2.0×10^{-4}	5.5×10^{-4}	4.0×10^{-4}	1.8×10^{-4}
Tin	mg/kg ww	3	0	0.06	0.10	0.08	0.02
Uranium	mg/kg ww	3	0	7.4×10^{-4}	3.7×10^{-3}	1.9×10^{-3}	1.6×10^{-3}
Vanadium	mg/kg ww	3	0	0.10	0.17	0.14	0.04
Zinc	mg/kg ww	3	0	22	24	23	1.0
Zirconium	mg/kg ww	3	1	0.02	0.04	0.03	0.01
Tellurium	mg/kg ww	3	3	2.0×10^{-3}	2.0×10^{-3}	2.0×10^{-3}	NA

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Giant Mine Property - South Baker Creek							
Aluminum	mg/kg ww	9	0	6.9	65	23	17
Antimony	mg/kg ww	9	0	$4.5x10^{-3}$	0.12	0.04	0.05
Arsenic	mg/kg ww	9	0	0.15	2.8	1.0	0.83
Barium	mg/kg ww	9	0	1.1	3.1	2.0	0.64
Beryllium	mg/kg ww	9	9	$1.0x10^{-3}$	$1.0x10^{-3}$	$1.0x10^{-3}$	NA
Bismuth	mg/kg ww	9	8	$1.0x10^{-3}$	$2.9x10^{-3}$	$1.2x10^{-3}$	$6.3x10^{-4}$
Boron	mg/kg ww	9	0	0.43	0.85	0.61	0.15
Cadmium	mg/kg ww	9	0	$4.0x10^{-3}$	0.05	0.02	0.01
Calcium	mg/kg ww	9	0	6,290	$1.4x10^{4}$	9,966	2,606
Cesium	mg/kg ww	9	0	$4.0x10^{-3}$	0.64	0.08	0.21
Chromium	mg/kg ww	9	0	0.08	2.3	0.55	0.70
Cobalt	mg/kg ww	9	0	0.01	0.15	0.09	0.05
Copper	mg/kg ww	9	0	1.2	3.3	2.6	0.70
Iron	mg/kg ww	9	0	35	163	95	37
Lead	mg/kg ww	9	0	0.04	0.47	0.17	0.13
Lithium	mg/kg ww	9	9	0.05	0.05	0.05	$1.1x10^{-9}$
Magnesium	mg/kg ww	9	0	247	578	458	97
Manganese	mg/kg ww	9	0	1.4	8.2	3.2	2.0
Mercury	mg/kg ww	9	0	$2.1x10^{-3}$	0.06	0.01	0.02
Moisture	mg/kg ww	9	0	66	76	71	3.3
Molybdenum	mg/kg ww	9	0	0.10	0.39	0.23	0.10
Nickel	mg/kg ww	9	0	0.11	1.6	0.49	0.45
Phosphorus	mg/kg ww	9	0	4,770	$1.0x10^{4}$	7,906	1,798
Potassium	mg/kg ww	9	0	1,380	3,640	3,162	682
Rubidium	mg/kg ww	9	0	2.5	13	5.8	3.3
Selenium	mg/kg ww	9	0	0.04	0.40	0.24	0.11
Silver	mg/kg ww	9	5	$5.0x10^{-4}$	$9.6x10^{-3}$	$1.8x10^{-3}$	$3.0x10^{-3}$
Sodium	mg/kg ww	9	0	642	1,620	1,349	291
Strontium	mg/kg ww	9	0	1.8	5.4	3.3	1.4
Thallium	mg/kg ww	9	5	$2.0x10^{-4}$	$2.0x10^{-3}$	$6.7x10^{-4}$	$7.3x10^{-4}$
Tin	mg/kg ww	9	0	0.03	0.24	0.12	0.07
Uranium	mg/kg ww	9	0	$8.3x10^{-4}$	$5.3x10^{-3}$	$1.9x10^{-3}$	$1.4x10^{-3}$
Vanadium	mg/kg ww	9	1	0.01	0.22	0.07	0.06
Zinc	mg/kg ww	9	0	14	33	25	5.4
Zirconium	mg/kg ww	9	8	0.02	0.05	0.02	0.01
Tellurium	mg/kg ww	9	9	$2.0x10^{-3}$	$2.0x10^{-3}$	$2.0x10^{-3}$	NA

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Giant Mine Property - Trapper Lake North							
Aluminum	mg/kg ww	16	0	3.2	38	13	9.7
Antimony	mg/kg ww	16	0	0.01	0.11	0.04	0.03
Arsenic	mg/kg ww	16	0	0.39	2.8	1.6	0.61
Barium	mg/kg ww	16	0	1.0	6.0	2.8	1.3
Beryllium	mg/kg ww	16	16	$1.0x10^{-3}$	$1.0x10^{-3}$	$1.0x10^{-3}$	NA
Bismuth	mg/kg ww	16	15	$1.0x10^{-3}$	$2.1x10^{-3}$	$1.1x10^{-3}$	$2.7x10^{-4}$
Boron	mg/kg ww	16	0	0.34	1.0	0.64	0.24
Cadmium	mg/kg ww	16	0	$6.7x10^{-3}$	0.24	0.06	0.06
Calcium	mg/kg ww	16	0	7,100	$1.3x10^{4}$	$1.0x10^{4}$	1,834
Cesium	mg/kg ww	16	0	0.01	1.2	0.36	0.37
Chromium	mg/kg ww	16	0	0.01	0.13	0.04	0.03
Cobalt	mg/kg ww	16	0	0.03	0.13	0.06	0.02
Copper	mg/kg ww	16	0	2.1	4.9	2.8	0.72
Iron	mg/kg ww	16	0	56	128	85	21
Lead	mg/kg ww	16	0	0.03	1.1	0.20	0.36
Lithium	mg/kg ww	16	16	0.05	0.05	0.05	$6.8x10^{-10}$
Magnesium	mg/kg ww	16	0	324	559	435	69
Manganese	mg/kg ww	16	0	1.9	4.2	3.0	0.67
Mercury	mg/kg ww	16	0	$2.8x10^{-3}$	0.07	0.03	0.02
Moisture	mg/kg ww	16	0	65	77	72	3.3
Molybdenum	mg/kg ww	16	0	0.08	0.20	0.13	0.03
Nickel	mg/kg ww	16	0	0.09	0.30	0.17	0.06
Phosphorus	mg/kg ww	16	0	5,480	9,770	7,659	1,081
Potassium	mg/kg ww	16	0	2,730	4,080	3,324	318
Rubidium	mg/kg ww	16	0	2.8	25	13	6.9
Selenium	mg/kg ww	16	0	0.02	0.69	0.26	0.13
Silver	mg/kg ww	16	3	$5.0x10^{-4}$	0.03	$6.7x10^{-3}$	$6.5x10^{-3}$
Sodium	mg/kg ww	16	0	1,160	1,830	1,374	180
Strontium	mg/kg ww	16	0	2.4	5.6	4.0	1.0
Tellurium	mg/kg ww	16	16	$2.0x10^{-3}$	$2.0x10^{-3}$	$2.0x10^{-3}$	NA
Thallium	mg/kg ww	16	2	$2.0x10^{-4}$	$3.5x10^{-3}$	$1.1x10^{-3}$	$8.3x10^{-4}$
Tin	mg/kg ww	16	3	0.01	0.06	0.03	0.01
Uranium	mg/kg ww	16	0	$5.6x10^{-4}$	$6.1x10^{-3}$	$2.2x10^{-3}$	$1.6x10^{-3}$
Vanadium	mg/kg ww	16	6	0.01	0.12	0.04	0.03
Zinc	mg/kg ww	16	0	23	40	28	4.1
Zirconium	mg/kg ww	16	16	0.02	0.02	0.02	$3.4x10^{-10}$

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Giant Mine Property - West of Baker Creek							
Aluminum	mg/kg ww	18	0	11	212	43	48
Antimony	mg/kg ww	18	0	0.03	0.78	0.11	0.17
Arsenic	mg/kg ww	18	0	1.3	28	4.4	6.1
Barium	mg/kg ww	18	0	1.2	6.7	2.6	1.3
Beryllium	mg/kg ww	18	17	$1.0x10^{-3}$	$5.8x10^{-3}$	$1.3x10^{-3}$	$1.1x10^{-3}$
Bismuth	mg/kg ww	18	17	$1.0x10^{-3}$	$2.5x10^{-3}$	$1.1x10^{-3}$	$3.5x10^{-4}$
Boron	mg/kg ww	18	0	0.31	1.4	0.71	0.33
Cadmium	mg/kg ww	18	0	$5.2x10^{-3}$	0.28	0.04	0.06
Calcium	mg/kg ww	18	0	7,050	$1.8x10^{4}$	$1.1x10^{4}$	3,137
Cesium	mg/kg ww	18	0	$6.0x10^{-3}$	0.23	0.06	0.07
Chromium	mg/kg ww	18	0	0.03	0.55	0.11	0.12
Cobalt	mg/kg ww	18	0	0.04	0.32	0.10	0.07
Copper	mg/kg ww	18	0	2.4	3.9	3.3	0.40
Iron	mg/kg ww	18	0	86	333	134	65
Lead	mg/kg ww	18	0	0.08	14	1.0	3.2
Lithium	mg/kg ww	18	16	0.05	0.35	0.07	0.07
Magnesium	mg/kg ww	18	0	412	649	531	75
Manganese	mg/kg ww	18	0	2.3	15	5.5	3.7
Mercury	mg/kg ww	18	0	$2.0x10^{-3}$	0.07	0.01	0.02
Moisture	%	18	0	63	72	69	2.2
Molybdenum	mg/kg ww	18	0	0.14	0.34	0.23	0.07
Nickel	mg/kg ww	18	0	0.13	0.55	0.25	0.12
Phosphorus	mg/kg ww	18	0	6,650	$1.3x10^{4}$	8,429	1,617
Potassium	mg/kg ww	18	0	2,990	4,290	3,676	381
Rubidium	mg/kg ww	18	0	3.2	20	8.4	5.0
Selenium	mg/kg ww	18	0	0.18	0.38	0.28	0.06
Silver	mg/kg ww	18	1	$5.0x10^{-4}$	0.02	$5.4x10^{-3}$	$6.4x10^{-3}$
Sodium	mg/kg ww	18	0	1,260	1,760	1,475	130
Strontium	mg/kg ww	18	0	2.2	5.4	3.6	0.93
Tellurium	mg/kg ww	18	18	$2.0x10^{-3}$	$2.0x10^{-3}$	$2.0x10^{-3}$	NA
Thallium	mg/kg ww	18	5	$2.0x10^{-4}$	$4.0x10^{-3}$	$8.3x10^{-4}$	$9.1x10^{-4}$
Tin	mg/kg ww	18	3	0.01	0.08	0.03	0.02
Uranium	mg/kg ww	18	0	$1.1x10^{-3}$	0.03	$6.5x10^{-3}$	$8.7x10^{-3}$
Vanadium	mg/kg ww	18	0	0.03	0.59	0.13	0.14
Zinc	mg/kg ww	18	0	24	34	29	3.2
Zirconium	mg/kg ww	18	11	0.02	0.10	0.04	0.02

Table B.21 Summary of concentrations in small mammals on the former Townsite

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Aluminum	mg/kg ww	4	0	11	53	24	19
Antimony	mg/kg ww	4	0	0.03	0.07	0.04	0.02
Arsenic	mg/kg ww	4	0	0.67	2.4	1.4	0.80
Barium	mg/kg ww	4	0	1.4	2.4	1.9	0.50
Beryllium	mg/kg ww	4	4	$1.0x10^{-3}$	$1.0x10^{-3}$	$1.0x10^{-3}$	NA
Bismuth	mg/kg ww	4	4	$1.0x10^{-3}$	$1.0x10^{-3}$	$1.0x10^{-3}$	NA
Boron	mg/kg ww	4	0	1.1	9.0	3.3	3.8
Cadmium	mg/kg ww	4	0	0.02	0.03	0.02	$3.9x10^{-3}$
Calcium	mg/kg ww	4	0	9,810	$1.4x10^{4}$	$1.1x10^{4}$	2,145
Cesium	mg/kg ww	4	0	0.01	0.03	0.02	$8.1x10^{-3}$
Chromium	mg/kg ww	4	0	0.06	0.46	0.28	0.21
Cobalt	mg/kg ww	4	0	0.06	0.25	0.15	0.08
Copper	mg/kg ww	4	0	3.0	3.4	3.2	0.16
Iron	mg/kg ww	4	0	89	157	109	32
Lead	mg/kg ww	4	0	0.28	0.75	0.41	0.23
Lithium	mg/kg ww	4	4	0.05	0.05	0.05	NA
Magnesium	mg/kg ww	4	0	487	660	540	82
Manganese	mg/kg ww	4	0	2.3	3.5	2.8	0.53
Mercury	mg/kg ww	4	0	$4.2x10^{-3}$	$8.0x10^{-3}$	$5.3x10^{-3}$	$1.8x10^{-3}$
Moisture	mg/kg ww	4	0	67	71	69	1.6
Molybdenum	mg/kg ww	4	0	0.18	0.28	0.24	0.04
Nickel	mg/kg ww	4	0	0.16	0.45	0.33	0.13
Phosphorus	mg/kg ww	4	0	8,310	$1.1x10^{4}$	9,260	1,383
Potassium	mg/kg ww	4	0	3,360	3,850	3,615	210
Rubidium	mg/kg ww	4	0	4.2	5.8	5.1	0.70
Selenium	mg/kg ww	4	0	0.32	0.39	0.36	0.03
Silver	mg/kg ww	4	0	$1.1x10^{-3}$	$3.8x10^{-3}$	$1.9x10^{-3}$	$1.3x10^{-3}$
Sodium	mg/kg ww	4	0	1,440	1,610	1,520	73
Strontium	mg/kg ww	4	0	2.5	3.4	3.0	0.38
Tellurium	mg/kg ww	4	4	$2.0x10^{-3}$	$2.0x10^{-3}$	$2.0x10^{-3}$	NA
Thallium	mg/kg ww	4	1	$2.0x10^{-4}$	$5.6x10^{-4}$	$4.3x10^{-4}$	$1.6x10^{-4}$
Tin	mg/kg ww	4	0	0.07	0.10	0.08	0.01
Uranium	mg/kg ww	4	0	$6.8x10^{-4}$	$3.7x10^{-3}$	$2.1x10^{-3}$	$1.4x10^{-3}$
Vanadium	mg/kg ww	4	0	0.04	0.21	0.09	0.08
Zinc	mg/kg ww	4	0	27	36	30	3.8
Zirconium	mg/kg ww	4	1	0.02	0.05	0.04	0.02

B.7 Fish

There have been several fish studies carried out in Baker Creek and Yellowknife Bay since 2011 that are considered appropriate for consideration within the risk assessment. In examining the fish data there are different requirements from both a human health and ecological perspective. For human health, fish tissue that is consumed by people is the focus of the summaries. Discussions with the YKDFN community indicated that they consume trout, lake whitefish, and inconnu. For the ecological risk assessment, whole body fish are the focus.

B.7.1 Whole Body Fish from Baker Creek

Two sampling programs were identified to characterize whole body fish in Baker Creek (Golder 2013a; Stantec 2014a). All samples were obtained from lower Baker Creek (Reach 0 and Reach 1) with 36 samples of slimy sculpin, nine spine stickleback, and arctic grayling obtained for analysis for most constituents. A summary of the data is presented in Table B.22.

Table B.22 Summary of whole body concentrations fish from Baker Creek

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Aluminum	mg/kg ww	36	2	1.0	100	23	26
Antimony	mg/kg ww	36	2	$5.0x10^{-3}$	0.62	0.16	0.16
Arsenic	mg/kg ww	36	0	0.21	16	3.3	3.6
Barium	mg/kg ww	36	0	0.27	6.0	1.6	1.4
Beryllium	mg/kg ww	36	33	$1.0x10^{-3}$	0.10	0.02	0.03
Bismuth	mg/kg ww	36	22	$1.0x10^{-3}$	0.06	0.02	0.02
Boron	mg/kg ww	22	11	0.10	1.1	0.35	0.27
Cadmium	mg/kg ww	36	0	0.02	0.56	0.09	0.12
Calcium	mg/kg ww	36	0	2,270	$2.9x10^{4}$	9,736	7,331
Chromium	mg/kg ww	36	17	0.05	1.1	0.22	0.25
Cobalt	mg/kg ww	36	0	0.03	1.1	0.21	0.26
Copper	mg/kg ww	36	0	1.0	9.9	2.6	2.1
Iron	mg/kg ww	36	0	12	199	55	49
Lead	mg/kg ww	36	1	0.02	0.86	0.16	0.19
Lithium	mg/kg ww	32	31	0.01	0.11	0.04	0.03
Magnesium	mg/kg ww	36	0	223	1,480	494	319
Manganese	mg/kg ww	36	0	1.3	39	15	9.5
Mercury	mg/kg ww	32	0	$6.2x10^{-3}$	0.12	0.03	0.02
Molybdenum	mg/kg ww	36	4	0.01	0.15	0.05	0.04
Nickel	mg/kg ww	36	9	0.05	0.94	0.24	0.21
Phosphorus	mg/kg ww	36	0	3,110	$2.3x10^{4}$	7,558	4,637
Potassium	mg/kg ww	36	0	1,890	$1.2x10^{4}$	3,987	2,361
Rhenium	mg/kg ww	18	18	$1.0x10^{-3}$	$1.0x10^{-3}$	$1.0x10^{-3}$	0.0
Rubidium	mg/kg ww	18	0	3.2	20	7.5	4.4
Selenium	mg/kg ww	36	0	0.30	1.7	0.67	0.37
Silver	mg/kg ww	4	4	0.03	0.03	0.03	0.0
Sodium	mg/kg ww	36	0	580	4,630	1,521	828
Strontium	mg/kg ww	36	0	2.7	48	14	11
Tellurium	mg/kg ww	18	18	$2.0x10^{-3}$	$2.0x10^{-3}$	$2.0x10^{-3}$	NA
Thallium	mg/kg ww	36	14	$2.3x10^{-3}$	0.01	$6.2x10^{-3}$	$2.7x10^{-3}$
Thorium	mg/kg ww	18	9	$1.0x10^{-3}$	0.03	$7.3x10^{-3}$	$9.7x10^{-3}$
Tin	mg/kg ww	36	20	$2.0x10^{-3}$	0.18	0.06	0.06
Titanium	mg/kg ww	36	11	0.04	4.5	1.1	1.2
Uranium	mg/kg ww	36	10	$1.0x10^{-3}$	0.03	$7.1x10^{-3}$	$6.3x10^{-3}$
Vanadium	mg/kg ww	36	13	0.05	0.38	0.11	0.08
Yttrium	mg/kg ww	18	12	$2.5x10^{-3}$	0.17	0.03	0.04
Zinc	mg/kg ww	36	0	18	134	49	34
Zirconium	mg/kg ww	4	0	0.05	0.22	0.15	0.07

B.7.2 Whole Body Fish from Yellowknife Bay

Only one sampling program was identified to characterize whole body fish in Yellowknife Bay (Stantec 2014a). A total of 61 samples of slimy sculpin were obtained from North Yellowknife Bay and South Yellowknife bay near the City of Yellowknife. A summary of the data is presented in Table B.23.

Table B.23 Summary of whole body fish concentrations from Yellowknife Bay

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Aluminum	mg/kg ww	61	0	2.9	150	21	24
Antimony	mg/kg ww	61	59	0.03	0.08	0.03	7.7×10^{-3}
Arsenic	mg/kg ww	61	0	0.15	6.2	0.64	0.89
Barium	mg/kg ww	61	0	0.70	4.3	2.5	0.84
Beryllium	mg/kg ww	61	61	0.03	0.03	0.03	1.3×10^{-9}
Bismuth	mg/kg ww	61	59	0.03	0.07	0.03	7.2×10^{-3}
Boron	mg/kg ww	61	61	0.25	0.25	0.25	0.0
Cadmium	mg/kg ww	61	0	0.02	0.07	0.04	0.01
Calcium	mg/kg ww	61	0	4,200	1.8×10^{4}	1.1×10^{4}	3,201
Chromium	mg/kg ww	61	61	0.15	0.15	0.15	NA
Cobalt	mg/kg ww	61	1	0.02	0.36	0.10	0.05
Copper	mg/kg ww	61	0	0.70	3.4	1.0	0.35
Iron	mg/kg ww	61	0	14	280	43	39
Lead	mg/kg ww	61	9	0.02	0.43	0.06	0.06
Magnesium	mg/kg ww	61	0	270	480	371	48
Manganese	mg/kg ww	61	0	1.4	12	4.4	1.6
Mercury	mg/kg ww	60	7	2.5×10^{-3}	0.05	0.02	9.4×10^{-3}
Molybdenum	mg/kg ww	61	61	0.03	0.03	0.03	1.3×10^{-9}
Nickel	mg/kg ww	61	58	0.03	0.30	0.08	0.07
Phosphorus	mg/kg ww	61	0	3,100	9,000	5,839	1,323
Potassium	mg/kg ww	61	0	2,300	3,500	2,856	241
Selenium	mg/kg ww	61	0	0.30	0.80	0.46	0.11
Silver	mg/kg ww	61	61	0.03	0.03	0.03	1.3×10^{-9}
Sodium	mg/kg ww	61	0	1,100	1,800	1,338	142
Strontium	mg/kg ww	61	0	6.1	28	17	5.2
Thallium	mg/kg ww	61	0	4.0×10^{-3}	8.0×10^{-3}	5.5×10^{-3}	9.9×10^{-4}
Tin	mg/kg ww	61	61	0.15	0.15	0.15	0.0
Titanium	mg/kg ww	61	25	0.25	2.4	0.61	0.43
Uranium	mg/kg ww	61	0	6.0×10^{-3}	0.04	0.02	7.0×10^{-3}
Vanadium	mg/kg ww	61	12	0.03	0.55	0.09	0.08
Zinc	mg/kg ww	61	0	16	32	24	2.7

B.7.3 Fish Muscle from Yellowknife Bay

Two sampling programs (Cott et al. 2016; Stantec 2014a) provided data on fish muscle in Yellowknife Bay (Back Bay, North Yellowknife Bay and South Yellowknife Bay). Samples of burbot, inconnu, lake trout, lake whitefish, and northern pike muscle were analyzed. A summary of the data is presented in Table B.24.

Table B.24 Summary of fish muscle concentrations from Yellowknife Bay

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Aluminum	mg/kg ww	154	126	0.15	32	1.1	3.6
Antimony	mg/kg ww	154	149	5.0×10^{-4}	0.13	0.02	0.01
Arsenic	mg/kg ww	155	2	0.03	4.0	0.30	0.52
Barium	mg/kg ww	145	111	5.0×10^{-3}	3.1	0.23	0.44
Beryllium	mg/kg ww	145	142	1.0×10^{-3}	0.05	0.03	0.01
Bismuth	mg/kg ww	145	137	0.01	0.08	0.02	9.8×10^{-3}
Boron	mg/kg ww	119	116	0.20	0.25	0.25	7.9×10^{-3}
Cadmium	mg/kg ww	145	134	1.0×10^{-3}	0.05	5.8×10^{-3}	6.5×10^{-3}
Calcium	mg/kg ww	145	0	71	1.3×10^{4}	568	1,759
Chromium	mg/kg ww	145	142	5.0×10^{-3}	0.15	0.13	0.04
Cobalt	mg/kg ww	145	124	2.0×10^{-3}	0.12	7.8×10^{-3}	0.02
Copper	mg/kg ww	145	102	0.11	2.0	0.33	0.31
Iron	mg/kg ww	145	96	1.0	63	4.1	9.0
Lead	mg/kg ww	145	135	2.2×10^{-3}	0.09	0.02	9.1×10^{-3}
Magnesium	mg/kg ww	145	0	178	410	285	40
Manganese	mg/kg ww	145	99	0.08	4.4	0.30	0.59
Mercury	mg/kg ww	75	0	0.03	0.47	0.14	0.11
Molybdenum	mg/kg ww	145	141	5.0×10^{-3}	0.06	0.02	8.7×10^{-3}
Nickel	mg/kg ww	145	139	0.01	0.59	0.04	0.06
Phosphorus	mg/kg ww	145	0	1,400	6,800	2,127	679
Potassium	mg/kg ww	145	0	2,500	5,000	4,244	509
Selenium	mg/kg ww	145	0	0.20	0.57	0.27	0.07
Silver	mg/kg ww	119	116	2.0×10^{-3}	0.03	0.02	3.6×10^{-3}
Sodium	mg/kg ww	145	0	140	1,400	429	267
Strontium	mg/kg ww	145	106	0.08	21	0.93	2.8
Thallium	mg/kg ww	145	45	1.5×10^{-3}	0.02	7.0×10^{-3}	4.3×10^{-3}
Tin	mg/kg ww	145	142	0.01	0.15	0.12	0.05
Titanium	mg/kg ww	119	113	0.16	1.4	0.27	0.13
Uranium	mg/kg ww	119	101	2.0×10^{-4}	0.02	3.4×10^{-3}	3.1×10^{-3}
Vanadium	mg/kg ww	145	140	0.01	0.09	0.03	0.01
Zinc	mg/kg ww	145	0	2.0	16	4.5	2.6

B.7.4 Fish Liver from Yellowknife Bay

Two sampling programs (Cott et al. 2016; Stantec 2014a) were identified to characterize fish muscle in Yellowknife Bay (Back Bay, North Yellowknife Bay and South Yellowknife Bay). Samples of lake whitefish and northern pike livers were analyzed. A summary of the data is presented in Table B.25.

Table B.25 Summary of fish liver concentrations from Yellowknife Bay

Constituent	Unit	N	N<MDL	Min	Max	Average	StDev
Aluminum	mg/kg ww	127	16	0.15	13	2.2	2.7
Antimony	mg/kg ww	127	126	5.0×10^{-3}	0.13	0.02	0.01
Arsenic	mg/kg ww	127	0	0.05	1.8	0.27	0.31
Barium	mg/kg ww	127	105	5.0×10^{-3}	0.15	0.13	0.05
Beryllium	mg/kg ww	127	127	0.03	0.15	0.03	0.02
Bismuth	mg/kg ww	127	124	0.02	0.09	0.02	8.6×10^{-3}
Boron	mg/kg ww	102	102	0.25	0.25	0.25	0.0
Cadmium	mg/kg ww	127	0	9.9×10^{-3}	0.43	0.12	0.08
Calcium	mg/kg ww	127	70	25	397	62	65
Chromium	mg/kg ww	127	121	0.05	2.5	0.19	0.35
Cobalt	mg/kg ww	127	1	0.01	0.22	0.04	0.02
Copper	mg/kg ww	127	0	1.3	35	7.5	4.6
Iron	mg/kg ww	127	1	11	570	73	61
Lead	mg/kg ww	127	124	0.01	0.72	0.02	0.06
Lithium	mg/kg ww	25	25	0.05	0.15	0.06	0.03
Magnesium	mg/kg ww	127	1	50	315	160	46
Manganese	mg/kg ww	127	0	0.22	2.5	1.2	0.49
Mercury	mg/kg ww	25	6	5.0×10^{-4}	0.15	0.05	0.05
Molybdenum	mg/kg ww	127	2	0.03	0.25	0.12	0.04
Nickel	mg/kg ww	127	120	0.03	0.81	0.04	0.08
Phosphorus	mg/kg ww	127	0	1,100	5,050	2,503	849
Potassium	mg/kg ww	127	0	1,440	4,500	3,098	546
Selenium	mg/kg ww	127	0	0.59	2.0	1.3	0.30
Silver	mg/kg ww	102	38	0.03	0.35	0.08	0.06
Sodium	mg/kg ww	127	0	550	1,800	1,014	283
Strontium	mg/kg ww	127	103	0.07	0.79	0.26	0.08
Thallium	mg/kg ww	127	9	1.5×10^{-3}	0.31	0.05	0.05
Tin	mg/kg ww	127	126	0.03	0.15	0.13	0.05
Titanium	mg/kg ww	102	102	0.25	0.25	0.25	0.0
Uranium	mg/kg ww	102	76	2.5×10^{-3}	0.12	5.5×10^{-3}	0.01
Vanadium	mg/kg ww	127	58	0.03	0.81	0.10	0.13
Zinc	mg/kg ww	127	0	11	73	32	11

B.8 Background

A summary of available data from background locations is provided in Appendix C.

B.9 Voluntary Sampling Program

A summary of the results of voluntary sampling program which took place from September 2016 to January 2017 is provided below.

B.9.1 Overview and Methods

The purpose of the voluntary sampling program was to collect samples of country foods that are consumed from people who live in the area around the Giant Mine site (City of Yellowknife, Ndilo, or Dettah) to inform the Human Health Risk Assessment (HHRA). Samples were submitted from various people from the YKDFN, NSMA as well as people living in Yellowknife for a wide range of country foods including small and large mammals, birds, fish, plants, and mushroom.

A list containing details of each of the samples submitted to the laboratory for chemical analysis as part of this program are provided below in Table B.26. In some cases the organ samples listed in Table B.26 represent a composite of organs from more than one animal.

An overview of the samples submitted for analysis is shown in Table B.27. While 103 sample numbers were assigned (as seen in Table B.26), some of the samples did not end up being collected and thus some of the numbers were skipped. Overall, 94 samples were submitted to the laboratory including 14 large game, 8 small game, 30 birds, 9 fish, 32 plants, and 1 mushroom sample. It should be noted that this represents a very good sampling effort for the purposes of the risk assessment.

Table B.26 Summary of Submitted Samples

#	Sample Code	Date (dd/mm/yr)	Species	Additional Detail	Location	Comments
1	2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	-
2	2385_GIANT_002	09/09/2016	Cranberries	-	Southern end of Prosperous Lake	-
3	2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	-
4	2385_GIANT_004	08/10/16	Cranberries	-	North central Prelude Lake	-
5	2385_GIANT_005	24/09/2016	Labrador Tea	-	SE side of Niven Lake	-
6	2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	-
7	2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	-
8	2385_GIANT_008	23/10/2016	Moose	Liver	2km N of highway, 3km east of Stagg River	-
9	2385_GIANT_009	10/10/15	Moose	Flesh	Past Behchoko	Ground moose; last year's
10	2385_GIANT_010	17/09/16	Cranberries	-	Yellowknife River	-
11	2385_GIANT_011	11/09/16	Juniper Berries	-	92 Morrison Dr, Yellowknife	-
12	2385_GIANT_012	04/08/16	Raspberries	-	92 Morrison Dr, Yellowknife	-
13	2385_GIANT_013	09/03/2016	Moose	Flesh	Wool Bay	-
14	2385_GIANT_014	10/07/2016	Moose	Flesh	Johnson Lake	-
15	2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	-
16	2385_GIANT_016	18/10/16	Spruce Grouse	Breast tissue	100km W of Ft Providence, Hwy1	Lead shot; female
17	2385_GIANT_017	18/10/16	Spruce Grouse	Breast tissue	100km W of Ft Providence, Hwy1	Lead shot; juvenile male
18	2385_GIANT_018	18/10/16	Spruce Grouse	Breast tissue	100km W of Ft Providence, Hwy1	Lead shot; adult male
19	2385_GIANT_019	31/10/2016	Beaver	-	Yk River, 1st Island	Possibly from spring/summer
20	2385_GIANT_020	31/10/2016	Moose	-	Francois Bay	-
21	2385_GIANT_021	31/10/2016	Cranberries	-	Island b/w Dettah and Wool Bay	(Beside channel)
22	2385_GIANT_022	31/10/2016	Cranberries	-	Prelude	
23	2385_GIANT_023	31/10/2016	Moose	-	Powder Point	-

#	Sample Code	Date (dd/mm/yr)	Species	Additional Detail	Location	Comments
24	2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	-
25	2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	-
26	2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	-
27	2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	-
28	2385_GIANT_028	31/10/2016	Birch syrup	-	Dettah junction	Late harvest
29	2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetary	-
30	2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	-
31	2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	-
32	2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	-
33	2385_GIANT_033	summer 2015	Red bear Berry	-	Ranny Hill Trail	-
34	2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	-
35	2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	-
36	2385_GIANT_036	2015	Moose	-	Cameron Falls	Near the falls
37	2385_GIANT_037	2016	Canada Goose	-	Great Slave Lake, North arm	North Arm
38	2385_GIANT_038	2016	Mallard duck	-	Yellowknife River	-
39	2385_GIANT_039	2016	Mallard Duck	-	lower Stagg River	-
40	2385_GIANT_040	2016	Black Bear	-	Boundary Creek	-
41	2385_GIANT_041	31/12/16	Ptarmigan	Breast tissue	Vee Lake Rd, within Giant Lease	-
42	2385_GIANT_042	31/12/16	Ptarmigan	Breast tissue	Vee Lake Rd, within Giant Lease	-
43	2385_GIANT_043	31/12/16	Ptarmigan	Breast tissue	Vee Lake Rd, within Giant Lease	-
44	2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	
45	2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	
46	2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	-

#	Sample Code	Date (dd/mm/yr)	Species	Additional Detail	Location	Comments
47	2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	-
48	2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	-
49	2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	
50	2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	*
51	2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	-
54	2385_GIANT_054	13/10/16	White Fish	Eggs	West side in front of Dettah	-
55	2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	"Black Duck."
56	2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	"Black Duck."
57	2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	"Black Duck."
60	2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	-
61	2385_GIANT_061	20/10/2016	Rose Hips	-	North end of Ndilo (Tililo Tili)	Local Soil.
62	2385_GIANT_062	20/10/2016	Labrador Tea	-	Ndilo Shelah Tili	Local Soil.
63	2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	Mulch Soil.
64	2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	Composted Soil; sample dried.
65	2385_GIANT_065	20/10/2016	Raspberry + Sk Berry	-	Ndilo Shelah Tili	Composted Soil; dried; last year's on bush.
66	2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	-
67	2385_GIANT_067	22/10/2016	Lake Trout	Flesh	South Akaitcho Bay	-
68	2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	-
69	2385_GIANT_069	22/10/2016	Lake Trout	Flesh	South Mackenzie Island	Tail end of fish.
70	2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	Tail end of fish.
71	2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	-

#	Sample Code	Date (dd/mm/yr)	Species	Additional Detail	Location	Comments
72	2385_GIANT_072	22/10/2016	Caribou	Kidney	Gordon Lake	-
73	2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	-
74	2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	-
75	2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	-
76	2385_GIANT_076	21/10/2016	Lake Trout	Flesh	Goulet Bay	-
77	2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingraham Trail	-
78	2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	Dettah Road (samples 78-80 all same bird).
79	2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	Dettah Road (samples 78-80 all same bird).
81	2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	Directly East of Ndilo.
82	2385_GIANT_082	23/10/2016	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	Directly East of Ndilo.
83	2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	Z11 - E637563 N6930140.
84	2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	Z11 - E0637449 N6930319.
85	2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	Z11 - E0637505 N6930368.
86	2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	
87	2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	Meat came from leg.
88	2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	Meat came from hide.
90	2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	Without Skin.
91	2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	Samples 90-93 all same bird.
92	2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	Samples 90-93 all same bird.
93	2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	Samples 90-93 all same bird.
94	2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	With Skin.

#	Sample Code	Date (dd/mm/yr)	Species	Additional Detail	Location	Comments
98	2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	Sample collected from shoulder blade bone with very little flesh to scrape off.
99	2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	-
100	2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	-
101	2385_GIANT_101	16/12/16	Rabbit	Leg meat	Approx. 2km south of Dettah junction, on Dettah rd.	-
102	2385_GIANT_102	15/08/16	Raspberries	-	Dettah	-
103	2385_GIANT_103	25/01/17	Rabbit	Leg meat	Dettah road	Fresh; was frozen at the lab.

Table B.27 Overview of samples submitted for analysis

Sample Type	Sample Species (Number of Samples Submitted)		Tissues Sampled
Plants	• Cranberries (11) • Labrador tea (4) • Raspberries (4) • Rose Hips (3) • Red Bear berries (1)	• Juniper berries (2) • Spruce gum (4) • Saskatoon berries (1) • Chives (1) • Birch Syrup (1)	Berries, gum, syrup, tea
Fungi	• Mushroom (1)		
Birds	• White Winged Scoter (3) • Canada Goose (1) • Ptarmigan (12)	• Black Ducks (5) • Mallard Ducks (2) • Spruce Grouse (6) • Lesser Scaup (1)	Flesh, Fat, Gizzard, Liver, Heart
Mammals	• Moose (10) • Muskox (1) • Muskrat (2) • Rabbit (2)	• Bear (1) • Beaver (4) • Caribou (1) • Reindeer (1) [a]	Flesh, Liver, Heart, Fat
Fish	• Lake Trout (5)	• White Fish (4)	Flesh, Eggs

Note: a – Reindeer sample from Inuvik, which is 200+ km away.

B.9.2 Sample Locations

Figure B.19 through to Figure B.23 show the approximate locations where the voluntary samples were obtained. As can be seen, around half (43) of the samples are from within 10 km of the Giant Mine; of these samples, quite a few of the berries and other plants are from Ndilo. Twenty-four (24) of the samples were collected from between 10 km and 25 km of the Giant Mine, 10 samples were obtained between 25 km and 50 km of the site, and 9 samples were obtained between 50 km and 100 km from the site. The remaining 8 samples were collected more than 100 km from the Giant Mine.

This sample distribution of more than half of the samples within a 10 km of the site and the rest further away is considered to be a good representation of the potential influence of the Giant Mine on the level of contaminants in country food.

Figure B.19 Voluntary samples from within 10 km of the Giant Mine Site

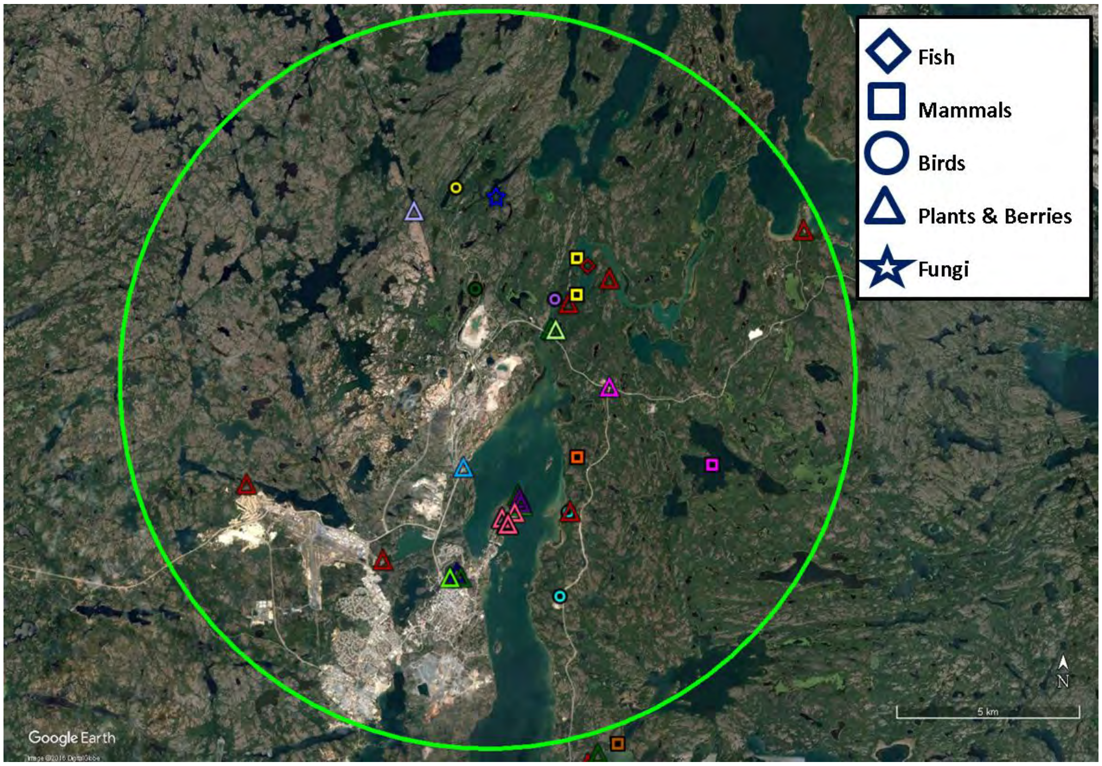

Figure B.20 Voluntary samples from the Ndilo Area

Figure B.21 Voluntary samples from within 25 km of the Giant Mine Site

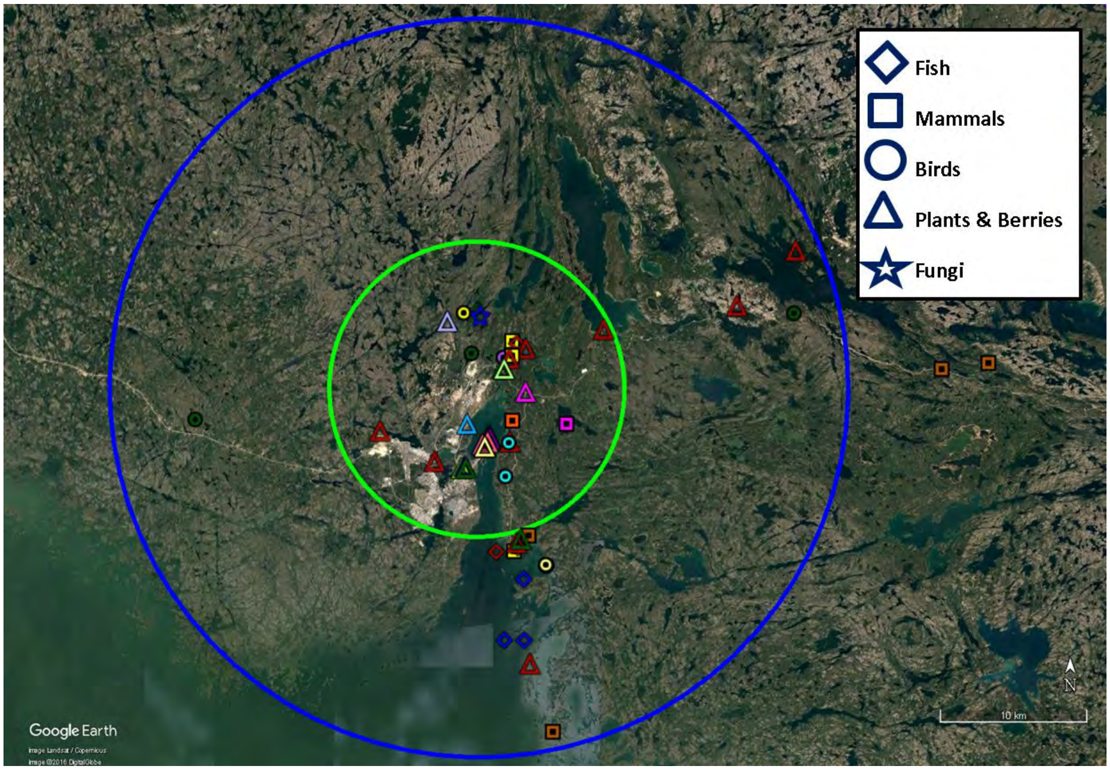

Figure B.22 Voluntary samples from within 50 km of the Giant Mine Site

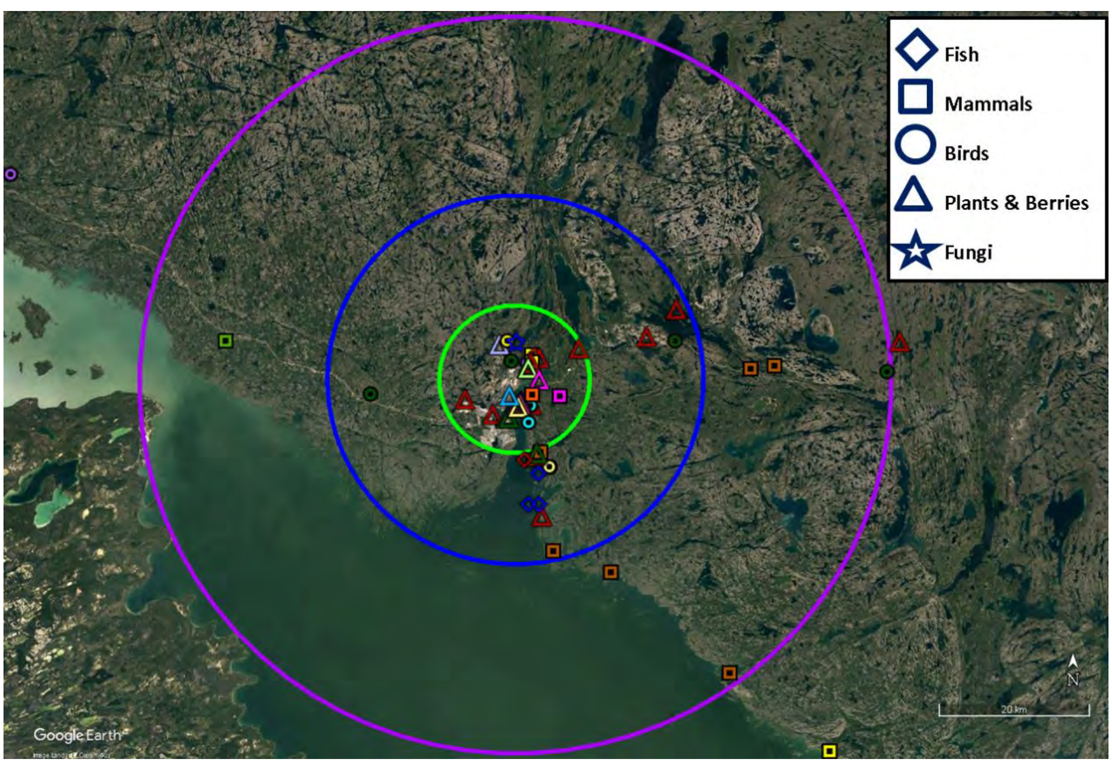

Figure B.23 Voluntary samples from within 100 km of the Giant Mine Site

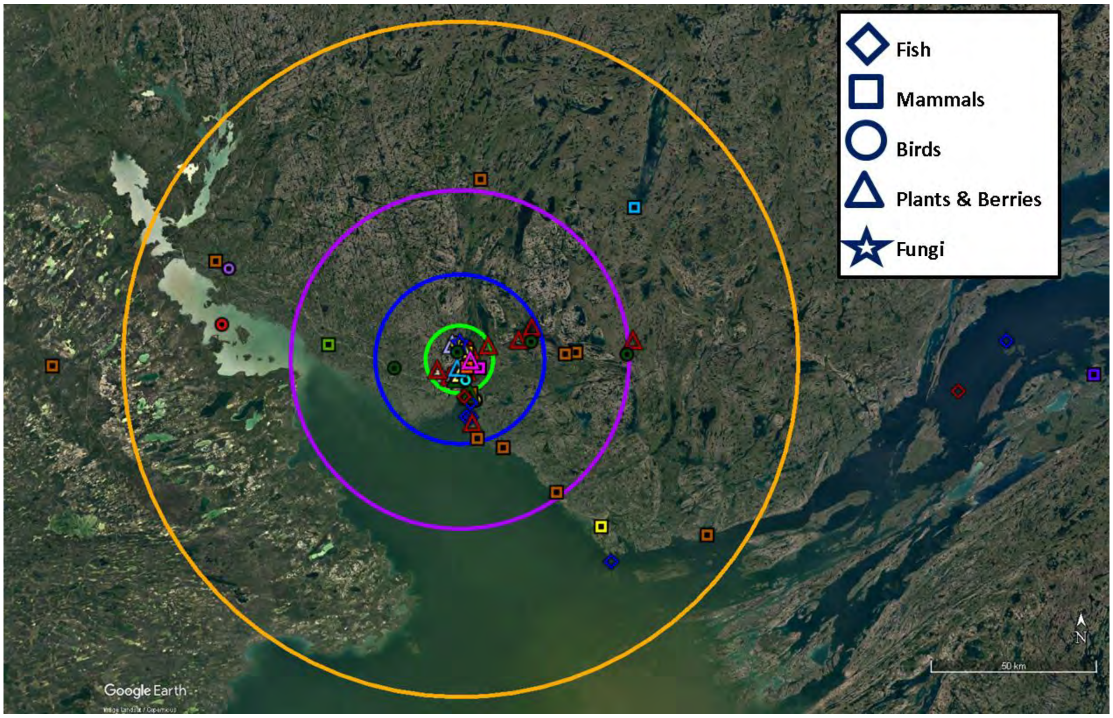

Table B.28 Measured concentrations in country foods

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Aluminum (Al)	3.76
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Arsenic (As)	0.02
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Barium (Ba)	1.81
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Boron (B)	0.69
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Calcium (Ca)	117.00
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Chromium (Cr)	0.02
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Cobalt (Co)	0.01
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Copper (Cu)	0.66
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Iron (Fe)	1.60
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Lead (Pb)	0.00
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Magnesium (Mg)	67.90
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Manganese (Mn)	21.00
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Nickel (Ni)	0.25
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Phosphorus (P)	125.00
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Potassium (K)	823.00
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Selenium (Se)	<0.010
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Sodium (Na)	5.10
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Strontium (Sr)	0.37
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Tin (Sn)	0.03
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Titanium (Ti)	<0.050
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	mg/kg ww	Total Zinc (Zn)	0.91
2385_GIANT_001	18/09/16	Cranberries	-	Yellowknife River	%	Moisture	86

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Aluminum (Al)	4.08
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Antimony (Sb)	0.00
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Arsenic (As)	0.02
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Barium (Ba)	1.71
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Boron (B)	0.94
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Calcium (Ca)	141.00
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Chromium (Cr)	0.05
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Cobalt (Co)	0.01
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Copper (Cu)	3.48
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Iron (Fe)	19.50
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Lead (Pb)	0.07
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Magnesium (Mg)	91.30
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Manganese (Mn)	20.10
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Molybdenum (Mo)	0.01
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Nickel (Ni)	0.14
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Phosphorus (P)	152.00
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Potassium (K)	932.00
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Selenium (Se)	<0.010
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Sodium (Na)	6.20
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Strontium (Sr)	0.24
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Tin (Sn)	0.08
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Titanium (Ti)	<0.050
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	mg/kg ww	Total Zinc (Zn)	1.55
2385_GIANT_002	9/9/16	Cranberries	-	southern end of Prosperous Lake	%	Moisture	84
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	%	Moisture	8.7

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Aluminum (Al)	50.3
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Antimony (Sb)	0.0249
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Arsenic (As)	0.431
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Barium (Ba)	5.79
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Beryllium (Be)	<0.10
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Bismuth (Bi)	<0.10
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Boron (B)	<2.0
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Cadmium (Cd)	0.039
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Calcium (Ca)	922
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Chromium (Cr)	2.31
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Cobalt (Co)	0.068
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Copper (Cu)	10.2
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Iron (Fe)	97
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Lead (Pb)	0.25
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Magnesium (Mg)	50
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Manganese (Mn)	22.3
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Mercury (Hg)	<0.010
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Molybdenum (Mo)	0.091
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Nickel (Ni)	1.51
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Phosphorus (P)	28
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Potassium (K)	183
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Selenium (Se)	<0.050
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Silver (Ag)	<0.020
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Sodium (Na)	13
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Strontium (Sr)	2.36
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Thallium (Tl)	<0.0020
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Tin (Sn)	1.57
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Titanium (Ti)	2.7
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Uranium (U)	0.0056
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Vanadium (V)	<0.20
2385_GIANT_003	25/09/16	Spruce Gum	-	Trails End - backyard	mg/kg dw	Total Zinc (Zn)	5.96
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Aluminum (Al)	3.33
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Antimony (Sb)	<0.0010

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Arsenic (As)	0.01
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Barium (Ba)	2.06
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Boron (B)	1.27
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Calcium (Ca)	146.00
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Chromium (Cr)	0.01
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Cobalt (Co)	0.01
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Copper (Cu)	0.50
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Iron (Fe)	1.80
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Lead (Pb)	<0.0020
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Magnesium (Mg)	93.60
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Manganese (Mn)	15.20
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Nickel (Ni)	0.09
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Phosphorus (P)	127.00
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Potassium (K)	808.00
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Selenium (Se)	<0.010
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Sodium (Na)	4.50
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Strontium (Sr)	0.38
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Tin (Sn)	0.02
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Titanium (Ti)	<0.050
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	mg/kg ww	Total Zinc (Zn)	1.05
2385_GIANT_004	8/10/16	Cranberries	-	North central Prelude Lake	%	Moisture	85
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	%	Moisture	49
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Aluminum (Al)	99
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Antimony (Sb)	0.0284

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Arsenic (As)	1.02
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Barium (Ba)	38.2
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Beryllium (Be)	<0.10
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Bismuth (Bi)	<0.10
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Boron (B)	22.7
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Cadmium (Cd)	<0.010
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Calcium (Ca)	5930
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Chromium (Cr)	0.65
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Cobalt (Co)	0.132
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Copper (Cu)	4.38
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Iron (Fe)	189
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Lead (Pb)	0.156
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Magnesium (Mg)	1520
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Manganese (Mn)	139
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Mercury (Hg)	0.011
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Molybdenum (Mo)	<0.050
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Nickel (Ni)	0.565
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Phosphorus (P)	1370
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Potassium (K)	4630
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Selenium (Se)	<0.050
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Silver (Ag)	<0.020
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Sodium (Na)	18
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Strontium (Sr)	4.3
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Thallium (Tl)	0.0095
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Tin (Sn)	1.34
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Titanium (Ti)	5.4
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Uranium (U)	0.0078
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Vanadium (V)	0.29
2385_GIANT_005	9/24/16	Labrador Tea	-	SE side of Niven Lake	mg/kg dw	Total Zinc (Zn)	20.6
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Aluminum (Al)	0.62
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Arsenic (As)	0.04
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Barium (Ba)	0.40

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Boron (B)	1.72
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Calcium (Ca)	551.00
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Chromium (Cr)	0.02
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Cobalt (Co)	0.01
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Copper (Cu)	0.32
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Iron (Fe)	2.30
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Lead (Pb)	<0.0020
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Magnesium (Mg)	191.00
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Manganese (Mn)	6.35
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Molybdenum (Mo)	0.01
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Nickel (Ni)	0.05
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Phosphorus (P)	331.00
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Potassium (K)	5490.00
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Selenium (Se)	<0.010
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Sodium (Na)	4.50
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Strontium (Sr)	1.52
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Titanium (Ti)	<0.050
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	mg/kg ww	Total Zinc (Zn)	1.58
2385_GIANT_006	24/09/16	Juniper Berries	-	SE side of Niven Lake	%	Moisture	28
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Aluminum (Al)	4.20
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Arsenic (As)	0.04
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Barium (Ba)	2.22
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Beryllium (Be)	<0.0020

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Boron (B)	0.93
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Cadmium (Cd)	0.00
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Calcium (Ca)	158.00
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Chromium (Cr)	0.07
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Cobalt (Co)	0.01
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Copper (Cu)	1.74
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Iron (Fe)	2.80
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Lead (Pb)	<0.0020
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Magnesium (Mg)	89.50
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Manganese (Mn)	28.20
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Molybdenum (Mo)	0.01
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Nickel (Ni)	0.20
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Phosphorus (P)	173.00
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Potassium (K)	892.00
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Selenium (Se)	<0.010
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Sodium (Na)	7.50
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Strontium (Sr)	0.27
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Tin (Sn)	0.27
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Titanium (Ti)	<0.050
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	mg/kg ww	Total Zinc (Zn)	1.33
2385_GIANT_007	20/09/16	Cranberries	-	Dettah ('bird camp')	%	Moisture	85
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Aluminum (Al)	<0.20
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Arsenic (As)	0.01
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Barium (Ba)	0.09

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Cadmium (Cd)	0.30
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Calcium (Ca)	29.20
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Cobalt (Co)	0.07
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Copper (Cu)	5.72
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Iron (Fe)	115.00
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Lead (Pb)	0.00
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Magnesium (Mg)	167.00
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Manganese (Mn)	1.23
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Mercury (Hg)	0.00
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Molybdenum (Mo)	0.60
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Phosphorus (P)	2860.00
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Potassium (K)	2390.00
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Selenium (Se)	0.88
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Silver (Ag)	0.01
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Sodium (Na)	398.00
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of	mg/kg ww	Total Strontium (Sr)	0.03

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
				Stagg River			
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Thallium (Tl)	0.00
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Titanium (Ti)	0.12
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	mg/kg ww	Total Zinc (Zn)	30.60
2385_GIANT_008	10/23/16	Moose	Liver	2km N of highway, 3km east of Stagg River	%	Moisture	55
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Aluminum (Al)	0.53
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Arsenic (As)	<0.0050
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Barium (Ba)	0.03
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Cadmium (Cd)	0.00
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Calcium (Ca)	50.90
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Chromium (Cr)	0.11
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Cobalt (Co)	<0.0040
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Copper (Cu)	0.77
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Iron (Fe)	17.50
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Lead (Pb)	0.00
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Magnesium (Mg)	242.00
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Manganese (Mn)	0.10
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Mercury (Hg)	0.00
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Nickel (Ni)	0.02
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Phosphorus (P)	2030.00
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Potassium (K)	3630.00

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Selenium (Se)	0.14
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Sodium (Na)	767.00
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Strontium (Sr)	0.03
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Titanium (Ti)	<0.050
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	mg/kg ww	Total Zinc (Zn)	63.00
2385_GIANT_009	10/10/15	Moose	Flesh	past Behchoko	%	Moisture	75
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Aluminum (Al)	3.50
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Arsenic (As)	0.03
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Barium (Ba)	1.86
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Boron (B)	2.78
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Calcium (Ca)	195.00
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Chromium (Cr)	0.55
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Cobalt (Co)	0.01
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Copper (Cu)	5.34
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Iron (Fe)	4.90
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Lead (Pb)	0.00
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Magnesium (Mg)	109.00
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Manganese (Mn)	24.00
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Molybdenum (Mo)	0.03
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Nickel (Ni)	0.48
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Phosphorus (P)	151.00
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Potassium (K)	1210.00
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Selenium (Se)	<0.010

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Sodium (Na)	6.10
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Strontium (Sr)	0.34
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Tin (Sn)	0.65
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Titanium (Ti)	<0.050
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	mg/kg ww	Total Zinc (Zn)	1.67
2385_GIANT_010	17/09/16	cranberries	-	Yellowknife River	%	Moisture	83
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Aluminum (Al)	0.71
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Antimony (Sb)	0.00
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Arsenic (As)	0.31
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Barium (Ba)	2.45
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Boron (B)	4.93
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Cadmium (Cd)	0.01
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Calcium (Ca)	1650.00
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Chromium (Cr)	0.49
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Cobalt (Co)	0.03
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Copper (Cu)	3.20
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Iron (Fe)	7.70
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Lead (Pb)	0.00
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Magnesium (Mg)	383.00
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Manganese (Mn)	46.90
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Mercury (Hg)	0.00
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Molybdenum (Mo)	0.14
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Nickel (Ni)	1.86
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Phosphorus (P)	592.00
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Potassium (K)	4060.00
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Selenium (Se)	<0.010
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Silver (Ag)	<0.0040

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Sodium (Na)	4.70
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Strontium (Sr)	2.24
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Tin (Sn)	0.20
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Titanium (Ti)	<0.050
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Zinc (Zn)	7.05
2385_GIANT_011	11/9/16	Juniper berries	-	92 Morrison Dr, Yellowknife	%	Moisture	31
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Aluminum (Al)	3.16
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Antimony (Sb)	0.00
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Arsenic (As)	0.10
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Barium (Ba)	0.73
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Boron (B)	2.47
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Cadmium (Cd)	0.00
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Calcium (Ca)	654.00
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Chromium (Cr)	0.17
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Cobalt (Co)	0.02
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Copper (Cu)	4.33
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Iron (Fe)	10.30
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Lead (Pb)	0.01
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Magnesium (Mg)	281.00
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Manganese (Mn)	8.14
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Molybdenum (Mo)	0.18
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Nickel (Ni)	0.43
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Phosphorus (P)	484.00
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Potassium (K)	2070.00
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Selenium (Se)	<0.010
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Sodium (Na)	6.60

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Strontium (Sr)	1.42
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Tin (Sn)	0.56
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Titanium (Ti)	0.06
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Uranium (U)	0.00
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	mg/kg ww	Total Zinc (Zn)	3.22
2385_GIANT_012	4/8/16	Raspberries	-	92 Morrison Dr, Yellowknife	%	Moisture	83
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Aluminum (Al)	<0.20
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Arsenic (As)	0.02
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Barium (Ba)	0.02
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Cadmium (Cd)	0.00
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Calcium (Ca)	34.00
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Cobalt (Co)	0.01
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Copper (Cu)	2.41
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Iron (Fe)	40.40
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Lead (Pb)	0.03
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Magnesium (Mg)	263.00
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Manganese (Mn)	0.24
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Phosphorus (P)	2230.00
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Potassium (K)	3500.00
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Selenium (Se)	0.13
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Sodium (Na)	422.00
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Strontium (Sr)	0.02

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Titanium (Ti)	0.12
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	mg/kg ww	Total Zinc (Zn)	71.50
2385_GIANT_013	3/9/16	Moose	Flesh	Wool Bay	%	Moisture	73
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Aluminum (Al)	0.21
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Arsenic (As)	0.01
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Barium (Ba)	0.02
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Cadmium (Cd)	0.00
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Calcium (Ca)	32.50
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Cobalt (Co)	0.01
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Copper (Cu)	1.02
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Iron (Fe)	20.10
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Lead (Pb)	<0.0020
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Magnesium (Mg)	257.00
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Manganese (Mn)	0.09
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Mercury (Hg)	0.00
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Phosphorus (P)	2210.00
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Potassium (K)	3800.00
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Selenium (Se)	0.19
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Sodium (Na)	451.00
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Strontium (Sr)	0.04
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Thallium (Tl)	0.00

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Titanium (Ti)	0.13
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	mg/kg ww	Total Zinc (Zn)	43.00
2385_GIANT_014	7/10/16	Moose	Flesh	Johnson Lake	%	Moisture	73
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Aluminum (Al)	<0.20
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Arsenic (As)	<0.0050
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Barium (Ba)	0.04
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Cadmium (Cd)	0.00
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Calcium (Ca)	30.90
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Cobalt (Co)	0.06
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Copper (Cu)	3.58
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Iron (Fe)	58.10
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Lead (Pb)	<0.0020
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Magnesium (Mg)	234.00
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Manganese (Mn)	0.27
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Molybdenum (Mo)	0.01
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Phosphorus (P)	2370.00
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Potassium (K)	2810.00
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Selenium (Se)	0.20
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Sodium (Na)	614.00
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Strontium (Sr)	0.03
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Tin (Sn)	<0.020

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Titanium (Ti)	0.17
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	mg/kg ww	Total Zinc (Zn)	24.40
2385_GIANT_015	23/09/2016	Moose	Heart	Drybones Bay	%	Moisture	75
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Aluminum (Al)	<0.20
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Arsenic (As)	<0.0050
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Barium (Ba)	0.01
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Boron (B)	0.75
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Cadmium (Cd)	0.01
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Calcium (Ca)	42.70
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Cobalt (Co)	<0.0040
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Copper (Cu)	3.45
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Iron (Fe)	49.90
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Lead (Pb)	0.02
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Magnesium (Mg)	350.00
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Manganese (Mn)	0.37
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Molybdenum (Mo)	0.01
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Phosphorus (P)	3310.00
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Potassium (K)	3340.00
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Selenium (Se)	0.85
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Sodium (Na)	797.00
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Strontium (Sr)	0.09
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Titanium (Ti)	0.20

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Zinc (Zn)	6.83
2385_GIANT_016	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	%	Moisture	71
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Aluminum (Al)	<0.20
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Arsenic (As)	<0.0050
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Barium (Ba)	<0.010
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Cadmium (Cd)	0.00
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Calcium (Ca)	43.70
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Cobalt (Co)	<0.0040
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Copper (Cu)	2.91
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Iron (Fe)	41.10
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Lead (Pb)	0.00
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Magnesium (Mg)	322.00
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Manganese (Mn)	0.32
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Molybdenum (Mo)	0.02
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Phosphorus (P)	2830.00
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Potassium (K)	3580.00
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Selenium (Se)	0.71
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Sodium (Na)	571.00
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Strontium (Sr)	0.02
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Titanium (Ti)	0.12
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Uranium (U)	<0.00040

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Zinc (Zn)	6.61
2385_GIANT_017	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	%	Moisture	73
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Aluminum (Al)	<0.20
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Antimony (Sb)	0.00
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Arsenic (As)	0.01
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Barium (Ba)	<0.010
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Cadmium (Cd)	0.00
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Calcium (Ca)	57.80
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Cobalt (Co)	<0.0040
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Copper (Cu)	3.38
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Iron (Fe)	54.10
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Lead (Pb)	0.09
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Magnesium (Mg)	310.00
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Manganese (Mn)	0.45
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Molybdenum (Mo)	0.03
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Phosphorus (P)	2880.00
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Potassium (K)	3180.00
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Selenium (Se)	0.47
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Sodium (Na)	747.00
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Strontium (Sr)	0.03
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Titanium (Ti)	0.08
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Vanadium (V)	<0.020

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	mg/kg ww	Total Zinc (Zn)	6.66
2385_GIANT_018	18/10/16	Spruce Grouse	Breast Tissue	100km W of Ft Providence, Hwy1	%	Moisture	70
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Aluminum (Al)	3.64
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Antimony (Sb)	0.01
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Arsenic (As)	0.12
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Barium (Ba)	0.08
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Calcium (Ca)	157.00
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Chromium (Cr)	0.05
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Cobalt (Co)	0.01
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Copper (Cu)	1.92
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Iron (Fe)	28.80
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Lead (Pb)	0.10
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Magnesium (Mg)	78.20
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Manganese (Mn)	0.22
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Nickel (Ni)	0.06
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Phosphorus (P)	484.00
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Potassium (K)	757.00
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Selenium (Se)	0.04
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Sodium (Na)	1930.00
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Strontium (Sr)	0.33
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Tin (Sn)	0.03
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Titanium (Ti)	<0.050
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	mg/kg ww	Total Zinc (Zn)	12.10

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_019	10/31/16	Beaver	-	Yk River, 1st Island	%	Moisture	58
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Aluminum (Al)	0.36
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Antimony (Sb)	0.00
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Arsenic (As)	0.02
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Barium (Ba)	0.18
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Cadmium (Cd)	0.01
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Calcium (Ca)	109.00
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Cobalt (Co)	0.01
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Copper (Cu)	1.04
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Iron (Fe)	29.80
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Lead (Pb)	0.01
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Magnesium (Mg)	228.00
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Manganese (Mn)	0.34
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Mercury (Hg)	0.00
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Phosphorus (P)	1900.00
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Potassium (K)	3400.00
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Selenium (Se)	0.13
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Sodium (Na)	660.00
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Strontium (Sr)	0.11
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Titanium (Ti)	0.06
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	mg/kg ww	Total Zinc (Zn)	67.70
2385_GIANT_020	10/31/16	Moose	-	Francois Bay	%	Moisture	77

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Aluminum (Al)	2.28
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Arsenic (As)	0.03
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Barium (Ba)	1.68
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Boron (B)	1.29
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Calcium (Ca)	164.00
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Chromium (Cr)	0.06
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Cobalt (Co)	0.01
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Copper (Cu)	0.69
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Iron (Fe)	2.50
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Lead (Pb)	<0.0020
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Magnesium (Mg)	112.00
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Manganese (Mn)	20.20
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Molybdenum (Mo)	0.02
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Nickel (Ni)	0.11
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Phosphorus (P)	209.00
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Potassium (K)	1290.00
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Selenium (Se)	<0.010
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Sodium (Na)	2.70
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Strontium (Sr)	0.20
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Titanium (Ti)	<0.050
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	mg/kg ww	Total Zinc (Zn)	1.93
2385_GIANT_021	10/31/16	Cranberries	-	Island b/w Dettah and Wool Bay	%	Moisture	83
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Aluminum (Al)	4.39

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Arsenic (As)	0.02
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Barium (Ba)	2.23
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Boron (B)	1.39
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Calcium (Ca)	196.00
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Chromium (Cr)	0.02
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Cobalt (Co)	0.01
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Copper (Cu)	0.79
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Iron (Fe)	3.20
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Lead (Pb)	<0.0020
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Magnesium (Mg)	88.20
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Manganese (Mn)	23.40
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Nickel (Ni)	0.15
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Phosphorus (P)	151.00
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Potassium (K)	971.00
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Selenium (Se)	<0.010
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Sodium (Na)	3.80
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Strontium (Sr)	0.51
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Thallium (Tl)	0.00
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Tin (Sn)	0.04
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Titanium (Ti)	<0.050
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	mg/kg ww	Total Zinc (Zn)	1.42
2385_GIANT_022	31/10/2016	Cranberries	-	Prelude?	%	Moisture	84
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Aluminum (Al)	0.55
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Antimony (Sb)	0.01

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Arsenic (As)	<0.0050
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Barium (Ba)	0.02
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Calcium (Ca)	40.30
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Cobalt (Co)	0.00
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Copper (Cu)	1.88
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Iron (Fe)	23.30
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Lead (Pb)	0.53
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Magnesium (Mg)	270.00
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Manganese (Mn)	0.25
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Phosphorus (P)	2540.00
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Potassium (K)	3660.00
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Selenium (Se)	0.13
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Sodium (Na)	450.00
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Strontium (Sr)	0.02
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Titanium (Ti)	0.07
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	mg/kg ww	Total Zinc (Zn)	30.50
2385_GIANT_023	31/10/2016	Moose	-	Powder Point	%	Moisture	72
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Aluminum (Al)	1.28
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Antimony (Sb)	0.0058
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Arsenic (As)	0.0554

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Barium (Ba)	0.064
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Cadmium (Cd)	0.0021
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Calcium (Ca)	74.9
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Chromium (Cr)	0.041
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Cobalt (Co)	0.0234
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Copper (Cu)	1.33
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Iron (Fe)	38.6
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Lead (Pb)	0.0107
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Magnesium (Mg)	252
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Manganese (Mn)	0.207
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Mercury (Hg)	0.003
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Nickel (Ni)	0.016
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Phosphorus (P)	2330
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Potassium (K)	4190
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Selenium (Se)	0.061
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Sodium (Na)	1040
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Strontium (Sr)	0.053
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Titanium (Ti)	0.066
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	mg/kg ww	Total Zinc (Zn)	66.7
2385_GIANT_024	31/10/2016	Muskox	-	Lutsel K'e	%	Moisture	76
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Aluminum (Al)	0.89
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Arsenic (As)	0.0599
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Barium (Ba)	2.17

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Cadmium (Cd)	0.0047
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Calcium (Ca)	16200
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Chromium (Cr)	0.058
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Cobalt (Co)	0.0151
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Copper (Cu)	0.52
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Iron (Fe)	12
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Lead (Pb)	0.0317
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Magnesium (Mg)	443
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Manganese (Mn)	1.44
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Mercury (Hg)	0.0372
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Nickel (Ni)	0.025
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Phosphorus (P)	10300
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Potassium (K)	3220
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Selenium (Se)	0.556
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Sodium (Na)	1170
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Strontium (Sr)	26.6
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Thallium (Tl)	0.00792
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Titanium (Ti)	0.27
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Uranium (U)	0.0242
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Vanadium (V)	0.063
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	mg/kg ww	Total Zinc (Zn)	19.1
2385_GIANT_025	31/10/2016	Whitefish	-	Lutsel K'e	%	Moisture	75
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Aluminum (Al)	0.32
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Arsenic (As)	0.196
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Barium (Ba)	0.268
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Beryllium (Be)	<0.0020

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Calcium (Ca)	3820
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Chromium (Cr)	0.033
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Cobalt (Co)	0.0085
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Copper (Cu)	0.565
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Iron (Fe)	12.3
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Lead (Pb)	0.0033
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Magnesium (Mg)	310
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Manganese (Mn)	0.295
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Mercury (Hg)	0.214
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Nickel (Ni)	0.014
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Phosphorus (P)	4730
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Potassium (K)	4010
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Selenium (Se)	0.393
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Sodium (Na)	772
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Strontium (Sr)	7.36
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Thallium (Tl)	0.0154
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Titanium (Ti)	0.133
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	mg/kg ww	Total Zinc (Zn)	10.7
2385_GIANT_026	31/10/2016	Lake Trout	-	Lutsel K'e	%	Moisture	73
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Aluminum (Al)	0.23
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Arsenic (As)	0.0163
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Barium (Ba)	0.045
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Bismuth (Bi)	<0.020

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Calcium (Ca)	49.2
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Chromium (Cr)	0.012
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Cobalt (Co)	0.0043
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Copper (Cu)	3.27
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Iron (Fe)	54.7
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Lead (Pb)	0.0036
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Magnesium (Mg)	331
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Manganese (Mn)	0.435
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Mercury (Hg)	0.0164
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Phosphorus (P)	2940
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Potassium (K)	4190
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Selenium (Se)	0.233
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Sodium (Na)	479
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Strontium (Sr)	0.03
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Thallium (Tl)	0.00051
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Titanium (Ti)	0.121
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	mg/kg ww	Total Zinc (Zn)	23.3
2385_GIANT_027	31/10/2016	Reindeer Meat	-	Inuvik	%	Moisture	70
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Aluminum (Al)	19.8
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Antimony (Sb)	0.0029
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Arsenic (As)	0.0228
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Barium (Ba)	10.3
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Beryllium (Be)	0.0056
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Boron (B)	9.18

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Cadmium (Cd)	0.251
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Calcium (Ca)	4460
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Chromium (Cr)	0.02
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Cobalt (Co)	0.801
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Copper (Cu)	0.088
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Iron (Fe)	16.6
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Lead (Pb)	0.0633
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Magnesium (Mg)	2430
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Manganese (Mn)	447
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Molybdenum (Mo)	0.026
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Nickel (Ni)	3.05
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Phosphorus (P)	382
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Potassium (K)	6280
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Selenium (Se)	<0.010
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Sodium (Na)	18.1
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Strontium (Sr)	11.2
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Thallium (Tl)	0.00102
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Tin (Sn)	0.023
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Titanium (Ti)	<0.050
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Uranium (U)	0.00042
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	mg/kg ww	Total Zinc (Zn)	107
2385_GIANT_028	31/10/2016	Birch Syrup	-	Dettah junction	%	Moisture	42
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Aluminum (Al)	4.80
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Arsenic (As)	0.07
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Barium (Ba)	1.13
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Beryllium (Be)	<0.0020

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Boron (B)	0.82
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Calcium (Ca)	132.00
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Chromium (Cr)	0.67
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Cobalt (Co)	0.01
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Copper (Cu)	8.88
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Iron (Fe)	7.10
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Lead (Pb)	0.01
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Magnesium (Mg)	68.80
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Manganese (Mn)	22.30
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Molybdenum (Mo)	0.02
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Nickel (Ni)	0.46
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Phosphorus (P)	134.00
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Potassium (K)	852.00
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Selenium (Se)	<0.010
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Sodium (Na)	7.20
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Strontium (Sr)	0.17
2385_GIANT_029	summer	Cranberry	-	"New" cemetery	mg/kg ww	Total Thallium (Tl)	<0.00040

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
	2016						
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Tin (Sn)	1.09
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Titanium (Ti)	<0.050
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	mg/kg ww	Total Zinc (Zn)	1.25
2385_GIANT_029	summer 2016	Cranberry	-	"New" cemetery	%	Moisture	85
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Aluminum (Al)	3.95
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Antimony (Sb)	0.01
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Arsenic (As)	0.18
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Barium (Ba)	3.57
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Boron (B)	3.26
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Calcium (Ca)	735.00
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Chromium (Cr)	0.39
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Cobalt (Co)	0.02
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Copper (Cu)	6.99
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Iron (Fe)	11.90
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Lead (Pb)	0.01
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Magnesium (Mg)	291.00
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Manganese (Mn)	2.31
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Molybdenum (Mo)	0.02
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Nickel (Ni)	0.38
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Phosphorus (P)	340.00
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Potassium (K)	2700.00
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Selenium (Se)	<0.010

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Sodium (Na)	4.20
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Strontium (Sr)	1.60
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Tin (Sn)	0.71
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Titanium (Ti)	0.10
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Uranium (U)	0.00
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	mg/kg ww	Total Zinc (Zn)	3.24
2385_GIANT_030	11/08/2016	Saskatoon Berry	-	Giant boat ramp area	%	Moisture	80
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Aluminum (Al)	4.03
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Arsenic (As)	0.07
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Barium (Ba)	1.90
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Boron (B)	0.89
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Calcium (Ca)	174.00
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Chromium (Cr)	0.46
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Cobalt (Co)	0.01
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Copper (Cu)	3.74
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Iron (Fe)	5.00
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Lead (Pb)	0.00
2385_GIANT_031	September	Cranberry	-	YK Golf club	mg/kg ww	Total Magnesium (Mg)	87.40

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
	2016						
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Manganese (Mn)	13.20
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Molybdenum (Mo)	0.02
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Nickel (Ni)	0.35
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Phosphorus (P)	157.00
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Potassium (K)	846.00
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Selenium (Se)	<0.010
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Sodium (Na)	3.70
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Strontium (Sr)	0.61
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Tin (Sn)	0.39
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Titanium (Ti)	<0.050
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	mg/kg ww	Total Zinc (Zn)	1.08
2385_GIANT_031	September 2016	Cranberry	-	YK Golf club	%	Moisture	84
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Aluminum (Al)	0.91
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Antimony (Sb)	0.00
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Arsenic (As)	0.15
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Barium (Ba)	0.05
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Beryllium (Be)	<0.0020

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Cadmium (Cd)	0.00
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Calcium (Ca)	43.00
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Cobalt (Co)	0.01
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Copper (Cu)	0.98
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Iron (Fe)	27.40
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Lead (Pb)	0.01
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Magnesium (Mg)	237.00
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Manganese (Mn)	0.22
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Mercury (Hg)	0.00
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Phosphorus (P)	1880.00
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Potassium (K)	2970.00
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Selenium (Se)	0.12
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Sodium (Na)	474.00
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Strontium (Sr)	0.07
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Titanium (Ti)	0.12
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	mg/kg ww	Total Zinc (Zn)	53.40
2385_GIANT_032	23/09/2015	Moose	-	YK Bay, Ruth Island N.	%	Moisture	75
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Aluminum (Al)	0.62
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Antimony (Sb)	0.00
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Arsenic (As)	0.18
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Barium (Ba)	0.54

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Boron (B)	1.17
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Calcium (Ca)	156.00
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Cobalt (Co)	0.00
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Copper (Cu)	0.51
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Iron (Fe)	3.70
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Lead (Pb)	0.00
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Magnesium (Mg)	85.50
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Manganese (Mn)	1.26
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Nickel (Ni)	0.14
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Phosphorus (P)	160.00
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Potassium (K)	1250.00
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Selenium (Se)	<0.010
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Sodium (Na)	6.30
2385_GIANT_033	summer	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Strontium (Sr)	0.20

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
	2015						
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Tin (Sn)	0.14
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Titanium (Ti)	<0.050
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	mg/kg ww	Total Zinc (Zn)	2.66
2385_GIANT_033	summer 2015	Red Bear Berry	-	Ranny Hill Trail	%	Moisture	84
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Aluminum (Al)	<0.20
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Arsenic (As)	0.13
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Barium (Ba)	0.02
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Calcium (Ca)	43.30
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Cobalt (Co)	<0.0040
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Copper (Cu)	4.56
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Iron (Fe)	47.10

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Lead (Pb)	0.00
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Magnesium (Mg)	288.00
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Manganese (Mn)	0.35
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Mercury (Hg)	0.04
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Phosphorus (P)	2800.00
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Potassium (K)	3660.00
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Selenium (Se)	0.23
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Sodium (Na)	618.00
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Strontium (Sr)	0.04
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Titanium (Ti)	0.11
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	mg/kg ww	Total Zinc (Zn)	13.00
2385_GIANT_034	September 2016	Lesser Scaup	-	Rater Lake	%	Moisture	72
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	%	Moisture	85
2385_GIANT_035	September	Suilus sp.	-	Vee Lake	mg/kg dw	Total Aluminum (Al)	1920

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
	2016	Mushroom					
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Antimony (Sb)	0.305
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Arsenic (As)	8.2
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Barium (Ba)	27.2
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Beryllium (Be)	<0.10
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Bismuth (Bi)	<0.10
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Boron (B)	9.6
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Cadmium (Cd)	0.475
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Calcium (Ca)	1440
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Chromium (Cr)	4.35
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Cobalt (Co)	1.06
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Copper (Cu)	15.3
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Iron (Fe)	2150
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Lead (Pb)	2.27
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Magnesium (Mg)	1160
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Manganese (Mn)	101
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Mercury (Hg)	0.031
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Molybdenum (Mo)	0.212
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Nickel (Ni)	2.08
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Phosphorus (P)	2680
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Potassium (K)	15900

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Selenium (Se)	0.783
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Silver (Ag)	0.242
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Sodium (Na)	30
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Strontium (Sr)	22.2
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Thallium (Tl)	0.0189
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Tin (Sn)	0.35
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Titanium (Ti)	61.8
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Uranium (U)	0.19
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Vanadium (V)	3.6
2385_GIANT_035	September 2016	Suilus sp. Mushroom	-	Vee Lake	mg/kg dw	Total Zinc (Zn)	52.3
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Aluminum (Al)	0.58
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Arsenic (As)	0.0205
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Barium (Ba)	0.097
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Cadmium (Cd)	0.0126
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Calcium (Ca)	56.7
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Chromium (Cr)	0.085
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Cobalt (Co)	0.0072
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Copper (Cu)	1.32
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Iron (Fe)	36.5
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Lead (Pb)	0.0185
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Magnesium (Mg)	242
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Manganese (Mn)	0.461
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Mercury (Hg)	0.0032

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Nickel (Ni)	0.024
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Phosphorus (P)	2370
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Potassium (K)	4070
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Selenium (Se)	0.24
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Sodium (Na)	555
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Strontium (Sr)	0.065
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Thallium (Tl)	0.00058
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Titanium (Ti)	0.1
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Uranium (U)	0.00109
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	mg/kg ww	Total Zinc (Zn)	69
2385_GIANT_036	7/7/05	Moose	-	Cameron Falls	%	Moisture	76
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Aluminum (Al)	0.93
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Antimony (Sb)	0.002
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Arsenic (As)	0.0435
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Barium (Ba)	0.041
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Calcium (Ca)	56.5
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Chromium (Cr)	0.049
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Cobalt (Co)	<0.0040
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Copper (Cu)	4.98
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Iron (Fe)	34.2
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Lead (Pb)	0.0089
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Magnesium (Mg)	277
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Manganese (Mn)	0.402
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Molybdenum (Mo)	0.023

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Nickel (Ni)	0.011
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Phosphorus (P)	2940
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Potassium (K)	3490
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Selenium (Se)	0.12
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Sodium (Na)	465
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Strontium (Sr)	0.042
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Tin (Sn)	0.029
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Titanium (Ti)	0.088
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Uranium (U)	0.00055
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	mg/kg ww	Total Zinc (Zn)	16.7
2385_GIANT_037	7/8/05	Canada Goose	-	Great Slave Lake, North arm	%	Moisture	70
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Aluminum (Al)	0.31
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Arsenic (As)	0.0195
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Barium (Ba)	0.028
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Calcium (Ca)	65.5
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Chromium (Cr)	0.015
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Cobalt (Co)	<0.0040
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Copper (Cu)	2.58
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Iron (Fe)	20.4
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Lead (Pb)	0.014
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Magnesium (Mg)	339
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Manganese (Mn)	0.212
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Mercury (Hg)	0.0584
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Molybdenum (Mo)	0.011
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Nickel (Ni)	0.011

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Phosphorus (P)	2780
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Potassium (K)	3820
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Selenium (Se)	0.099
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Sodium (Na)	437
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Strontium (Sr)	0.052
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Thallium (Tl)	0.00082
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Titanium (Ti)	0.072
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	mg/kg ww	Total Zinc (Zn)	9.87
2385_GIANT_038	7/8/05	Mallard Duck	-	Yellowknife River	%	Moisture	73
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Aluminum (Al)	4.54
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Antimony (Sb)	0.0011
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Arsenic (As)	0.0165
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Barium (Ba)	0.042
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Calcium (Ca)	44.6
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Chromium (Cr)	0.031
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Cobalt (Co)	0.0148
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Copper (Cu)	6.39
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Iron (Fe)	69
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Lead (Pb)	0.0161
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Magnesium (Mg)	290
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Manganese (Mn)	0.388
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Mercury (Hg)	0.0695
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Molybdenum (Mo)	0.022
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Nickel (Ni)	0.021
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Phosphorus (P)	2930

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Potassium (K)	3220
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Selenium (Se)	0.222
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Sodium (Na)	536
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Strontium (Sr)	0.042
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Thallium (Tl)	0.00078
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Titanium (Ti)	0.295
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Uranium (U)	0.0006
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	mg/kg ww	Total Zinc (Zn)	9.53
2385_GIANT_039	7/8/05	Mallard Duck	-	lower Stagg River	%	Moisture	71
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Aluminum (Al)	0.39
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Arsenic (As)	0.497
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Barium (Ba)	0.015
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Cadmium (Cd)	0.0045
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Calcium (Ca)	43.8
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Chromium (Cr)	0.035
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Cobalt (Co)	<0.0040
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Copper (Cu)	1.52
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Iron (Fe)	25.8
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Lead (Pb)	0.0038
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Magnesium (Mg)	219
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Manganese (Mn)	0.164
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Mercury (Hg)	0.0175
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Nickel (Ni)	0.012
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Phosphorus (P)	2150
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Potassium (K)	3300

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Selenium (Se)	0.227
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Sodium (Na)	644
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Strontium (Sr)	0.024
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Thallium (Tl)	0.00154
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Titanium (Ti)	0.076
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	mg/kg ww	Total Zinc (Zn)	47.3
2385_GIANT_040	7/8/05	Black Bear	-	Boundary Creek	%	Moisture	70
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Aluminum (Al)	<0.20
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Arsenic (As)	0.0986
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Barium (Ba)	0.01
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Cadmium (Cd)	0.0287
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Calcium (Ca)	33.7
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Cobalt (Co)	<0.0040
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Copper (Cu)	4.09
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Iron (Fe)	57.1
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Lead (Pb)	0.0391
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Magnesium (Mg)	335
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Manganese (Mn)	0.412
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Molybdenum (Mo)	0.022
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Phosphorus (P)	3070
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Potassium (K)	3440
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Selenium (Se)	0.107

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Sodium (Na)	429
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Strontium (Sr)	0.06
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Titanium (Ti)	0.149
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Zinc (Zn)	9.1
2385_GIANT_041	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	%	Moisture	72
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Aluminum (Al)	<0.20
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Arsenic (As)	0.184
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Barium (Ba)	<0.010
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Cadmium (Cd)	0.0463
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Calcium (Ca)	31.2
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Cobalt (Co)	<0.0040
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Copper (Cu)	4.2
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Iron (Fe)	57.4
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Lead (Pb)	0.032
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Magnesium (Mg)	350
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Manganese (Mn)	0.449
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Mercury (Hg)	0.0024
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Molybdenum (Mo)	0.013
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Phosphorus (P)	3210
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Potassium (K)	3870
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Selenium (Se)	0.3
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Silver (Ag)	<0.0040

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Sodium (Na)	428
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Strontium (Sr)	0.056
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Titanium (Ti)	0.144
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Zinc (Zn)	7.93
2385_GIANT_042	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	%	Moisture	73
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Aluminum (Al)	<0.20
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Arsenic (As)	0.0974
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Barium (Ba)	<0.010
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Cadmium (Cd)	0.115
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Calcium (Ca)	33.8
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Cobalt (Co)	0.0045
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Copper (Cu)	4.25
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Iron (Fe)	55
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Lead (Pb)	0.0348
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Magnesium (Mg)	362
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Manganese (Mn)	0.47
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Molybdenum (Mo)	0.023
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Phosphorus (P)	3150
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Potassium (K)	3860
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Selenium (Se)	0.1
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Sodium (Na)	353

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Strontium (Sr)	0.054
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Titanium (Ti)	0.166
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Zinc (Zn)	9
2385_GIANT_043	31/12/16	Ptarmigan	breast tissue	Vee Lake Rd, within Giant Lease	%	Moisture	73
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Aluminum (Al)	<0.20
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Antimony (Sb)	0.0029
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Arsenic (As)	0.171
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Barium (Ba)	0.031
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Cadmium (Cd)	0.122
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Calcium (Ca)	65.1
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Cobalt (Co)	0.0113
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Copper (Cu)	6
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Iron (Fe)	83.8
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Lead (Pb)	0.133
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Magnesium (Mg)	256
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Manganese (Mn)	0.676
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Mercury (Hg)	0.0021
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Molybdenum (Mo)	0.046
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Phosphorus (P)	2720
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Potassium (K)	3190
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Selenium (Se)	0.201
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Sodium (Na)	826
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Strontium (Sr)	0.158

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Titanium (Ti)	0.141
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Zinc (Zn)	25.2
2385_GIANT_044	31/12/16	Ptarmigan	6 hearts	Vee Lake Rd, within Giant Lease	%	Moisture	75
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Aluminum (Al)	713
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Antimony (Sb)	0.024
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Arsenic (As)	0.492
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Barium (Ba)	2.4
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Beryllium (Be)	0.0116
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Boron (B)	0.65
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Cadmium (Cd)	0.407
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Calcium (Ca)	1010
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Chromium (Cr)	15.4
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Cobalt (Co)	0.444
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Copper (Cu)	2.45
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Iron (Fe)	1290
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Lead (Pb)	0.292
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Magnesium (Mg)	553
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Manganese (Mn)	25.4
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Mercury (Hg)	0.002
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Molybdenum (Mo)	0.047
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Nickel (Ni)	1.21
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Phosphorus (P)	1050
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Potassium (K)	2370
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Selenium (Se)	0.094
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Sodium (Na)	503
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Strontium (Sr)	1.64
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Thallium (Tl)	0.00616

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Tin (Sn)	0.022
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Titanium (Ti)	21
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Uranium (U)	0.194
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Vanadium (V)	1.67
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	mg/kg ww	Total Zinc (Zn)	25.8
2385_GIANT_045	31/12/16	Ptarmigan	3 gizzards	Vee Lake Rd, within Giant Lease	%	Moisture	74
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Aluminum (Al)	0.37
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Arsenic (As)	0.0055
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Barium (Ba)	0.013
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Cadmium (Cd)	0.0747
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Calcium (Ca)	31
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Cobalt (Co)	0.0042
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Copper (Cu)	3.35
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Iron (Fe)	50.8
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Lead (Pb)	0.0115
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Magnesium (Mg)	367
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Manganese (Mn)	0.294
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Mercury (Hg)	<0.0020

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Molybdenum (Mo)	0.02
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Phosphorus (P)	3450
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Potassium (K)	4700
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Selenium (Se)	0.106
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Sodium (Na)	469
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Strontium (Sr)	0.089
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Titanium (Ti)	0.153
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Zinc (Zn)	7.85
2385_GIANT_046	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	%	Moisture	73
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Aluminum (Al)	0.28
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Arsenic (As)	0.0103
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Barium (Ba)	0.012
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake	mg/kg ww	Total Bismuth (Bi)	<0.020

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
				and Tibbit			
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Cadmium (Cd)	0.0346
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Calcium (Ca)	32.1
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Chromium (Cr)	0.016
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Cobalt (Co)	<0.0040
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Copper (Cu)	3.9
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Iron (Fe)	68.2
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Lead (Pb)	0.0135
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Magnesium (Mg)	370
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Manganese (Mn)	0.417
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Molybdenum (Mo)	0.02
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Phosphorus (P)	3450
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Potassium (K)	4370
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Selenium (Se)	0.139
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Sodium (Na)	544
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Strontium (Sr)	0.124
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Thallium (Tl)	<0.00040

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Titanium (Ti)	0.183
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Zinc (Zn)	8.16
2385_GIANT_047	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	%	Moisture	73
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Aluminum (Al)	0.27
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Antimony (Sb)	0.0161
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Arsenic (As)	<0.0050
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Barium (Ba)	0.024
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Cadmium (Cd)	0.282
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Calcium (Ca)	59
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Chromium (Cr)	0.014
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Cobalt (Co)	0.0156
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Copper (Cu)	3.53
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Iron (Fe)	62.1
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Lead (Pb)	1.04
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake	mg/kg ww	Total Magnesium (Mg)	370

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
				and Tibbit			
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Manganese (Mn)	0.276
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Mercury (Hg)	0.0022
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Molybdenum (Mo)	0.018
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Phosphorus (P)	3490
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Potassium (K)	4520
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Selenium (Se)	0.064
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Sodium (Na)	501
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Strontium (Sr)	0.249
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Titanium (Ti)	0.174
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Zinc (Zn)	8.47
2385_GIANT_048	31/12/16	Ptarmigan	Breast tissue	Ingraham Trail, between Reid Lake and Tibbit	%	Moisture	72
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Aluminum (Al)	<0.20
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Antimony (Sb)	0.0017
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Arsenic (As)	<0.0050

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Barium (Ba)	0.016
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Cadmium (Cd)	0.166
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Calcium (Ca)	61.6
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Chromium (Cr)	0.01
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Cobalt (Co)	0.0256
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Copper (Cu)	4.53
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Iron (Fe)	101
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Lead (Pb)	0.0533
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Magnesium (Mg)	252
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Manganese (Mn)	0.351
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Mercury (Hg)	0.0023
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Molybdenum (Mo)	0.036
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Phosphorus (P)	2500
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Potassium (K)	3180
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Selenium (Se)	0.115
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake	mg/kg ww	Total Sodium (Na)	1050

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
				and Tibbit			
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Strontium (Sr)	0.439
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Titanium (Ti)	0.115
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Zinc (Zn)	22.8
2385_GIANT_049	31/12/16	Ptarmigan	3 hearts	Ingraham Trail, between Reid Lake and Tibbit	%	Moisture	76
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Aluminum (Al)	345
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Antimony (Sb)	0.0011
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Arsenic (As)	0.107
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Barium (Ba)	5
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Beryllium (Be)	0.0143
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Boron (B)	0.7
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Cadmium (Cd)	0.599
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Calcium (Ca)	967
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Chromium (Cr)	22.3
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Cobalt (Co)	0.321
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Copper (Cu)	2.97

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Iron (Fe)	789
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Lead (Pb)	0.152
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Magnesium (Mg)	402
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Manganese (Mn)	10.1
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Molybdenum (Mo)	0.065
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Nickel (Ni)	1.12
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Phosphorus (P)	1070
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Potassium (K)	2630
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Selenium (Se)	0.064
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Sodium (Na)	497
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Strontium (Sr)	3.29
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Thallium (Tl)	0.00629
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Tin (Sn)	0.028
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Titanium (Ti)	11.2
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Uranium (U)	0.191
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Vanadium (V)	1.22
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	mg/kg ww	Total Zinc (Zn)	25.7
2385_GIANT_050	31/12/16	Ptarmigan	3 gizzards	Ingraham Trail, between Reid Lake and Tibbit	%	Moisture	52
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Aluminum (Al)	2.19

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Antimony (Sb)	0.00
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Arsenic (As)	0.05
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Barium (Ba)	0.18
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Boron (B)	2.20
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Cadmium (Cd)	0.00
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Calcium (Ca)	267.00
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Chromium (Cr)	0.10
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Cobalt (Co)	0.01
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Copper (Cu)	0.66
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Iron (Fe)	11.60
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Lead (Pb)	0.00
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Magnesium (Mg)	206.00
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Manganese (Mn)	3.92
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Molybdenum (Mo)	0.04
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Nickel (Ni)	0.18
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Phosphorus (P)	384.00
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Potassium (K)	1420.00
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Selenium (Se)	<0.010
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Sodium (Na)	2.80
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Strontium (Sr)	0.33
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Titanium (Ti)	0.07
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	mg/kg ww	Total Zinc (Zn)	3.89
2385_GIANT_051	13/10/16	Raspberry	Berry	Ndilo	%	Moisture	88
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Aluminum (Al)	0.49
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Antimony (Sb)	<0.0010

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Arsenic (As)	0.24
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Barium (Ba)	0.33
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Cadmium (Cd)	0.00
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Calcium (Ca)	405.00
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Chromium (Cr)	0.01
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Cobalt (Co)	0.03
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Copper (Cu)	0.69
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Iron (Fe)	7.50
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Lead (Pb)	0.00
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Magnesium (Mg)	341.00
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Manganese (Mn)	1.47
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Mercury (Hg)	0.01
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Phosphorus (P)	3710.00
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Potassium (K)	2370.00
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Selenium (Se)	0.93
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Sodium (Na)	1200.00
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Strontium (Sr)	1.41
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Thallium (Tl)	0.00
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Titanium (Ti)	0.23
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Uranium (U)	0.00
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Vanadium (V)	0.04
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	mg/kg ww	Total Zinc (Zn)	30.30
2385_GIANT_054	13/10/16	White Fish	Eggs	West side infront of Dettah	%	Moisture	64
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Aluminum (Al)	0.82
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Antimony (Sb)	0.00

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Arsenic (As)	0.06
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Barium (Ba)	0.12
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Calcium (Ca)	45.60
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Cobalt (Co)	<0.0040
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Copper (Cu)	0.58
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Iron (Fe)	20.00
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Lead (Pb)	0.00
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Magnesium (Mg)	27.00
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Manganese (Mn)	0.18
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Mercury (Hg)	0.03
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Molybdenum (Mo)	0.02
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Phosphorus (P)	311.00
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Potassium (K)	480.00
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Selenium (Se)	0.12
2385_GIANT_055	13/10/16	White Winged	Fat	Akaitcho Bay	mg/kg ww	Total Silver (Ag)	<0.0040

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
		Scoter					
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Sodium (Na)	162.00
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Strontium (Sr)	0.16
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Thallium (Tl)	0.00
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Titanium (Ti)	<0.050
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	mg/kg ww	Total Zinc (Zn)	2.96
2385_GIANT_055	13/10/16	White Winged Scoter	Fat	Akaitcho Bay	%	Moisture	21
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Aluminum (Al)	362.00
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Antimony (Sb)	0.04
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Arsenic (As)	0.46
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Barium (Ba)	10.90
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Beryllium (Be)	0.03
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Cadmium (Cd)	0.06
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Calcium (Ca)	1830.00
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Chromium (Cr)	3.19
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Cobalt (Co)	0.61

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Copper (Cu)	3.53
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Iron (Fe)	2660.00
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Lead (Pb)	0.11
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Magnesium (Mg)	481.00
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Manganese (Mn)	65.40
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Mercury (Hg)	0.06
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Molybdenum (Mo)	0.20
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Nickel (Ni)	1.88
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Phosphorus (P)	1760.00
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Potassium (K)	2980.00
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Selenium (Se)	0.37
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Sodium (Na)	718.00
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Strontium (Sr)	7.25
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Thallium (Tl)	0.05
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Titanium (Ti)	11.90
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Uranium (U)	0.13
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Vanadium (V)	1.78
2385_GIANT_056	13/10/16	White Winged Scoter	Gizzard	Akaitcho Bay	mg/kg ww	Total Zinc (Zn)	33.70
2385_GIANT_056	13/10/16	White Winged	Gizzard	Akaitcho Bay	%	Moisture	63

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
		Scoter					
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Aluminum (Al)	7.95
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Antimony (Sb)	0.00
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Arsenic (As)	0.22
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Barium (Ba)	0.02
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Cadmium (Cd)	0.39
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Calcium (Ca)	64.20
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Chromium (Cr)	0.02
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Cobalt (Co)	0.05
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Copper (Cu)	17.80
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Iron (Fe)	46.20
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Lead (Pb)	0.02
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Magnesium (Mg)	216.00
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Manganese (Mn)	1.40
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Mercury (Hg)	0.24
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Molybdenum (Mo)	0.11
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Nickel (Ni)	0.03
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Phosphorus (P)	4360.00

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Potassium (K)	2970.00
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Selenium (Se)	1.45
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Silver (Ag)	0.20
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Sodium (Na)	1620.00
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Strontium (Sr)	0.19
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Thallium (Tl)	0.04
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Titanium (Ti)	0.28
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Uranium (U)	0.01
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Vanadium (V)	0.52
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	mg/kg ww	Total Zinc (Zn)	33.00
2385_GIANT_057	13/10/16	White Winged Scoter	Liver	Akaitcho Bay	%	Moisture	81
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	%	Moisture	10
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Aluminum (Al)	6.2
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Antimony (Sb)	0.0517
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Arsenic (As)	1.23
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Barium (Ba)	3.08
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Beryllium (Be)	<0.10
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Bismuth (Bi)	<0.10
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Boron (B)	<2.0
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Cadmium (Cd)	<0.010
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Calcium (Ca)	189
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Chromium (Cr)	<0.20
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Cobalt (Co)	<0.020
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Copper (Cu)	0.284
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Iron (Fe)	12

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Lead (Pb)	0.074
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Magnesium (Mg)	16
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Manganese (Mn)	2.04
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Mercury (Hg)	<0.010
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Molybdenum (Mo)	<0.050
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Nickel (Ni)	<0.050
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Phosphorus (P)	19
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Potassium (K)	45
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Selenium (Se)	<0.050
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Silver (Ag)	<0.020
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Sodium (Na)	<10
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Strontium (Sr)	0.41
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Thallium (Tl)	<0.0020
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Tin (Sn)	0.22
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Titanium (Ti)	<1.0
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Uranium (U)	<0.0020
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Vanadium (V)	<0.20
2385_GIANT_060	17/10/16	Spruce Gum	-	1 km east of Dettah	mg/kg dw	Total Zinc (Zn)	2.74
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Aluminum (Al)	0.63
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Arsenic (As)	0.0189
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Barium (Ba)	2.42
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Boron (B)	6.3
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Cadmium (Cd)	0.0022
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Calcium (Ca)	2950
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Chromium (Cr)	1.01
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Cobalt (Co)	0.0259
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Copper (Cu)	4.25
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Iron (Fe)	17.4
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Lead (Pb)	0.0061
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Magnesium (Mg)	1100

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Manganese (Mn)	8.57
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Molybdenum (Mo)	0.143
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Nickel (Ni)	0.828
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Phosphorus (P)	1380
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Potassium (K)	7030
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Selenium (Se)	<0.010
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Sodium (Na)	3.4
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Strontium (Sr)	6.03
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Tin (Sn)	0.197
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Titanium (Ti)	0.074
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Zinc (Zn)	9.26
2385_GIANT_061	10/20/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	%	Moisture	44
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	%	Moisture	44
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Aluminum (Al)	113
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Antimony (Sb)	0.0833
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Arsenic (As)	0.766
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Barium (Ba)	93.6
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Beryllium (Be)	<0.10
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Bismuth (Bi)	<0.10
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Boron (B)	19.7
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Cadmium (Cd)	0.015
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Calcium (Ca)	5720
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Chromium (Cr)	0.68
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Cobalt (Co)	0.171
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Copper (Cu)	4.49
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Iron (Fe)	193
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Lead (Pb)	0.249
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Magnesium (Mg)	1570

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Manganese (Mn)	672
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Mercury (Hg)	0.015
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Molybdenum (Mo)	<0.050
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Nickel (Ni)	0.847
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Phosphorus (P)	1150
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Potassium (K)	3130
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Selenium (Se)	<0.050
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Silver (Ag)	<0.020
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Sodium (Na)	22
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Strontium (Sr)	5.81
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Thallium (Tl)	<0.0020
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Tin (Sn)	1.08
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Titanium (Ti)	5.3
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Uranium (U)	0.0099
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Vanadium (V)	0.23
2385_GIANT_062	10/20/16	Labrador Tea	-	Ndilo Shelah Tili	mg/kg dw	Total Zinc (Zn)	29.4
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	%	Moisture	42
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Aluminum (Al)	47.4
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Antimony (Sb)	0.0286
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Arsenic (As)	0.27
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Barium (Ba)	12.8
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Beryllium (Be)	<0.10
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Bismuth (Bi)	<0.10
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Boron (B)	13.5
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Cadmium (Cd)	<0.010
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Calcium (Ca)	7740
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Chromium (Cr)	0.39
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Cobalt (Co)	0.073
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Copper (Cu)	6.41
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Iron (Fe)	83
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Lead (Pb)	0.09
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Magnesium (Mg)	2840
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Manganese (Mn)	71.4

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Mercury (Hg)	<0.010
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Molybdenum (Mo)	0.299
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Nickel (Ni)	0.521
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Phosphorus (P)	2290
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Potassium (K)	12400
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Selenium (Se)	<0.050
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Silver (Ag)	<0.020
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Sodium (Na)	17
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Strontium (Sr)	15.5
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Thallium (Tl)	<0.0020
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Tin (Sn)	1.09
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Titanium (Ti)	1.5
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Uranium (U)	0.0041
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Vanadium (V)	<0.20
2385_GIANT_063	20/10/16	Rose Hips	-	Ndilo Shelah Tili	mg/kg dw	Total Zinc (Zn)	17.6
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	%	Moisture	44
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Aluminum (Al)	198
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Antimony (Sb)	0.205
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Arsenic (As)	1.47
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Barium (Ba)	19
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Beryllium (Be)	<0.20
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Bismuth (Bi)	<0.20
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Boron (B)	15.8
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Cadmium (Cd)	0.061
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Calcium (Ca)	9280
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Chromium (Cr)	0.96 (1)
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Cobalt (Co)	0.182
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Copper (Cu)	4.27
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Iron (Fe)	368
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Lead (Pb)	0.342
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Magnesium (Mg)	2170
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Manganese (Mn)	107
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Mercury (Hg)	<0.020

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Molybdenum (Mo)	0.17
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Nickel (Ni)	0.69
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Phosphorus (P)	1710
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Potassium (K)	9180
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Selenium (Se)	<0.10
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Silver (Ag)	<0.040
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Sodium (Na)	110
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Strontium (Sr)	23.9
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Thallium (Tl)	<0.0040
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Tin (Sn)	2.3
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Titanium (Ti)	8.2
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Uranium (U)	0.0232
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Vanadium (V)	0.43
2385_GIANT_064	20/10/16	Chives	-	Ndilo Shelah Tili	mg/kg dw	Total Zinc (Zn)	38.5
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	%	Moisture	34
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Aluminum (Al)	37.4
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Antimony (Sb)	0.0312
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Arsenic (As)	0.834
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Barium (Ba)	31.8
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Beryllium (Be)	<0.10
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Bismuth (Bi)	<0.10
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Boron (B)	22.1
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Cadmium (Cd)	0.062
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Calcium (Ca)	6320
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Chromium (Cr)	0.63
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Cobalt (Co)	0.147

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Copper (Cu)	5.39
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Iron (Fe)	79
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Lead (Pb)	0.076
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Magnesium (Mg)	1660
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Manganese (Mn)	101
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Mercury (Hg)	<0.010
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Molybdenum (Mo)	0.147
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Nickel (Ni)	1.01
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Phosphorus (P)	1460
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Potassium (K)	10000
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Selenium (Se)	<0.050
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Silver (Ag)	<0.020
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Sodium (Na)	27
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Strontium (Sr)	14
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Thallium (Tl)	<0.0020
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Tin (Sn)	0.52
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Titanium (Ti)	1.3
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Uranium (U)	0.0036
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Vanadium (V)	<0.20
2385_GIANT_065	10/20/16	Raspberry + Sk Berry	-	Ndilo Shelah Tili	mg/kg dw	Total Zinc (Zn)	41.9
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Aluminum (Al)	0.64

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Antimony (Sb)	0.00
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Arsenic (As)	0.11
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Barium (Ba)	0.19
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Cadmium (Cd)	0.00
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Calcium (Ca)	438.00
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Cobalt (Co)	0.04
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Copper (Cu)	1.01
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Iron (Fe)	38.70
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Lead (Pb)	0.00
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Magnesium (Mg)	342.00
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Manganese (Mn)	6.56
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Mercury (Hg)	0.01
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Molybdenum (Mo)	0.01
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Nickel (Ni)	0.01
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Phosphorus (P)	3560.00
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Potassium (K)	2430.00
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Selenium (Se)	3.03
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Sodium (Na)	887.00
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Strontium (Sr)	1.01
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Thallium (Tl)	0.03
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Titanium (Ti)	0.24
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Uranium (U)	0.00
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Vanadium (V)	0.03
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	mg/kg ww	Total Zinc (Zn)	40.90
2385_GIANT_066	22/10/16	White Fish	Eggs	200m East of Dettah	%	Moisture	65
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Aluminum (Al)	0.29
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Antimony (Sb)	<0.0010

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Arsenic (As)	0.28
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Barium (Ba)	0.13
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Calcium (Ca)	752.00
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Chromium (Cr)	0.14
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Cobalt (Co)	<0.0040
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Copper (Cu)	0.35
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Iron (Fe)	5.90
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Lead (Pb)	0.00
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Magnesium (Mg)	208.00
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Manganese (Mn)	0.12
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Mercury (Hg)	0.23
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Nickel (Ni)	0.02
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Phosphorus (P)	2260.00
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Potassium (K)	3160.00
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Selenium (Se)	0.26
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Sodium (Na)	502.00
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Strontium (Sr)	0.76
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Thallium (Tl)	0.01
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Titanium (Ti)	0.16
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	mg/kg ww	Total Zinc (Zn)	6.34
2385_GIANT_067	10/22/16	Lake Trout	Flesh	South Akaitcho Bay	%	Moisture	69
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	%	Moisture	7
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Aluminum (Al)	33.4
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Antimony (Sb)	0.0767

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Arsenic (As)	1.69
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Barium (Ba)	1.95
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Beryllium (Be)	<0.10
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Bismuth (Bi)	<0.10
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Boron (B)	<2.0
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Cadmium (Cd)	<0.010
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Calcium (Ca)	224
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Chromium (Cr)	<0.20
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Cobalt (Co)	0.035
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Copper (Cu)	0.583
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Iron (Fe)	52
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Lead (Pb)	0.255
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Magnesium (Mg)	28
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Manganese (Mn)	8.3
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Mercury (Hg)	<0.010
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Molybdenum (Mo)	<0.050
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Nickel (Ni)	0.105
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Phosphorus (P)	25
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Potassium (K)	87
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Selenium (Se)	<0.050
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Silver (Ag)	<0.020
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Sodium (Na)	<10
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Strontium (Sr)	0.73
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Thallium (Tl)	<0.0020
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Tin (Sn)	0.6
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Titanium (Ti)	1.1
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Uranium (U)	0.0023
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Vanadium (V)	<0.20
2385_GIANT_068	22/10/16	Spruce Gum	-	Wiiliideh Cultural Site	mg/kg dw	Total Zinc (Zn)	2.04
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Aluminum (Al)	0.26
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Arsenic (As)	0.15
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Barium (Ba)	0.09

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Calcium (Ca)	627.00
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Cobalt (Co)	0.00
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Copper (Cu)	0.73
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Iron (Fe)	8.20
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Lead (Pb)	0.00
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Magnesium (Mg)	245.00
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Manganese (Mn)	0.12
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Mercury (Hg)	0.31
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Nickel (Ni)	0.01
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Phosphorus (P)	2810.00
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Potassium (K)	3780.00
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Selenium (Se)	0.38
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Sodium (Na)	578.00
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Strontium (Sr)	0.77
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Thallium (Tl)	0.01
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Titanium (Ti)	0.19
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Zinc (Zn)	7.40
2385_GIANT_069	10/22/16	Lake Trout	Flesh	South Mackenzie Island	%	Moisture	71
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Aluminum (Al)	0.85
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Arsenic (As)	0.10
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Barium (Ba)	0.11
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Beryllium (Be)	<0.0020

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Calcium (Ca)	1340.00
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Chromium (Cr)	0.02
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Cobalt (Co)	<0.0040
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Copper (Cu)	0.58
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Iron (Fe)	6.30
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Lead (Pb)	0.01
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Magnesium (Mg)	256.00
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Manganese (Mn)	0.09
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Mercury (Hg)	0.24
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Nickel (Ni)	0.01
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Phosphorus (P)	3300.00
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Potassium (K)	3950.00
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Selenium (Se)	0.33
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Sodium (Na)	701.00
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Strontium (Sr)	1.51
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Thallium (Tl)	0.02
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Titanium (Ti)	0.24
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	mg/kg ww	Total Zinc (Zn)	8.57
2385_GIANT_070	22/10/16	Lake Trout	Flesh	South Mackenzie Island	%	Moisture	73
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Aluminum (Al)	0.34
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Arsenic (As)	0.24
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Barium (Ba)	0.15
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Bismuth (Bi)	<0.020

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Cadmium (Cd)	0.00
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Calcium (Ca)	666.00
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Cobalt (Co)	<0.0040
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Copper (Cu)	0.38
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Iron (Fe)	5.20
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Lead (Pb)	0.00
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Magnesium (Mg)	249.00
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Manganese (Mn)	0.20
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Mercury (Hg)	0.05
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Phosphorus (P)	2610.00
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Potassium (K)	3950.00
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Selenium (Se)	0.41
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Sodium (Na)	640.00
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Strontium (Sr)	1.21
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Thallium (Tl)	0.00
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Titanium (Ti)	0.19
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Uranium (U)	0.00
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	mg/kg ww	Total Zinc (Zn)	7.18
2385_GIANT_071	22/10/16	White Fish	Flesh	Yellowknife River	%	Moisture	77
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Aluminum (Al)	0.31
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Antimony (Sb)	0.00
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Arsenic (As)	0.01
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Barium (Ba)	0.42
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Boron (B)	<0.40

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Cadmium (Cd)	5.26
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Calcium (Ca)	57.70
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Cobalt (Co)	0.04
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Copper (Cu)	2.69
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Iron (Fe)	77.30
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Lead (Pb)	0.03
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Magnesium (Mg)	103.00
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Manganese (Mn)	1.06
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Mercury (Hg)	0.67
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Molybdenum (Mo)	0.12
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Phosphorus (P)	1680.00
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Potassium (K)	1540.00
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Selenium (Se)	0.50
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Silver (Ag)	0.02
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Sodium (Na)	835.00
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Strontium (Sr)	0.09
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Thallium (Tl)	0.00
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Titanium (Ti)	0.12
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	mg/kg ww	Total Zinc (Zn)	17.40
2385_GIANT_072	10/22/16	Caribou	Kidney	Gordon Lake	%	Moisture	62
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Aluminum (Al)	2.55
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Antimony (Sb)	0.00
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Arsenic (As)	0.05
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Barium (Ba)	0.08
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Cadmium (Cd)	0.00

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Calcium (Ca)	52.20
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Chromium (Cr)	0.12
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Cobalt (Co)	0.01
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Copper (Cu)	0.39
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Iron (Fe)	16.20
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Lead (Pb)	0.01
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Magnesium (Mg)	73.90
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Manganese (Mn)	0.31
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Nickel (Ni)	0.06
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Phosphorus (P)	648.00
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Potassium (K)	1080.00
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Selenium (Se)	0.05
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Sodium (Na)	716.00
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Strontium (Sr)	0.12
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Tin (Sn)	0.03
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Titanium (Ti)	0.07
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	mg/kg ww	Total Zinc (Zn)	8.78
2385_GIANT_073	22/10/16	Beaver	Flesh + Fat	Dettah Area	%	Moisture	34
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Aluminum (Al)	2.74
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Antimony (Sb)	0.53
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Arsenic (As)	1.09
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Barium (Ba)	1.11
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Beryllium (Be)	1.11
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Cadmium (Cd)	1.04
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Calcium (Ca)	41.00

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Chromium (Cr)	1.10
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Cobalt (Co)	0.94
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Copper (Cu)	1.31
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Iron (Fe)	12.00
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Lead (Pb)	0.96
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Magnesium (Mg)	55.40
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Manganese (Mn)	1.21
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Mercury (Hg)	0.05
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Molybdenum (Mo)	0.51
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Nickel (Ni)	0.99
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Phosphorus (P)	517.00
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Potassium (K)	834.00
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Selenium (Se)	1.10
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Silver (Ag)	0.09
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Sodium (Na)	546.00
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Strontium (Sr)	1.06
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Thallium (Tl)	0.02
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Tin (Sn)	0.46
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Titanium (Ti)	2.69
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Uranium (U)	0.96
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Vanadium (V)	0.97
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	mg/kg ww	Total Zinc (Zn)	8.64
2385_GIANT_074	22/10/16	Beaver	Flesh	Drybones Bay	%	Moisture	26
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	%	Moisture	46
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Aluminum (Al)	37.9
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Antimony (Sb)	0.0453
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Arsenic (As)	0.303
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Barium (Ba)	43.9
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Beryllium (Be)	<0.10
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Bismuth (Bi)	<0.10
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Boron (B)	18.1
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Cadmium (Cd)	<0.010
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Calcium (Ca)	5610

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Chromium (Cr)	0.41
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Cobalt (Co)	0.204
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Copper (Cu)	4.8
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Iron (Fe)	56
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Lead (Pb)	0.056
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Magnesium (Mg)	1520
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Manganese (Mn)	329
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Mercury (Hg)	0.011
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Molybdenum (Mo)	<0.050
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Nickel (Ni)	1.51
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Phosphorus (P)	1320
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Potassium (K)	4180
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Selenium (Se)	<0.050
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Silver (Ag)	<0.020
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Sodium (Na)	<10
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Strontium (Sr)	6.86
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Thallium (Tl)	0.017
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Tin (Sn)	1.22
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Titanium (Ti)	<1.0
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Uranium (U)	0.0038
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Vanadium (V)	<0.20
2385_GIANT_075	22/10/16	Labrador Tea	-	Wiiliideh Cultural Site	mg/kg dw	Total Zinc (Zn)	15
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Aluminum (Al)	0.36
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Arsenic (As)	0.13
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Barium (Ba)	<0.010
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Calcium (Ca)	90.40
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Cobalt (Co)	<0.0040

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Copper (Cu)	0.24
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Iron (Fe)	3.20
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Lead (Pb)	0.01
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Magnesium (Mg)	240.00
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Manganese (Mn)	0.05
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Mercury (Hg)	0.20
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Nickel (Ni)	0.02
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Phosphorus (P)	2310.00
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Potassium (K)	3700.00
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Selenium (Se)	0.30
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Sodium (Na)	350.00
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Strontium (Sr)	0.06
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Thallium (Tl)	0.01
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Titanium (Ti)	0.13
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	mg/kg ww	Total Zinc (Zn)	4.03
2385_GIANT_076	10/21/16	Lake Trout	Flesh	Goulet Bay	%	Moisture	74
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Aluminum (Al)	4.90
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Arsenic (As)	0.03
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Barium (Ba)	1.76
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Boron (B)	1.42
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Calcium (Ca)	172.00
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Chromium (Cr)	0.02
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Cobalt (Co)	0.01
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Copper (Cu)	0.62

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Iron (Fe)	4.50
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Lead (Pb)	0.00
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Magnesium (Mg)	102.00
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Manganese (Mn)	24.40
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Nickel (Ni)	0.21
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Phosphorus (P)	147.00
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Potassium (K)	1250.00
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Selenium (Se)	<0.010
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Sodium (Na)	6.80
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Strontium (Sr)	0.31
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Titanium (Ti)	<0.050
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	mg/kg ww	Total Zinc (Zn)	1.62
2385_GIANT_077	23/10/16	Cranberry	-	Tibbit Lake, Ingrahm Trail	%	Moisture	84
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Aluminum (Al)	1.05
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Antimony (Sb)	0.00
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Arsenic (As)	0.59
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Barium (Ba)	0.04
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Cadmium (Cd)	0.00
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Calcium (Ca)	32.80
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Cobalt (Co)	<0.0040
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Copper (Cu)	2.54
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Iron (Fe)	29.20

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Lead (Pb)	0.05
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Magnesium (Mg)	347.00
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Manganese (Mn)	0.36
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Mercury (Hg)	0.00
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Molybdenum (Mo)	0.01
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Nickel (Ni)	0.02
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Phosphorus (P)	3180.00
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Potassium (K)	4210.00
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Selenium (Se)	0.17
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Sodium (Na)	351.00
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Strontium (Sr)	0.03
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Titanium (Ti)	0.26
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Uranium (U)	0.00
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	mg/kg ww	Total Zinc (Zn)	7.05
2385_GIANT_078	23/10/16	Spruce Grouse	Breast Flesh	Zone 11 E638771 N692711	%	Moisture	71
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Aluminum (Al)	16.30
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Antimony (Sb)	0.00
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Arsenic (As)	2.22
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Barium (Ba)	0.16
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Cadmium (Cd)	0.18
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Calcium (Ca)	93.70
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Chromium (Cr)	0.16
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Cobalt (Co)	0.03
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Copper (Cu)	1.95
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Iron (Fe)	72.50
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Lead (Pb)	0.08

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Magnesium (Mg)	220.00
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Manganese (Mn)	1.54
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Mercury (Hg)	0.00
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Molybdenum (Mo)	0.02
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Nickel (Ni)	0.05
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Phosphorus (P)	1690.00
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Potassium (K)	4170.00
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Selenium (Se)	0.13
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Sodium (Na)	623.00
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Strontium (Sr)	0.12
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Thallium (Tl)	0.00
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Titanium (Ti)	0.99
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Uranium (U)	0.00
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Vanadium (V)	0.03
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	mg/kg ww	Total Zinc (Zn)	39.30
2385_GIANT_079	23/10/16	Spruce Grouse	Gizzard	Zone 11 E638771 N692711	%	Moisture	75
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Aluminum (Al)	116.00
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Antimony (Sb)	0.00
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Arsenic (As)	1.48
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Barium (Ba)	7.02
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Beryllium (Be)	0.01
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Cadmium (Cd)	0.46
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Calcium (Ca)	161.00
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Chromium (Cr)	5.37
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Cobalt (Co)	0.06
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Copper (Cu)	2.05
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Iron (Fe)	349.00
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Lead (Pb)	0.10
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Magnesium (Mg)	211.00

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Manganese (Mn)	5.68
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Mercury (Hg)	0.00
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Molybdenum (Mo)	0.80
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Nickel (Ni)	0.23
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Phosphorus (P)	1550.00
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Potassium (K)	2630.00
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Selenium (Se)	0.14
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Sodium (Na)	558.00
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Strontium (Sr)	0.41
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Thallium (Tl)	0.00
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Tin (Sn)	0.02
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Titanium (Ti)	3.01
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Uranium (U)	0.06
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Vanadium (V)	0.16
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	mg/kg ww	Total Zinc (Zn)	23.50
2385_GIANT_081	23/10/16	Spruce Grouse	Gizzard + Liver	Dettah Road East of Ndilo	%	Moisture	59
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	%	Moisture	69
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Aluminum (Al)	525
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Antimony (Sb)	0.0087
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Arsenic (As)	1.35
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Barium (Ba)	3.27
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Beryllium (Be)	<0.10
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Bismuth (Bi)	<0.10
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Boron (B)	4.4
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Cadmium (Cd)	0.031
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Calcium (Ca)	2080

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Chromium (Cr)	2.31
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Cobalt (Co)	0.287
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Copper (Cu)	1.82
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Iron (Fe)	155
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Lead (Pb)	0.098
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Magnesium (Mg)	1700
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Manganese (Mn)	283
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Mercury (Hg)	<0.010
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Molybdenum (Mo)	<0.050
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Nickel (Ni)	1.87
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Phosphorus (P)	1350
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Potassium (K)	4410
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Selenium (Se)	<0.050
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Silver (Ag)	<0.020
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Sodium (Na)	660
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Strontium (Sr)	2.56
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Thallium (Tl)	0.0048
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Tin (Sn)	1.21
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Titanium (Ti)	2.9
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Uranium (U)	0.0127
2385_GIANT_082	10/23/16	Pine Needles +	-	Dettah Road East of Ndilo	mg/kg dw	Total Vanadium (V)	<0.20

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
		Cranberry					
2385_GIANT_082	10/23/16	Pine Needles + Cranberry	-	Dettah Road East of Ndilo	mg/kg dw	Total Zinc (Zn)	41.5
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	%	Moisture	51
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Aluminum (Al)	70.7
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Antimony (Sb)	0.138
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Arsenic (As)	1.62
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Barium (Ba)	52.9
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Beryllium (Be)	<0.10
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Bismuth (Bi)	<0.10
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Boron (B)	17.8
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Cadmium (Cd)	0.02
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Calcium (Ca)	6470
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Chromium (Cr)	0.48
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Cobalt (Co)	0.159
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Copper (Cu)	4.83
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Iron (Fe)	146
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Lead (Pb)	0.312
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Magnesium (Mg)	1740
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Manganese (Mn)	260
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Mercury (Hg)	0.022
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Molybdenum (Mo)	<0.050
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Nickel (Ni)	0.916
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Phosphorus (P)	1240
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Potassium (K)	3330
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Selenium (Se)	<0.050
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Silver (Ag)	<0.020
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Sodium (Na)	16
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Strontium (Sr)	9.78
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Thallium (Tl)	0.0144
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Tin (Sn)	1.3
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Titanium (Ti)	2.9
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Uranium (U)	0.0074

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Vanadium (V)	<0.20
2385_GIANT_083	26/10/16	Labrador Tea	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Zinc (Zn)	22.4
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Aluminum (Al)	10.8
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Antimony (Sb)	0.0158
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Arsenic (As)	0.225
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Barium (Ba)	1.17
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Boron (B)	11.3
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Cadmium (Cd)	0.0026
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Calcium (Ca)	5020
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Chromium (Cr)	0.484
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Cobalt (Co)	0.0458
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Copper (Cu)	4.28
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Iron (Fe)	28.3
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Lead (Pb)	0.0165
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Magnesium (Mg)	1240
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Manganese (Mn)	18.2
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Mercury (Hg)	0.0031
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Molybdenum (Mo)	0.05
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Nickel (Ni)	0.397
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Phosphorus (P)	1450
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Potassium (K)	9780
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Selenium (Se)	<0.010
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Sodium (Na)	8
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Strontium (Sr)	9.72
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Tin (Sn)	0.221
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Titanium (Ti)	0.676
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Uranium (U)	0.00145
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Vanadium (V)	0.028
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	mg/kg ww	Total Zinc (Zn)	6.18

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_084	26/10/16	Rose Hips	-	North end of Ndilo (Tililo Tili)	%	Moisture	47
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	%	Moisture	8.3
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Aluminum (Al)	10.6
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Antimony (Sb)	0.0935
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Arsenic (As)	1.56
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Barium (Ba)	1.47
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Beryllium (Be)	<0.10
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Bismuth (Bi)	<0.10
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Boron (B)	<2.0
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Cadmium (Cd)	<0.010
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Calcium (Ca)	227
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Chromium (Cr)	<0.20
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Cobalt (Co)	<0.020
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Copper (Cu)	0.744
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Iron (Fe)	22
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Lead (Pb)	0.112
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Magnesium (Mg)	23
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Manganese (Mn)	1.49
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Mercury (Hg)	<0.010
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Molybdenum (Mo)	<0.050
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Nickel (Ni)	0.065
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Phosphorus (P)	34
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Potassium (K)	105
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Selenium (Se)	<0.050
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Silver (Ag)	<0.020
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Sodium (Na)	<10
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Strontium (Sr)	0.69
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Thallium (Tl)	<0.0020
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Tin (Sn)	0.63
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Titanium (Ti)	<1.0
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Uranium (U)	<0.0020
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Vanadium (V)	<0.20
2385_GIANT_085	26/10/16	Spruce Gum	-	North end of Ndilo (Tililo Tili)	mg/kg dw	Total Zinc (Zn)	2.19

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Aluminum (Al)	0.67
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Antimony (Sb)	0.00
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Arsenic (As)	0.02
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Barium (Ba)	0.14
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Cadmium (Cd)	0.02
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Calcium (Ca)	133.00
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Chromium (Cr)	0.02
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Cobalt (Co)	0.04
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Copper (Cu)	2.41
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Iron (Fe)	254.00
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Lead (Pb)	0.03
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Magnesium (Mg)	188.00
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Manganese (Mn)	1.17
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Mercury (Hg)	0.00
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Molybdenum (Mo)	0.22
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Nickel (Ni)	0.02
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Phosphorus (P)	2470.00
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Potassium (K)	2950.00
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Selenium (Se)	0.39
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Sodium (Na)	1040.00
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Strontium (Sr)	0.29
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Thallium (Tl)	0.00
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Titanium (Ti)	0.23
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	mg/kg ww	Total Zinc (Zn)	20.80
2385_GIANT_086	26/10/16	Muskrat	Organs	Hay Lake	%	Moisture	70
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Aluminum (Al)	0.71

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Antimony (Sb)	0.01
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Arsenic (As)	0.04
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Barium (Ba)	0.07
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Cadmium (Cd)	<0.0020
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Calcium (Ca)	75.70
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Chromium (Cr)	0.14
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Cobalt (Co)	0.01
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Copper (Cu)	1.93
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Iron (Fe)	72.70
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Lead (Pb)	0.05
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Magnesium (Mg)	260.00
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Manganese (Mn)	0.21
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Mercury (Hg)	0.00
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Nickel (Ni)	0.02
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Phosphorus (P)	2270.00
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Potassium (K)	3600.00
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Selenium (Se)	0.13
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Sodium (Na)	867.00
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Strontium (Sr)	0.12
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Titanium (Ti)	0.22
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	mg/kg ww	Total Zinc (Zn)	21.60
2385_GIANT_087	26/10/16	Muskrat	Flesh	Hay Lake	%	Moisture	75
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Aluminum (Al)	0.64
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Antimony (Sb)	0.00

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Arsenic (As)	<0.0050
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Barium (Ba)	0.03
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Cadmium (Cd)	0.00
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Calcium (Ca)	70.00
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Chromium (Cr)	0.05
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Cobalt (Co)	<0.0040
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Copper (Cu)	1.03
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Iron (Fe)	29.30
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Lead (Pb)	0.03
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Magnesium (Mg)	193.00
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Manganese (Mn)	0.12
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Nickel (Ni)	0.03
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Phosphorus (P)	1530.00
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Potassium (K)	2320.00
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Selenium (Se)	0.07
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Sodium (Na)	1310.00
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Strontium (Sr)	0.24
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Titanium (Ti)	0.14
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	mg/kg ww	Total Zinc (Zn)	25.60
2385_GIANT_088	26/10/16	Beaver	Flesh	Yellowknife River First Island	%	Moisture	70
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Aluminum (Al)	1.10
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Antimony (Sb)	0.00
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Arsenic (As)	0.03

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Barium (Ba)	0.08
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Cadmium (Cd)	0.08
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Calcium (Ca)	50.00
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Chromium (Cr)	0.02
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Cobalt (Co)	0.02
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Copper (Cu)	8.32
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Iron (Fe)	94.00
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Lead (Pb)	0.03
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Magnesium (Mg)	291.00
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Manganese (Mn)	0.77
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Mercury (Hg)	0.19
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Molybdenum (Mo)	0.02
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Nickel (Ni)	0.04
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Phosphorus (P)	3100.00
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Potassium (K)	3450.00
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Selenium (Se)	1.09
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Sodium (Na)	633.00
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Strontium (Sr)	0.06
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Thallium (Tl)	0.00
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Titanium (Ti)	0.20
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	mg/kg ww	Total Zinc (Zn)	13.50
2385_GIANT_090	26/10/16	Black Duck 1	Breast Flesh	Dettah Bay	%	Moisture	68
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Aluminum (Al)	767.00
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Antimony (Sb)	0.01
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Arsenic (As)	0.74
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Barium (Ba)	6.21

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Beryllium (Be)	0.03
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Boron (B)	0.76
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Cadmium (Cd)	0.12
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Calcium (Ca)	461.00
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Chromium (Cr)	5.79
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Cobalt (Co)	0.56
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Copper (Cu)	3.47
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Iron (Fe)	1400.00
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Lead (Pb)	0.36
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Magnesium (Mg)	621.00
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Manganese (Mn)	25.50
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Mercury (Hg)	0.12
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Molybdenum (Mo)	0.12
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Nickel (Ni)	1.69
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Phosphorus (P)	1510.00
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Potassium (K)	2660.00
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Selenium (Se)	1.58
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Silver (Ag)	0.00
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Sodium (Na)	826.00
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Strontium (Sr)	1.13
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Thallium (Tl)	0.01
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Titanium (Ti)	14.60
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Uranium (U)	0.29
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Vanadium (V)	1.80
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	mg/kg ww	Total Zinc (Zn)	31.50
2385_GIANT_091	26/10/16	Black Duck 1	Gizzard	Dettah Bay	%	Moisture	66
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Aluminum (Al)	2.22
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Antimony (Sb)	0.00
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Arsenic (As)	0.07
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Barium (Ba)	0.25
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Beryllium (Be)	<0.0020

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Cadmium (Cd)	1.40
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Calcium (Ca)	79.30
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Cobalt (Co)	0.07
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Copper (Cu)	36.40
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Iron (Fe)	1190.00
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Lead (Pb)	0.04
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Magnesium (Mg)	235.00
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Manganese (Mn)	7.58
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Mercury (Hg)	0.47
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Molybdenum (Mo)	0.75
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Nickel (Ni)	0.07
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Phosphorus (P)	3780.00
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Potassium (K)	3300.00
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Selenium (Se)	7.85
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Silver (Ag)	0.04
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Sodium (Na)	1080.00
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Strontium (Sr)	0.08
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Thallium (Tl)	0.00
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Titanium (Ti)	0.35
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Uranium (U)	0.00
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Vanadium (V)	0.02
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	mg/kg ww	Total Zinc (Zn)	39.20
2385_GIANT_092	26/10/16	Black Duck 1	Liver	Dettah Bay	%	Moisture	73
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Aluminum (Al)	0.44
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Antimony (Sb)	0.00
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Arsenic (As)	0.03
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Barium (Ba)	0.05
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Bismuth (Bi)	<0.020

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Cadmium (Cd)	0.03
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Calcium (Ca)	54.10
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Cobalt (Co)	0.04
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Copper (Cu)	4.23
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Iron (Fe)	172.00
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Lead (Pb)	0.02
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Magnesium (Mg)	198.00
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Manganese (Mn)	0.73
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Mercury (Hg)	0.20
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Molybdenum (Mo)	0.03
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Nickel (Ni)	0.04
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Phosphorus (P)	2250.00
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Potassium (K)	2630.00
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Selenium (Se)	3.88
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Sodium (Na)	1160.00
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Strontium (Sr)	0.03
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Thallium (Tl)	0.00
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Titanium (Ti)	0.15
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	mg/kg ww	Total Zinc (Zn)	20.80
2385_GIANT_093	26/10/16	Black Duck 1	Heart	Dettah Bay	%	Moisture	74
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Aluminum (Al)	1.77
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Antimony (Sb)	0.00
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Arsenic (As)	0.04
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Barium (Ba)	0.09
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Boron (B)	<0.40

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Cadmium (Cd)	0.02
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Calcium (Ca)	52.10
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Chromium (Cr)	0.04
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Cobalt (Co)	0.02
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Copper (Cu)	5.10
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Iron (Fe)	116.00
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Lead (Pb)	0.02
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Magnesium (Mg)	249.00
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Manganese (Mn)	0.77
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Mercury (Hg)	0.21
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Molybdenum (Mo)	0.03
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Nickel (Ni)	0.03
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Phosphorus (P)	2630.00
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Potassium (K)	2980.00
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Selenium (Se)	1.82
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Sodium (Na)	741.00
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Strontium (Sr)	0.05
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Thallium (Tl)	0.00
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Titanium (Ti)	0.24
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	mg/kg ww	Total Zinc (Zn)	12.90
2385_GIANT_094	26/10/16	Black Duck 2	Breast Flesh	Dettah Bay	%	Moisture	64
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Aluminum (Al)	0.36
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Antimony (Sb)	0.00
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Arsenic (As)	0.65
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Barium (Ba)	0.05
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Cadmium (Cd)	0.01

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Calcium (Ca)	77.80
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Chromium (Cr)	0.01
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Cobalt (Co)	0.02
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Copper (Cu)	1.49
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Iron (Fe)	34.70
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Lead (Pb)	0.03
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Magnesium (Mg)	226.00
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Manganese (Mn)	0.23
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Mercury (Hg)	0.00
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Nickel (Ni)	0.03
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Phosphorus (P)	1890.00
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Potassium (K)	2950.00
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Selenium (Se)	0.13
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Sodium (Na)	899.00
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Strontium (Sr)	0.07
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Titanium (Ti)	0.08
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	mg/kg ww	Total Zinc (Zn)	80.60
2385_GIANT_098	26/10/16	Moose	Flesh	Dettah	%	Moisture	74
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Aluminum (Al)	0.87
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Antimony (Sb)	0.0053
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Arsenic (As)	0.0077
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Barium (Ba)	0.161
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail,	mg/kg ww	Total Bismuth (Bi)	<0.020

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
				middle/south of Prelude Lake			
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Cadmium (Cd)	0.0315
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Calcium (Ca)	396
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Chromium (Cr)	0.013
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Cobalt (Co)	0.0091
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Copper (Cu)	5.42
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Iron (Fe)	106
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Lead (Pb)	0.0647
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Magnesium (Mg)	437
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Manganese (Mn)	0.494
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Mercury (Hg)	0.0036
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Molybdenum (Mo)	0.029
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Nickel (Ni)	0.011
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Phosphorus (P)	4230
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Potassium (K)	4800
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Selenium (Se)	0.13
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Sodium (Na)	629
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Strontium (Sr)	1.15
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Thallium (Tl)	<0.00040

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Titanium (Ti)	0.276
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	mg/kg ww	Total Zinc (Zn)	12.2
2385_GIANT_099	16/12/16	Ptarmigan	Breast flesh	Just N of Ingraham Trail, middle/south of Prelude Lake	%	Moisture	73
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Aluminum (Al)	0.35
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Antimony (Sb)	0.107
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Arsenic (As)	0.109
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Barium (Ba)	0.022
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Cadmium (Cd)	0.0093
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Calcium (Ca)	38.9
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Chromium (Cr)	<0.010
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Cobalt (Co)	<0.0040
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Copper (Cu)	4.04
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Iron (Fe)	44
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Lead (Pb)	10.8
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km	mg/kg ww	Total Magnesium (Mg)	315

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
				outside of town, towards Rae			
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Manganese (Mn)	0.288
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Molybdenum (Mo)	0.022
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Phosphorus (P)	2810
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Potassium (K)	2940
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Selenium (Se)	0.405
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Sodium (Na)	640
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Strontium (Sr)	0.05
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Thallium (Tl)	0.00062
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Titanium (Ti)	0.136
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	mg/kg ww	Total Zinc (Zn)	5.97
2385_GIANT_100	16/12/16	Ptarmigan	Breast Flesh	Yk #3 highway, about 20km outside of town, towards Rae	%	Moisture	72
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Aluminum (Al)	0.93
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Antimony (Sb)	0.0252
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Arsenic (As)	0.166

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Barium (Ba)	0.053
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Cadmium (Cd)	0.0071
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Calcium (Ca)	52.2
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Chromium (Cr)	0.026
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Cobalt (Co)	0.0108
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Copper (Cu)	2.12
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Iron (Fe)	26.8
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Lead (Pb)	0.0547
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Magnesium (Mg)	328
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Manganese (Mn)	0.206
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Mercury (Hg)	0.0023
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Nickel (Ni)	0.02
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Phosphorus (P)	2770
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Potassium (K)	3920
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Selenium (Se)	0.094
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah	mg/kg ww	Total Sodium (Na)	555

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
				junction, on Dettah rd.			
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Strontium (Sr)	0.07
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Titanium (Ti)	0.138
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	mg/kg ww	Total Zinc (Zn)	13.8
2385_GIANT_101	16/12/16	Rabbit	Leg Meat	Approx. 2km south of Dettah junction, on Dettah rd.	%	Moisture	73
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Aluminum (Al)	2.67
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Antimony (Sb)	<0.0010
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Arsenic (As)	0.0843
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Barium (Ba)	0.409
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Boron (B)	4.32
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Cadmium (Cd)	0.0056
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Calcium (Ca)	576
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Chromium (Cr)	0.029
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Cobalt (Co)	0.102
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Copper (Cu)	1.56
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Iron (Fe)	13.3
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Lead (Pb)	0.012
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Magnesium (Mg)	364
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Manganese (Mn)	9.81
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Molybdenum (Mo)	0.049
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Nickel (Ni)	0.751

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Phosphorus (P)	704
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Potassium (K)	1910
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Selenium (Se)	<0.010
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Sodium (Na)	3.9
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Strontium (Sr)	0.848
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Tin (Sn)	0.046
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Titanium (Ti)	0.099
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	mg/kg ww	Total Zinc (Zn)	6.56
2385_GIANT_102	15/08/16	Raspberries	-	Dettah	%	Moisture	79
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Aluminum (Al)	0.3
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Antimony (Sb)	0.0023
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Arsenic (As)	0.0122
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Barium (Ba)	0.019
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Beryllium (Be)	<0.0020
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Bismuth (Bi)	<0.020
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Boron (B)	<0.40
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Cadmium (Cd)	0.007
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Calcium (Ca)	43.2
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Chromium (Cr)	0.011
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Cobalt (Co)	0.0098
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Copper (Cu)	1.95
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Iron (Fe)	19.8
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Lead (Pb)	0.0238
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Magnesium (Mg)	308
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Manganese (Mn)	0.178
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Mercury (Hg)	<0.0020
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Molybdenum (Mo)	<0.010
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Nickel (Ni)	<0.010
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Phosphorus (P)	2710

Lab Sample ID	Date (dd/mm/yr)	Species	Species detail	Location	Units	Constituent	Result
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Potassium (K)	3940
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Selenium (Se)	0.116
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Silver (Ag)	<0.0040
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Sodium (Na)	463
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Strontium (Sr)	0.039
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Thallium (Tl)	<0.00040
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Tin (Sn)	<0.020
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Titanium (Ti)	0.145
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Uranium (U)	<0.00040
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Vanadium (V)	<0.020
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	mg/kg ww	Total Zinc (Zn)	12.7
2385_GIANT_103	25/01/17	Rabbit	Leg Meat	Dettah road	%	Moisture	57

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LIST OF ATTACHMENTS

ATTACHMENT B.1

GOLDER (2016) HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT DATA GAPS

TECHNICAL MEMORANDUM

DATE	December 21, 2016	**REFERENCE No.**	414-HHRA-25-TECH MEMO-0001-Rev0_20161221 (HHERA data gaps)
TO	Mr. Greg Wright AECOM Canada Ltd		
CC	David Hango, Public Works and Government Services Canada; Steven Fiddler, Golder Associates Ltd.		
FROM	Tamika Mulders, Lilly Cesh, Audrey Wagenaar, and Damian Panayi	**EMAIL**	Tamika_Mulders@golder.com, Lilly_Cesh@golder.com, Audrey_Wagenaar@golder.com, Damian_Panayi@golder.com

GIANT MINE DATA REPORT - HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT DATA GAPS

1.0 INTRODUCTION

Golder Associates Ltd. (Golder) was retained by AECOM Canada Ltd. (AECOM) and Public Works and Government Services Canada (PWGSC) to collect samples (e.g., soil, sediment, water, vegetation, and small mammals) to fill data gaps for the Human Health and Ecological Risk Assessment (HHERA) currently being completed at Giant Mine (hereafter referred to as the Site). The samples collected were based on the data gaps identified by Canada North Environmental Services (CanNorth). The samples collected focused on the Giant Mine Townsite and Shoreline Lands, the Baker Creek watershed, the undisturbed areas of the Giant Mine lease, Long Lake, and the Yellowknife River watershed. This memorandum presents the field methods for the sample collection, the locations of the samples, and the results of the chemical analysis.

2.0 SAMPLE COLLECTION METHODS AND CHEMISTRY RESULTS

2.1 Giant Mine Townsite and Shoreline Lands

Sediment Samples

Samples were collected from ten (10) stations between August 23 and August 25, 2016. Sample stations were located between the Foreshore Tailings and the mouth of Baker Creek (Figure 1). Analysis of the samples for arsenic bioaccessibility are provided in this memorandum. The results of analysis for total metals will be provided in a separate memo expected to be available in January 2017.

At each station, water depth and physico-chemical measurements were collected prior to collecting the sediment sample (Table 1). Total depth of the water column was measured using a depth sounder (Hummingbird Helix 5 SI GPS). *In situ* physico-chemical measurements of specific conductivity, dissolved oxygen, pH, and water temperature were collected at each station using a submersible multi-sensor probe (YSI model 600QS-O-M). Three duplicate sediment samples were collected.

Following the collection of the *in situ* field measurements, a Tech-Ops sediment sampler was used to collect sediment core samples (Appendix A, Photograph 1). Three core samples were collected at each station , each core divided into 5 centimetre (cm) intervals representing 0 to 5 cm, 5 to 10 cm, and greater than 10 cm depth ranges. Each depth interval was mixed thoroughly in a stainless steel bowl until it was homogeneous in colour and texture creating one composite core sample of sediment for each depth interval (Appendix A, Photograph 2). The composite samples were then transferred into laboratory-supplied containers, kept cool and shipped to the Royal

Military College of Canada (RMC) in Kingston, Ontario for arsenic bioaccessibility analysis under the supervision of Dr. Iris Koch.

A summary of the samples collected and field measurements are provided in Table 1. The arsenic bioaccessibility results are provided in Table 2 and the laboratory report is provided in Appendix B.

Soil Samples

Soil samples were collected between August 12 and 17, 2016 at ten (10) stations including four (4) outcrop stations, four (4) forest stations, and two (2) wetland stations (Figure 1; Appendix A, Photographs 3 and 4).

Soil samples were collected using hand tools including a soil trowel, a shovel, and/or a hand auger. Outcrop stations were selected at outcrop crevasses and two soil samples were collected per station. Outcrop soil samples were collected at depth intervals 0 to 5 cm and 20 to 30 cm. Forest stations were identified in areas with stable vegetative cover typically located along the edges of bedrock outcrops. Wetland stations were selected in low lying areas typically between outcrops where standing water had potential to be present. Three soil grabs were collected from each forest and wetland station at depth intervals of 5 to 10 cm, 20 to 30 cm, and 60 to 80 cm. Soil samples were placed in re-sealable plastic bags and submitted to RMC in Kingston, Ontario for arsenic bioaccessibility analysis under the supervision of Dr. Iris Koch.

A summary of the samples collected and field measurements are provided in Table 3. The arsenic bioaccessibility results are provided in Table 4 and the laboratory report is provided in Appendix B.

2.2 Co-Located Sediment and Aquatic Plant Samples

Sediment and aquatic plant sampling was conducted on September 23, 2016. Ten (10) co-located (i.e., collected within 10 m^2) sediment and aquatic plant samples were collected in each of three areas: lower Baker creek, upper Baker creek, and the Yellowknife River (Figures 2 and 3). Photographs were taken at each location of substrate collected and the surrounding area (Appendix A, Photograph 5). Sediment samples were collected using a stainless steel hand shovel. Samples were placed in a stainless steel bowl and mixed to homogenize the sample. Following the homogenizing, the sample was placed in clean 125 mL glass jars provided by ALS Environmental Laboratory (ALS) in Yellowknife, NT. Sampling equipment was cleaned with Liquinox soap and rinsed with deionized water between each site. Nitrile gloves were used for all contact with samples and were changed at each site. Sediment samples were kept on ice in a cooler and then transferred to a refrigerator at the end of the day. Samples were keep cool in the refrigerator until submitted to ALS in Yellowknife, NT for the analysis of total metals.

Aquatic plants such as water sedge (*Carex aquatilis*) and cattail (*Typha latifolia*) were collected to represent aquatic plant species. The aquatic plants samples include a number of different plant species and varies depending on what was available at each location. One species was collected at each site. Only healthy plant samples were collected (i.e., no visible signs of disease or yellowing). Aquatic plants were collected by hand. Samples were double-bagged in re-sealable plastic bags, labelled, and kept cool until they could be frozen at the end of the day. Nitrile gloves were used for all contact with samples and were changed at each site. Aquatic plants samples were submitted to ALS in Yellowknife, NT for total metals analysis. Aquatic plant samples for arsenic bioaccessibility were collected at five stations, from the three areas (lower Baker creek, upper Baker creek, and the Yellowknife River), and sent to RMC in Kingston, Ontario for analysis under the supervision of Dr. Iris Koch.

Duplicate samples were taken at three locations, one in each area (lower Baker creek, upper Baker creek, and the Yellowknife River). Sediment duplicate samples were sampled by collecting twice as much sediment from a location, homogenizing the sample in a bowl, and then filling twice as many jars. Aquatic plant duplicate samples were collected at the same locations as the sediment duplicates. Aquatic plant sample duplicate samples were sampled by collecting twice as much, mixing the plants in a large bag, and dividing the sample into two re-sealable plastic bags to be analyzed separately.

A summary of the samples collected and field measurements are provided in Table 5. The chemistry results are provided in Tables 6 (sediment) and 7 (aquatic plants) and the bioaccessibility results for the aquatic plants are provided in Table 8. The laboratory reports are provided in Appendix B. The relative percent differences (RPD) calculations for duplicate samples are provided in Appendix C.

2.3 Co-Located Soil and Vegetation Samples

Co-located soil and vegetation samples were collected from September 7 to September 11, 2016. Each soil sample was co-located (within 10 m^2) of each plant tissue sample. Soil was collected using a stainless steel hand shovel. After removal of top layer of organic material, the field crew collected surficial soil up to top 15 cm if available. The soil depth was measured with a ruler and recorded. Soil was mixed in the stainless steel bowl to homogenize the sample, rocks and debris were removed before being placed in the sample container (Appendix A, Photograph 6). Headspace was minimized in sample containers. Nitrile gloves were used for all contact with soil and changed between samples. Sampling equipment was washed with Liquinox soap and rinsed with deionized water after each sample. The soil collection locations are shown on Figure 2.

Leaves of cranberry (*Vaccinium vitis-idaea*) and alder (*Alnus* sp.) were collected to represent terrestrial forbs and shrubs (Appendix A, Photograph 7). Only healthy plant samples were collected (i.e. no signs of disease, yellowing leaves, breakage or missing leaves). Cranberry and alder leaves were collected by hand. Samples were double-bagged in re-sealable plastic bags, labelled, and kept cool until they could be frozen at the end of the day. Nitrile gloves were used for all contact with samples and were changed at each site and between samples. Plant samples (minimum of 5 g) were submitted to ALS in Yellowknife, NT for total metals analysis. Plant samples for arsenic bioaccessibility samples were collected at five stations of both cranberry and alder leaves and submitted to RMC in Kingston, Ontario for analysis under the supervision of Dr. Iris Koch. Cranberry and alder collection locations are shown on Figure 4.

Duplicate samples were collected at four locations. Soil duplicate samples were sampled by collecting twice as much soil from a location, homogenizing the sample in a bowl, and then filling twice as many jars. Plant duplicate samples were collected at the same locations as the soil duplicates. Plant duplicate samples were sampled by collecting twice as much, mixing the plants in a large bag, and dividing the sample into two re-sealable plastic bags to be analyzed separately.

A summary of the samples collected and field measurements are provided in Table 5. The arsenic bioaccessibility results for plants are provided in Table 8 and the chemistry results are provided in Tables 9 (soil), 10 (alder) and 11 (cranberry). The laboratory reports are provided in Appendix B. The relative percent differences (RPD) calculations for duplicate samples are provided in Appendix C.

2.4 Small Mammal Tissue Samples

Small mammal trapping was conducted according to the wildlife research permit (permit number WL 500470). Small mammal traps were set on September 6, 2016 and were checked each consecutive day until September 10, inclusive. Ninety-eight (98) commercial mouse traps were set on eight transects, each transect consisted of twelve (12) stations and stations were made up of clusters of two or three traps (Appendix A, Photograph 8). Stations were placed approximately 20 m apart, recorded with GPS waypoints and track files. Each transect consisted twenty-five (25) traps and the traps were moved to different transects as mice were caught. Traps were baited with a mixture of peanut butter and oats. A sample of the bait used to trap the small mammals was submitted to ALS in Yellowknife, NT for total metals analysis along with the carcasses. At stations where small mammals were caught, the field crew collected co-located (i.e., collected within 10 m^2) soil and vegetation samples (Figure 5). Samples were identified and weighed at the Yellowknife Golder lab at the end of each day, and were frozen in labelled re-sealable plastic bags until submitted to ALS in Yellowknife, NT for total metals analysis. Three small mammal species were caught, including deer mouse (*Peromyscus maniculatus*), northern red-backed vole (*Myodes rutilus*), and an unidentified shrew species (*Sorex* sp.).

A summary of the samples collected and field measurements are provided in Table 5. The chemistry results are provided in Table 12 and the laboratory reports are provided in Appendix B.

2.5 Long Lake Sample Collection Methods

Long Lake sediment, surface water, and soil sampling was conducted on September 21, 2016. Surface water and sediment were collected at ten (10) locations along the public beach, day use, and boat launch areas at Fred Henne Territorial Park. Soil samples were collected at ten (10) campsites in the Fred Henne Campground, focusing on areas that would be likely to be used for camping (e.g., setting up tents) (Figure 6). Samples were collected across the intended area for maximum coverage. One duplicate was taken of each sample type. Photos of the site and substrate and GPS waypoints were recorded at each location. All samples (33 in total, 11 of each medium) were submitted to ALS in Yellowknife, NT for the analysis for total metals. In addition, five (5) soil samples and five (5) sediment samples were also submitted to RMC in Kingston, Ontario for arsenic bioaccessibility analysis under the supervision of Dr. Iris Koch

Prior to the collection of surface water samples, an YSI multimeter and handheld pH meter were used to collect field parameters (Table 13; Appendix A, Photograph 9). Sample bottles were partially submerged in the lake, using nitrile gloves and taking care to avoid large debris or suspended solids. Surface water samples were collected prior to collecting sediment samples at the same location, to avoid stirring up substrate. Samples were labelled and kept cool until delivery to ALS in Yellowknife, NT. Due to a laboratory oversight, insufficient preservative vials had been included with the sample bottle set; however, samples were delivered to ALS the same day, within hold time requirements for total metals, and were preserved at the lab.

Sediment was collected at the same locations as surface water, from the upper 0.10 m of substrate. Stainless steel hand tools and a stainless steel bowl were used to sample and homogenize the substrate; rocks and organic debris were removed before placing the sample into a labelled re-sealable plastic bags. The substrate type and a description of the substrate type were recorded. Nitrile gloves were used for all contact with soil and changed between each sample. Sampling equipment was washed with Liquinox soap and rinsed with deionized water after each sample.

Soil was collected at locations dispersed throughout the campground area (Figure 6). Soil was collected at areas either on a camping pad clearing, or in cases of thick gravel covering limiting access to soil beneath, directly next to the gravel pad. Soil was collected using a stainless steel trowel and bowl. After removal of top layer of organic material, field crew collected surficial soil (top 15 cm) if possible, soil depth was measured with a ruler and recorded. Soil was mixed in the stainless steel bowl to homogenize the sample; rocks and debris were removed before being placed in the sample container. Nitrile gloves were used for all contact with soil and changed between samples. Sampling equipment was washed with Liquinox soap and rinsed with deionized water after each sample.

A summary of the samples collected and field measurements are provided in Table 13. The chemistry results for Long Lake are provided in Tables 14 (surface water), 15 (sediment) and 16 (soil). The arsenic bioaccessibility results for the Long Lake sediment and soil samples are provided in Table 17 and 18 respectively. The laboratory reports are provided in Appendix B and the relative percent differences (RPD) calculations for duplicate samples is provided in Appendix C.

3.0 CLOSURE

We trust that the information provided in this technical memorandum is sufficient for your present needs. Should you have any questions, please contact the undersigned.

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https://capws.golder.com/sites/1313770044aecomenvironmentalservicesgiantmines/phases and tasks/ta33 - contaminated soils/report/task 1 - hhra data gap/1313770044-23000 draft giant mine hhera data gaps tech memo_21dec16.docx

FIGURES

LEGEND

- INDUSTRIAL WATER
- PIT BOUNDARY
- PROPOSED GIANT MINE LEASE BOUNDARY
- PRIMARY HIGHWAY
- LOCAL ROAD
- SEDIMENT SAMPLING LOCATION
- SOIL SAMPLING LOCATION

0 200 400

1:10,000 METRES

DRAFT

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
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DATUM: NAD 83, PROJECTION: UTM ZONE 11N

CLIENT

AECOM CANADA LTD.

PROJECT

CONTAMINATED SOILS INVESTIGATION

TITLE

2016 TOWNSITE AND SHORELINE SOIL AND SEDIMENT SAMPLING LOCATIONS

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-12-20
DESIGNED	TM
PREPARED	LMS
REVIEWED	-
APPROVED	-

PROJECT NO.	CONTROL	REV.	FIGURE
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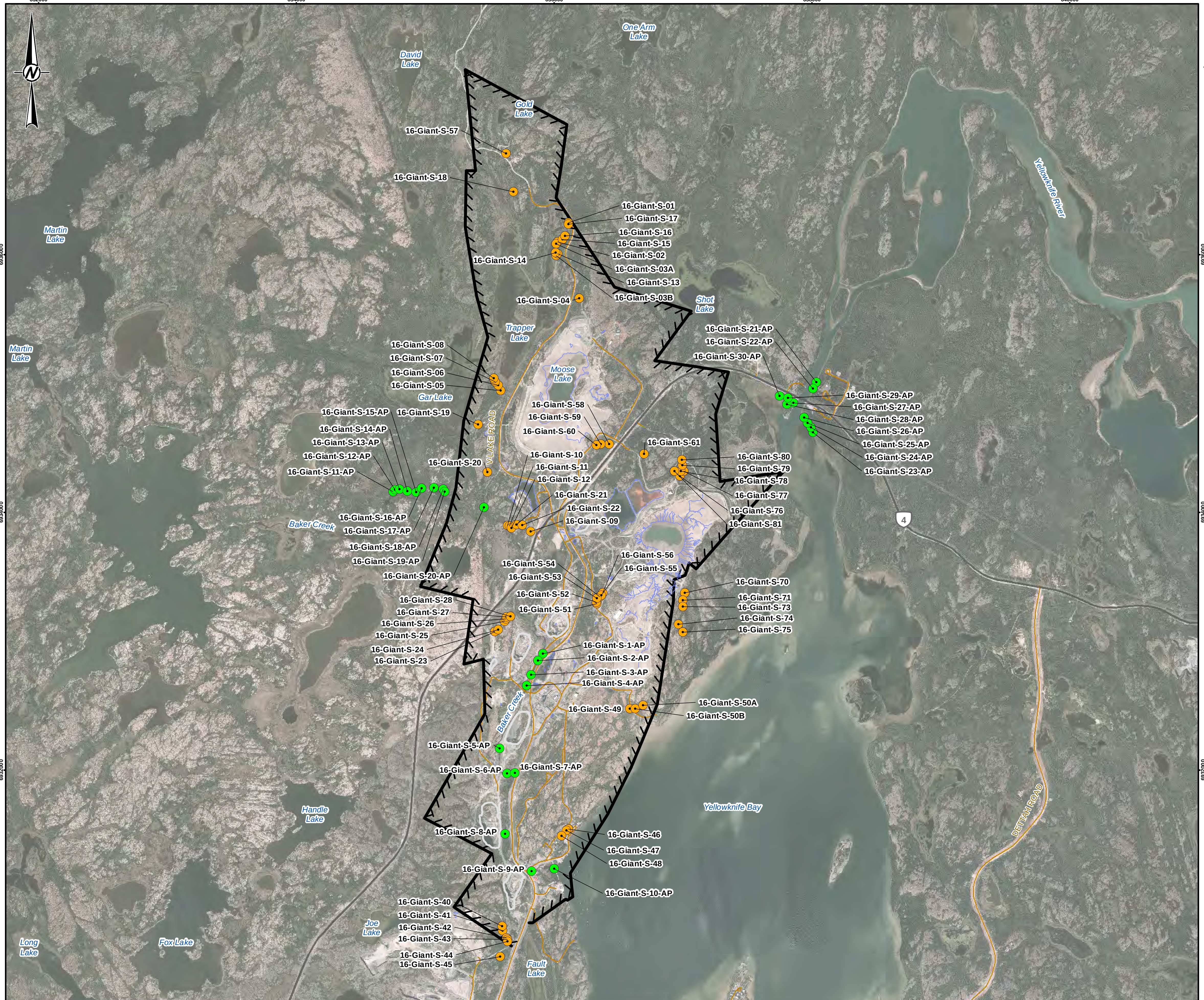

LEGEND

- INDUSTRIAL WATER
- PIT BOUNDARY
- PROPOSED GIANT MINE LEASE BOUNDARY
- PRIMARY HIGHWAY
- LOCAL ROAD
- SEDIMENT SAMPLING LOCATION
- SOIL SAMPLING LOCATION

0 500 1,000

1:30,000 METRES

DRAFT

NOTE(S)

1. S = SOIL

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
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DATUM: NAD 83, PROJECTION: UTM ZONE 11N

CLIENT

AECOM CANADA LTD.

PROJECT

CONTAMINATED SOILS INVESTIGATION

TITLE

2016 SOIL AND SEDIMENT SAMPLING LOCATIONS

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-12-20
DESIGNED	TM
PREPARED	LMS
REVIEWED	-
APPROVED	-

PROJECT NO.	CONTROL	REV.	FIGURE
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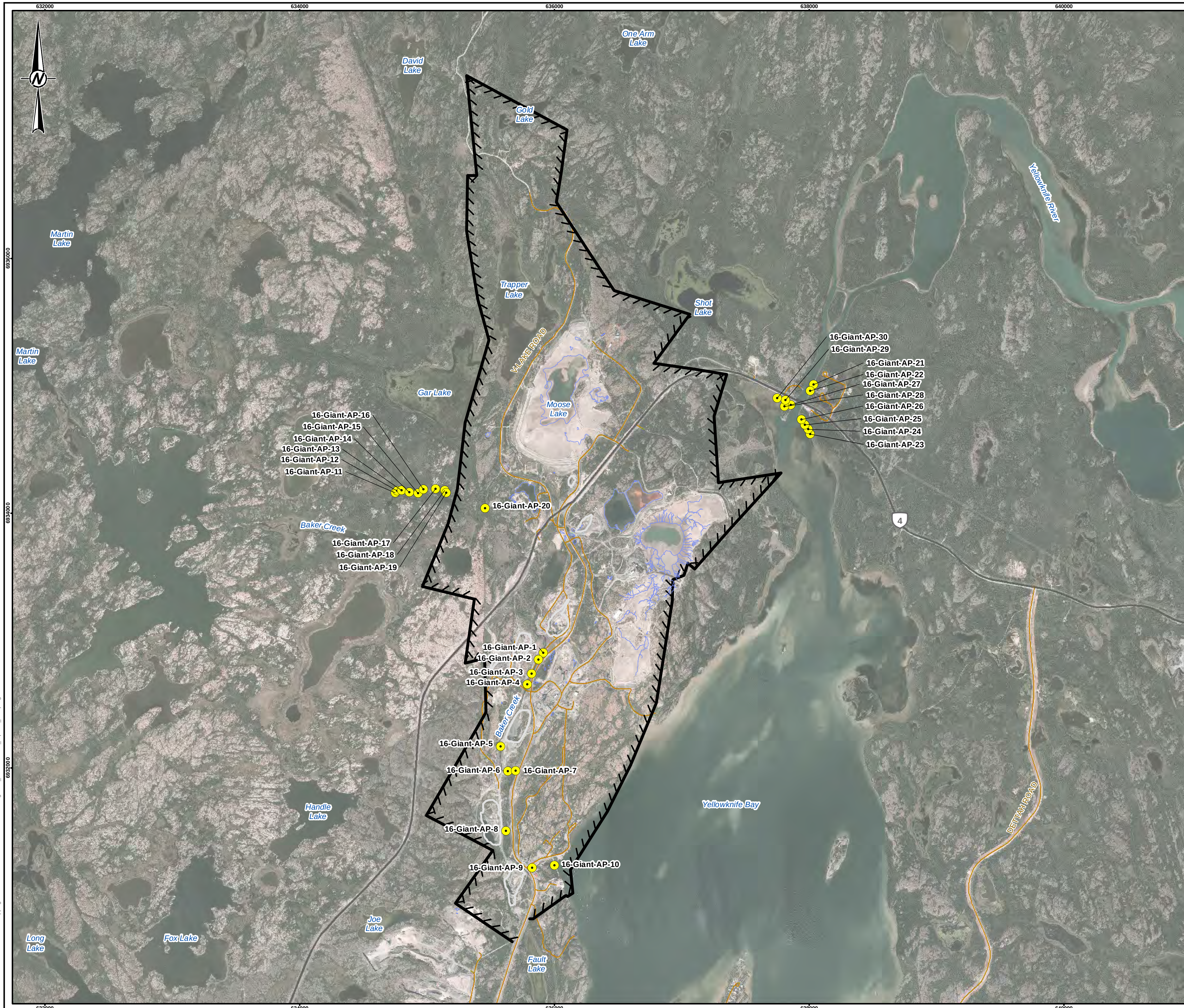

LEGEND

- INDUSTRIAL WATER
- PIT BOUNDARY
- PROPOSED GIANT MINE LEASE BOUNDARY
- PRIMARY HIGHWAY
- LOCAL ROAD
- AQUATIC PLANT SAMPLING LOCATION

0 500 1,000

1:30,000 METRES

DRAFT

NOTE(S)

1. AP = AQUATIC PLANT

REFERENCE(S)

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2. 2015 ORTHOPHOTO PROVIDED BY CLIENT.
DATUM: NAD 83, PROJECTION: UTM ZONE 11N

CLIENT

AECOM CANADA LTD.

PROJECT

CONTAMINATED SOILS INVESTIGATION

TITLE

2016 AQUATIC PLANT SAMPLING LOCATIONS

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-12-20
DESIGNED	TM
PREPARED	LMS
REVIEWED	-
APPROVED	-

PROJECT NO.	CONTROL	REV.	FIGURE
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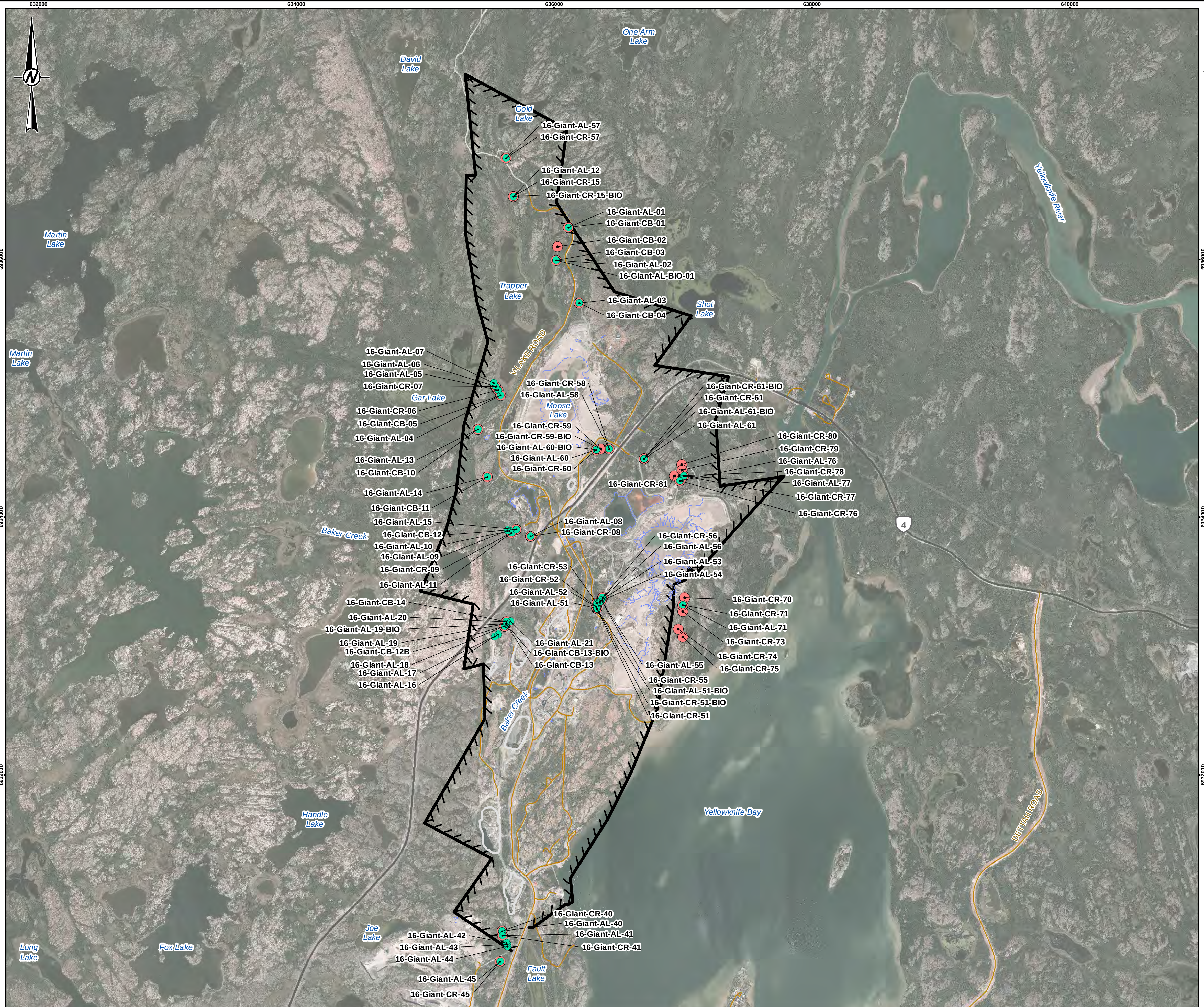


LEGEND

- INDUSTRIAL WATER
- PIT BOUNDARY
- PROPOSED GIANT MINE LEASE BOUNDARY
- PRIMARY HIGHWAY
- LOCAL ROAD
- WATERCOURSE
- ALDER SAMPLING LOCATION
- CRANBERRY SAMPLING LOCATION

0 500 1,000

1:30,000 METRES

DRAFT

NOTE(S)
1. AL = ALDER; CR/CB = CRANBERRY

REFERENCE(S)
1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
2. 2015 ORTHOPHOTO PROVIDED BY CLIENT.
DATUM: NAD 83, PROJECTION: UTM ZONE 11N

CLIENT
AECOM CANADA LTD.

PROJECT
CONTAMINATED SOILS INVESTIGATION

TITLE
2016 VEGETATION SAMPLING LOCATIONS

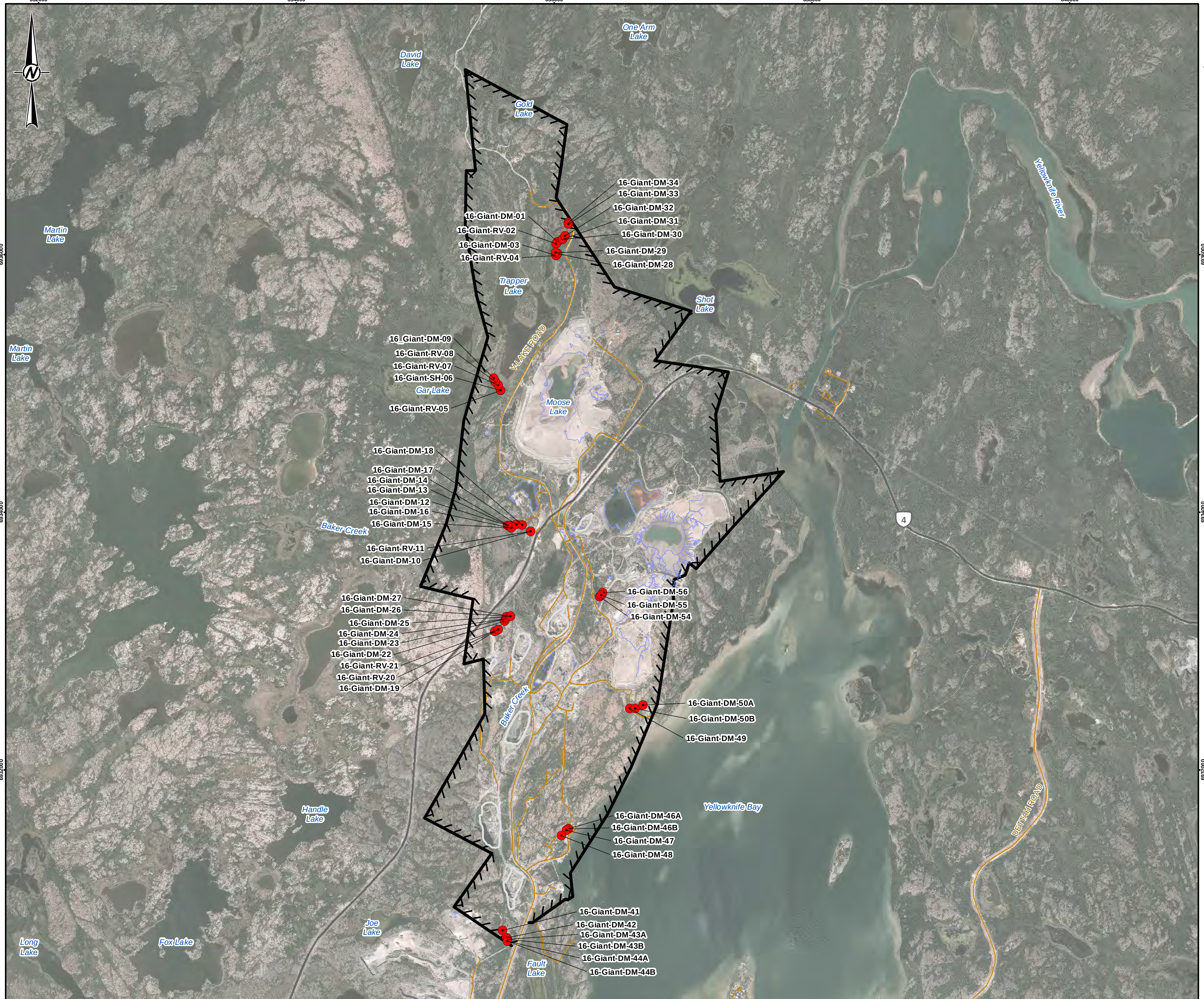
CONSULTANT

Golder Associates

YYYY-MM-DD	2016-12-20
DESIGNED	TM
PREPARED	LMS
REVIEWED	-
APPROVED	-

PROJECT NO.	CONTROL	REV.	FIGURE
1313770044		A	4

25mm



LEGEND

- INDUSTRIAL WATER
- PIT BOUNDARY
- PROPOSED GIANT MINE LEASE BOUNDARY
- PRIMARY HIGHWAY
- LOCAL ROAD
- SMALL MAMMAL SAMPLING LOCATION

DRAFT

NOTE(S)
1. DM = DEER MOUSE; RV = NORTHERN RED-BACKED VOLE; SH = SHREW

REFERENCE(S)
1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
2. 2015 ORTHOPHOTO PROVIDED BY CLIENT.
DATUM: NAD 83, PROJECTION: UTM ZONE 11N

CLIENT
AECOM CANADA LTD.

PROJECT
CONTAMINATED SOILS INVESTIGATION

TITLE
2016 SMALL MAMMAL SAMPLING LOCATIONS

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-12-20
DESIGNED	TM
PREPARED	LMS
REVIEWED	-
APPROVED	-

PROJECT NO.	CONTROL	REV.	FIGURE
1313770044		A	5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

PATH: I:\2013\13-1377\13-1377-0044\Mapping\MXD\Soils\Terrain\Contaminated Soil Invest\FIG5_13-1377-0044_SmMammals_Sampling.mxd PRINTED ON: 2016-12-20 AT: 7:50:30 AM

LEGEND

- PRIMARY HIGHWAY
- LOCAL ROAD
- SURFACE WATER/SEDIMENT SAMPLING LOCATION
- SOIL SAMPLING LOCATION

0 100 200

1:4,000 METRES

DRAFT

NOTE(S)

1. S = SOIL; SE = SEDIMENT; SW = SURFACE WATER

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
2. 2015 ORTHOPHOTO PROVIDED BY CLIENT.
DATUM: NAD 83, PROJECTION: UTM ZONE 11N

CLIENT
AECOM CANADA LTD.

PROJECT
CONTAMINATED SOILS INVESTIGATION

TITLE
2016 LONG LAKE SOIL, SEDIMENT AND SURFACE WATER SAMPLING LOCATIONS

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-12-20
DESIGNED	TM
PREPARED	LMS
REVIEWED	-
APPROVED	-

PROJECT NO.	CONTROL	REV.	FIGURE
1313770044		A	6

25mm

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

TABLES

Table 1: Sediment Samples Collected in Shoreline Lands
Giant Mine - HHERA Data Gaps

Sample ID	Date Collected	GPS Coordinates		Sediment Depth (m)	Water Depth (m)	Specific Conductivity (us/cm)	Dissolved oxygen	pH (surface/at	Water Temperature (°C)
		Northing	Easting						
2016 SQ-0-50-1	25-Aug-16	6932278	636753	0.0 -0.5	0.6	96	10.19	6.38	16.99
2016 SQ-0-50-3				> 10					
2016 SQ-A-1	25-Aug-16	6932099	636649	0.0 -0.5	1	94	10.31	7.57	17.84
2016 SQ-A-2				0.5-0.1					
2016 SQ-B-1	25-Aug-16	6931959	636638	0.0 -0.5	4	95/91	10.15/10.36	7.62/7.67	17.92/17.30
2016 SQ-B-2				0.5-0.1					
2016 SQ-15-100-1	25-Aug-16	6931797	636559	0.0 -0.5	6.2	94/132	10.24/10.19	7.80/7.65	18.52/16.13
2016 SQ-C-1	24-Aug-16	6931608	636288	0.0 -0.5	-	77	10.92	8.12	18.71
2016 SQ-2S-100-1	24-Aug-16	6931427	636197	0.0 -0.5	6.0-6.2	83/131	10.82/10.86	7.96/7.90	18.11/16.59
2016 SQ-2S-100-3				> 10					

Notes:
mg/L = milligram per litre
°C = degrees Celsius

Table 2: Results for Arsenic Bioaccessibility in Sediment
Giant Mine HHERA Data Gaps

Sample ID	BA conc dw (mg/kg)	Sediment conc dw (mg/kg)	%BA	Filtrate conc (mg/L)	Sediment conc ww (mg/kg)	% Filtrate of sediment conc ww	% Mobile of total	% Moisture	LOD BA conc (mg/kg)	LOD % BA
2016 SQ-A-1	150	825	18	0.035	563	0.0062	18	32	0.20	0.024
2016 SQ-A-2	130	840	16	0.046	646	0.0071	16	23	0.20	0.024
2016 SQ-B-1	130	370	35	0.0068	187	0.0036	35	49	0.20	0.054
2016 SQ-B-2	157	670	23	0.025	418	0.0060	23	38	0.20	0.030
2016 SQ-C-1	17	62	28	0.0083	40	0.021	28	35	0.20	0.32
2016 SQ-O-50-1	269	1200	22	0.20	873	0.023	22	27	0.20	0.017
2016 SQ-O-50-3	337	1400	24	0.25	1062	0.024	24	24	0.20	0.014
2016 SQ-1S-100-1	108	350	31	0.015	163	0.0092	31	53	0.20	0.057
2016 SQ-2S-100-1	214	630	34	0.020	249	0.0080	34	60	0.20	0.032
2016 SQ-2S-100-3	88	320	28	0.0048	165	0.0029	28	48	0.20	0.063

Notes:
dw - dry weight; ww - wet weight
BA conc = concentration of bioaccessible element in dewatered sediment; Sediment conc = concentration (dw) of element in dewatered and dried sediment;
%BA = % bioaccessibility = 100% x bioaccessible As/total As;
Filtrate conc = concentration of element in filtrate (water) removed from sediment;
Sediment conc ww = wet weight sediment concentration, dewatered sediment concentration corrected for percent moisture
% Filtrate of sediment conc ww = 100% x filtrate conc/Sediment conc ww;
% Mobile of total = 100% x (BA conc corrected for percent moisture + filtrate conc)/sediment conc ww;
LOD = limit of detection; LOD % BA = (LOD for bioaccess As Conc)/Total As * 100%.

Table 3: Summary of Soil Samples Collected in the Townsite
Giant Mine - HHERA Data Gaps

Sample ID	Date Collected	Sample Type	GPS Coordinates		Soil Depth (m)	Soil Descirption
			Northing	Easting		
SL-F-01-1	12-Aug-16	Forest	636363	6931855	0.05-0.10	Topsoil and rootmass
SL-F-03-1	12-Aug-16		636296	6931676	0.05-0.10	Topsoil and rootmass
SL-F-08-1	13-Aug-16		636535	6931973	0.05-0.10	Sandy clay, some gravel
TS-F-02-1	17-Aug-16		635931	6931464	0.05-0.10	Sandy topsoil
SL-WL-06-1	16-Aug-16	Wetland	636569	6932264	0.05-0.10	Topsoil and rootmass
SL-WL-05-1	13-Aug-16		636469	6931849	0.05-0.10	Silty Sand
TS-OC-1-1	12-Aug-16	Outcrop	636210	6931679	0.00-0.05	Topsoil
TS-OC-02-1	17-Aug-16		635873	6931467	0.00-0.05	Sand, some rootlets
TS-OC-04-1	17-Aug-16		636043	6931556	0.00-0.05	Sandy Topsoil
SL-OC-04-1	13-Aug-16		636530	6932100	0.00-0.05	Topsoil and rootmass

Table 4: Results for Arsenic Bioaccessibility in Soil
Giant Mine HHERA Data Gaps

Sample ID	BA conc dw (mg/kg)	Soil conc dw (mg/kg)	%BA	LOD BA conc (mg/kg)	LOD % BA
SL-F-01-1 B2	100	1400	7.1	0.20	0.014
TS-F-02-1 B2	156	290	54	0.20	0.069
SL-F-03-1	63	280	22	0.20	0.071
SL-F-08-1 *	124	300	41	0.20	0.067
TS-OC-02-1 B2	310	1100	28	0.20	0.018
TS-OC-01-1 B2	561	2000	28	0.20	0.010
TS-OC-04-1 B2	274	1800	15	0.20	0.011
SL-OC-04-1	1803	4300	42	0.20	0.005
SL-WL-C6-1	317	900	35	0.20	0.022
SL-WL-05-1	217	460	47	0.20	0.043

Notes:
dw - dry weight
BA conc = concentration of bioaccessible element in soil
%BA = % bioaccessibility = 100% x bioaccessible As/total As;
LOD = limit of detection; LOD % BA = (LOD for bioaccess As Conc)/Total As * 100%.
* - Average of the duplicate pair (BA conc) reported

Table 5: Summary of Co-located Soil, Vegetation, and Small Mammal Samples
Giant Mine HHERA Data Gaps

Sample ID	Duplicate sample ID	Date collected (d/m/yyyy)	GPS Coordinates (11V)		Sample Type	Common Name	Scientific Name	Co-located samples[1]				
			Easting	Northing				Co-located Sample ID	Duplicate sample ID	Sample Type	Sample depth (cm)	Soil type(s)[2]
16-Giant-DM-34	-	7/9/2016	636108	6936246	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-01	-	soil	15	PO
16-Giant-DM-01	-	7/9/2016	636027	6936098	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-02	-	soil	15	PO
16-Giant-RV-02	-	7/9/2016	636016	6936080	small mammal tissue	Northern red-backed vole	*Myodes rutilus*	16-Giant-S-03A	-	soil	15	PO
16-Giant-DM-03	-	7/9/2016	636016	6935989	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-03B	16-Giant-S-03B-DUP	soil	15	PO
16-Giant-RV-04	-	7/9/2016	636016	6935989	small mammal tissue	Northern red-backed vole	*Myodes rutilus*	16-Giant-S-03B	16-Giant-S-03B-DUP	soil	15	PO
16-Giant-RV-05	-	7/9/2016	635582	6934941	small mammal tissue	Northern red-backed vole	*Myodes rutilus*	16-Giant-S-05	-	soil	15	PO
16-Giant-SH-06	-	7/9/2016	635582	6934941	small mammal tissue	Shrew species	*Sorex spp.*	16-Giant-S-05	-	soil	15	PO
16-Giant-RV-07	-	7/9/2016	635564	6934986	small mammal tissue	Northern red-backed vole	*Myodes rutilus*	16-Giant-S-06	-	soil	15	PO
16-Giant-RV-08	-	7/9/2016	635541	6935010	small mammal tissue	Northern red-backed vole	*Myodes rutilus*	16-Giant-S-07	-	soil	15	PO
16_Giant-DM-09	-	7/9/2016	635530	6935037	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-08	-	soil	15	PO
16-Giant-DM-10	-	7/9/2016	635816	6933849	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-09	-	soil	15	PO, SA
16-Giant-RV-11	-	7/9/2016	635816	6933849	small mammal tissue	Northern red-backed vole	*Myodes rutilus*	16-Giant-S-09	-	soil	15	PO, SA
16-Giant-DM-12	-	7/9/2016	635638	6933894	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-10	-	soil	15	PO
16-Giant-DM-13	-	7/9/2016	635652	6933889	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-11	-	soil	15	PO
16-Giant-DM-14	-	7/9/2016	635652	6933889	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-11	-	soil	15	PO
16-Giant-DM-15	-	7/9/2016	635669	6933876	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-12	-	soil	15	PO, SA
16-Giant-DM-16	-	7/9/2016	635669	6933876	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-12	-	soil	15	PO, SA
16-Giant-DM-28	-	8/9/2016	636026	6936007	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-13	-	soil	15	PO
16-Giant-DM-29	-	8/9/2016	636011	6936012	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-14	-	soil	15	PO
16-Giant-DM-30	-	8/9/2016	636063	6936115	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-15	-	soil	15	PO
16-Giant-DM-31	-	8/9/2016	636063	6936115	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-15	-	soil	15	PO
16-Giant-DM-32	-	8/9/2016	636082	6936144	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-16	-	soil	15	PO
16-Giant-DM-33	-	8/9/2016	363111	6936233	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-17	-	soil	15	PO
16-Giant-DM-17	-	7/9/2016	635706	6933904	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-21	-	soil	15	PO
16-Giant-DM-18	-	7/9/2016	635752	6933899	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-22	-	soil	15	PO
16-Giant-DM-19	-	7/9/2016	635539	6933070	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-23	-	soil	15	CL
16-Giant-RV-20	-	7/9/2016	635563	6933088	small mammal tissue	Northern red-backed vole	*Myodes rutilus*	16-Giant-S-24	-	soil	15	PO
16-Giant-RV-21	-	7/9/2016	635563	6933088	small mammal tissue	Northern red-backed vole	*Myodes rutilus*	16-Giant-S-24	-	soil	15	PO
16-Giant-DM-22	-	7/9/2016	635613	6933150	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-25	-	soil	15	PO
16-Giant-DM-23	-	7/9/2016	635625	6933169	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-26	-	soil	15	PO
16-Giant-DM-24	-	7/9/2016	635625	6933169	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-26	-	soil	15	PO
16-Giant-DM-25	-	7/9/2016	635628	6933185	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-27	-	soil	15	PO, SI
16-Giant-DM-26	-	7/9/2016	635660	6933189	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-28	-	soil	15	PO
16-Giant-DM-27	-	7/9/2016	635660	6933189	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-28	-	soil	15	PO
16-Giant-DM-41	-	9/9/2016	635598	6930753	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-41	16-Giant-S-41-DUP	soil	15	PO
16-Giant-DM-42	-	9/9/2016	635631	6930694	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-42	-	soil	10	PO
16-Giant-DM-43A	-	9/9/2016	635637	6930681	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-43	-	soil	10	PO
16-Giant-DM-43B	-	9/9/2016	635637	6930681	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-43	-	soil	10	PO
16-Giant-DM-44A	-	9/9/2016	635639	6930666	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-44	-	soil	5	PO
16-Giant-DM-44B	-	9/9/2016	635639	6930666	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-44	-	soil	5	PO
16-Giant-DM-46A	-	9/9/2016	636111	6931539	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-46	-	soil	15	PO
16-Giant-DM-46B	-	9/9/2016	636111	6931539	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-46	-	soil	15	PO
16-Giant-DM-47	-	9/9/2016	636093	6931529	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-47	-	soil	10	PO
16-Giant-DM-48	-	9/9/2016	636057	6931487	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-48	-	soil	5	PO
16-Giant-DM-49	-	10/9/2016	636585	6932475	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-49	-	soil	15	CL
16-Giant-DM-50B	-	10/9/2016	636629	6932473	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-50B	-	soil	15	CL
16-Giant-DM-50A	-	10/9/2016	636690	6932500	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-50A	-	soil	15	PO, SA
16-Giant-DM-54	-	10/9/2016	636352	6933344	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-54	-	soil	15	PO, SA

Table 5: Summary of Co-located Soil, Vegetation, and Small Mammal Samples
Giant Mine HHERA Data Gaps

Sample ID	Duplicate sample ID	Date collected (d/m/yyyy)	GPS Coordinates (11V)		Sample Type	Common Name	Scientific Name	Co-located samples[1]				
			Easting	Northing				Co-located Sample ID	Duplicate sample ID	Sample Type	Sample depth (cm)	Soil type(s)[2]
16-Giant-DM-55	-	10/9/2016	636364	6933352	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-55	-	soil	15	PO
16-Giant-DM-56	-	10/9/2016	636375	6933374	small mammal tissue	Deer mouse	*Peromyscus maniculatus*	16-Giant-S-56	-	soil	15	PO, SA
16-Giant-Bait	-	9/9/2016	-	-	small mammal bait	-	-	-	-	-	-	-
16-Giant-AL-01	-	7/9/2016	636108	6936246	vegetation	Alder	*Alnus sp.*	16-Giant-S-01	-	soil	15	-
16-Giant-CB-01	-	7/9/2016	636108	6936246	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-01	-	soil	15	PO
16-Giant-CB-02	-	7/9/2016	636027	6936098	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-02	-	soil	15	PO
16-Giant-CB-03	16-Giant-CB-03-DUP	7/9/2016	636016	6935989	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-03B	16-Giant-S-03B-DUP	soil	15	PO
16-Giant-AL-02	16-Giant-AL-02-DUP	7/9/2016	636016	6935989	vegetation	Alder	*Alnus sp.*	16-Giant-S-03B	16-Giant-S-03B-DUP	soil	15	PO
16-Giant-AL-BIO-01	-	7/9/2016	636016	6935989	vegetation	Alder	*Alnus sp.*	16-Giant-S-03B	16-Giant-S-03B-DUP	soil	15	PO
16-Giant-CB-04	-	7/9/2016	636192	6935658	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-04	-	soil	15	PO
16-Giant-AL-03	-	7/9/2016	636192	6935658	vegetation	Alder	*Alnus sp.*	16-Giant-S-04	-	soil	15	PO
16-Giant-CB-05	-	7/9/2016	635582	6934941	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-05	-	soil	15	PO
16-Giant-AL-04	-	7/9/2016	635582	6934941	vegetation	Alder	*Alnus sp.*	16-Giant-S-05	-	soil	15	PO
16-Giant-AL-05	-	7/9/2016	635564	6934986	vegetation	Alder	*Alnus sp.*	16-Giant-S-06	-	soil	15	PO
16-Giant-CR-06	-	7/9/2016	635564	6934986	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-06	-	soil	15	PO
16-Giant-CR-07	-	7/9/2016	635544	6935010	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-07	-	soil	15	PO
16-Giant-AL-06	-	7/9/2016	635544	6935010	vegetation	Alder	*Alnus sp.*	16-Giant-S-07	-	soil	15	PO
16-Giant-AL-07	-	7/9/2016	635530	6935037	vegetation	Alder	*Alnus sp.*	16-Giant-S-08	-	soil	15	PO
16-Giant-AL-08	-	7/9/2016	635816	6933849	vegetation	Alder	*Alnus sp.*	16-Giant-S-09	-	soil	15	PO, SA
16-Giant-CR-08	-	7/9/2016	635816	6933849	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-09	-	soil	15	PO, SA
16-Giant-AL-09	-	7/9/2016	635638	6933894	vegetation	Alder	*Alnus sp.*	16-Giant-S-10	-	soil	15	PO
16-Giant-AL-10	-	7/9/2016	635652	6933889	vegetation	Alder	*Alnus sp.*	16-Giant-S-11	-	soil	15	PO
16-Giant-AL-11	-	7/9/2016	635669	6933876	vegetation	Alder	*Alnus sp.*	16-Giant-S-12	-	soil	15	PO, SA
16-Giant-CR-09	-	7/9/2016	635669	6933876	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-12	-	soil	15	PO, SA
16-Giant-AL-12	-	8/9/2016	635684	6936487	vegetation	Alder	*Alnus sp.*	16-Giant-S-18	-	soil	15	SA
16-Giant-CR-15	-	8/9/2016	635684	6936487	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-18	-	soil	15	SA
16-Giant-CR-15-BIO	-	8/9/2016	635684	6936487	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-18	-	soil	15	SA
16-Giant-AL-13	-	8/9/2016	635408	6934680	vegetation	Alder	*Alnus sp.*	16-Giant-S-19	-	soil	15	SI
16-Giant-CB-10	-	8/9/2016	635408	6934680	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-19	-	soil	15	SI
16-Giant-AL-14	-	8/9/2016	635480	6934311	vegetation	Alder	*Alnus sp.*	16-Giant-S-20	-	soil	15	PO
16-Giant-CB-11	-	8/9/2016	635480	6934311	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-20	-	soil	15	PO
16-Giant-AL-15	-	8/9/2016	635706	6933904	vegetation	Alder	*Alnus sp.*	16-Giant-S-21	-	soil	15	PO
16-Giant-CB-12	-	8/9/2016	635706	6933904	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-21	-	soil	15	PO
16-Giant-AL-16	-	8/9/2016	635539	6933070	vegetation	Alder	*Alnus sp.*	16-Giant-S-23	-	soil	15	CL
16-Giant-AL-17	-	8/9/2016	635563	6933088	vegetation	Alder	*Alnus sp.*	16-Giant-S-24	-	soil	15	PO
16-Giant-AL-18	-	8/9/2016	635613	6933150	vegetation	Alder	*Alnus sp.*	16-Giant-S-25	-	soil	15	PO
16-Giant-CB-12B	-	8/9/2016	635613	6933150	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-25	-	soil	15	PO
16-Giant-CB-13	-	8/9/2016	635625	6933169	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-26	-	soil	15	PO
16-Giant-CB-13-BIO	-	8/9/2016	635625	6933169	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-26	-	soil	15	PO
16-Giant-AL-19	-	8/9/2016	635625	6933169	vegetation	Alder	*Alnus sp.*	16-Giant-S-26	-	soil	15	PO
16-Giant-AL-19-BIO	-	8/9/2016	635625	6933169	vegetation	Alder	*Alnus sp.*	16-Giant-S-26	-	soil	15	PO
16-Giant-AL-20	-	8/9/2016	635628	6933185	vegetation	Alder	*Alnus sp.*	16-Giant-S-27	-	soil	15	PO, SI
16-Giant-CB-14	-	8/9/2016	635628	6933185	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-27	-	soil	15	PO, SI
16-Giant-AL-21	-	8/9/2016	635660	6933189	vegetation	Alder	*Alnus sp.*	16-Giant-S-28	-	soil	15	PO
16-Giant-CR-40	-	9/9/2016	635594	6930787	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-40	-	soil	15	PO, CO
16-Giant-AL-40	-	9/9/2016	635594	6930787	vegetation	Alder	*Alnus sp.*	16-Giant-S-40	-	soil	15	PO, CO
16-Giant-AL-41	16-Giant-AL-41-DUP	9/9/2016	635598	6930753	vegetation	Alder	*Alnus sp.*	16-Giant-S-41	16-Giant-S-41-DUP	soil	15	PO
16-Giant-CR-41	16-Giant-CR-41-DUP	9/9/2016	635598	6930753	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-41	16-Giant-S-41-DUP	soil	15	PO

Table 5: Summary of Co-located Soil, Vegetation, and Small Mammal Samples
Giant Mine HHERA Data Gaps

Sample ID	Duplicate sample ID	Date collected (d/m/yyyy)	GPS Coordinates (11V)		Sample Type	Common Name	Scientific Name	Co-located samples[1]				
			Easting	Northing				Co-located Sample ID	Duplicate sample ID	Sample Type	Sample depth (cm)	Soil type(s)[2]
16-Giant-AL-42	-	9/9/2016	635631	6930694	vegetation	Alder	*Alnus sp.*	16-Giant-S-42	-	soil	10	PO
16-Giant-AL-43	-	9/9/2016	635637	6930681	vegetation	Alder	*Alnus sp.*	16-Giant-S-43	-	soil	10	PO
16-Giant-AL-44	-	9/9/2016	635639	6930666	vegetation	Alder	*Alnus sp.*	16-Giant-S-44	-	soil	5	PO
16-Giant-AL-45	-	9/9/2016	635580	6930550	vegetation	Alder	*Alnus sp.*	16-Giant-S-45	-	soil	15	PO
16-Giant-CR-45	-	9/9/2016	635580	6930550	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-45	-	soil	15	PO
16-Giant-CR-51	16-Giant-CR-51-DUP	10/9/2016	636332	6933288	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-51	16-Giant-S-51-DUP	soil	15	PO
16-Giant-AL-51	16-Giant-AL-51-DUP	10/9/2016	636332	6933288	vegetation	Alder	*Alnus sp.*	16-Giant-S-51	16-Giant-S-51-DUP	soil	15	PO
16-Giant-CR-51-BIO	-	10/9/2016	636332	6933288	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-51	16-Giant-S-51-DUP	soil	15	PO
16-Giant-AL-51-BIO	-	10/9/2016	636332	6933288	vegetation	Alder	*Alnus sp.*	16-Giant-S-51	16-Giant-S-51-DUP	soil	15	PO
16-Giant-AL-52	-	10/9/2016	636326	6933301	vegetation	Alder	*Alnus sp.*	16-Giant-S-52	-	soil	15	PO, SA
16-Giant-CR-52	-	10/9/2016	636326	6933301	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-52	-	soil	15	PO, SA
16-Giant-AL-53	16-Giant-AL-53-DUP	10/9/2016	636332	6933329	vegetation	Alder	*Alnus sp.*	16-Giant-S-53	16-Giant-S-53-DUP	soil	15	PO
16-Giant-CR-53	16-Giant-CR-53-DUP	10/9/2016	636332	6933329	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-53	16-Giant-S-53-DUP	soil	15	PO
16-Giant-AL-54	-	10/9/2016	636352	6933344	vegetation	Alder	*Alnus sp.*	16-Giant-S-54	-	soil	15	PO, SA
16-Giant-AL-55	-	10/9/2016	636364	6933352	vegetation	Alder	*Alnus sp.*	16-Giant-S-55	-	soil	15	PO
16-Giant-CR-55	-	10/9/2016	636364	6933352	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-55	-	soil	15	PO
16-Giant-AL-56	-	10/9/2016	636375	6933374	vegetation	Alder	*Alnus sp.*	16-Giant-S-56	-	soil	15	PO, SA
16-Giant-CR-56	-	10/9/2016	636375	6933374	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-56	-	soil	15	PO, SA
16-Giant-AL-57	-	10/9/2016	635626	6936784	vegetation	Alder	*Alnus sp.*	16-Giant-S-57	-	soil	15	SA
16-Giant-CR-57	-	10/9/2016	635626	6936784	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-57	-	soil	15	SA
16-Giant-AL-58	-	10/9/2016	636427	6934527	vegetation	Alder	*Alnus sp.*	16-Giant-S-58	-	soil	10	PO, SA
16-Giant-CR-58	-	10/9/2016	636427	6934527	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-58	-	soil	10	PO, SA
16-Giant-CR-59	-	10/9/2016	636360	6934528	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-59	-	soil	15	CL
16-Giant-CR-59-BIO	-	10/9/2016	636360	6934528	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-59	-	soil	15	CL
16-Giant-AL-60	-	10/9/2016	636327	6934519	vegetation	Alder	*Alnus sp.*	16-Giant-S-60	-	soil	10	PO
16-Giant-CR-60	-	10/9/2016	636327	6934519	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-60	-	soil	10	PO
16-Giant-AL-60-BIO	-	10/9/2016	636327	6934519	vegetation	Alder	*Alnus sp.*	16-Giant-S-60	-	soil	10	PO
16-Giant-AL-61	-	10/9/2016	636695	6934449	vegetation	Alder	*Alnus sp.*	16-Giant-S-61	-	soil	15	PO
16-Giant-AL-61-BIO	-	10/9/2016	636695	6934449	vegetation	Alder	*Alnus sp.*	16-Giant-S-61	-	soil	15	PO
16-Giant-CR-61	-	10/9/2016	636695	6934449	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-61	-	soil	15	PO
16-Giant-CR-61-BIO	-	10/9/2016	636695	6934449	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-61	-	soil	15	PO
16-Giant-CR-70	-	11/9/2016	637013	6933374	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-70	-	soil	10	PO
16-Giant-AL-71	-	11/9/2016	636998	6933316	vegetation	Alder	*Alnus sp.*	16-Giant-S-71	-	soil	15	PO
16-Giant-CR-71	-	11/9/2016	636998	6933316	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-71	-	soil	15	PO
16-Giant-CR-73	-	11/9/2016	636997	6933266	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-73	-	soil	15	PO
16-Giant-CR-74	-	11/9/2016	636965	6933130	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-74	-	soil	5	PO
16-Giant-CR-75	-	11/9/2016	636998	6933067	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-75	-	soil	5	PO
16-Giant-AL-76	-	11/9/2016	636976	6934280	vegetation	Alder	*Alnus sp.*	16-Giant-S-76	-	soil	15	PO
16-Giant-CR-76	-	11/9/2016	636976	6934280	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-76	-	soil	15	PO

Table 5: Summary of Co-located Soil, Vegetation, and Small Mammal Samples
Giant Mine HHERA Data Gaps

Sample ID	Duplicate sample ID	Date collected (d/m/yyyy)	GPS Coordinates (11V)		Sample Type	Common Name	Scientific Name	Co-located samples[1]				
			Easting	Northing				Co-located Sample ID	Duplicate sample ID	Sample Type	Sample depth (cm)	Soil type(s)[2]
16-Giant-AL-77	-	11/9/2016	637005	6934317	vegetation	Alder	*Alnus sp.*	16-Giant-S-77	-	soil	15	PO
16-Giant-CR-77	-	11/9/2016	637005	6934317	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-77	-	soil	15	PO
16-Giant-CR-78	-	11/9/2016	636983	6934319	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-78	-	soil	15	PO
16-Giant-CR-79	-	11/9/2016	636993	6934362	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-79	-	soil	15	PO
16-Giant-CR-80	-	11/9/2016	636990	6934407	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-80	-	soil	10	PO
16-Giant-CR-81	-	11/9/2016	636933	6934316	vegetation	Cranberry	*Vaccinium vitis-idaea*	16-Giant-S-81	-	soil	5	PO
16-Giant-AP-1	-	23/9/2016	635913	6932902	aquatic plant	Sedge/Cattail	-	16-Giant-S-1-AP	-	sediment	3	-
16-Giant-AP-2	-	23/9/2016	635875	6932846	aquatic plant	Sedge/Cattail	-	16-Giant-S-2-AP	-	sediment	1	-
16-Giant-AP-3	16-Giant-AP-3D	23/9/2016	635820	6932737	aquatic plant	Sedge/Cattail	-	16-Giant-S-3-AP	16-Giant-S-3D-AP	sediment	15	-
16-Giant-AP-3-BIO	-	23/9/2016	635820	6932737	aquatic plant	Sedge/Cattail	-	16-Giant-S-3-AP	16-Giant-S-3D-AP	sediment	15	-
16-Giant-AP-4	-	23/9/2016	635785	6932653	aquatic plant	Sedge/Cattail	-	16-Giant-S-4-AP	-	sediment	10	-
16-Giant-AP-5	-	23/9/2016	635577	6932164	aquatic plant	Sedge/Cattail	-	16-Giant-S-5-AP	-	sediment	5	-
16-Giant-AP-6	-	23/9/2016	635632	6931971	aquatic plant	Sedge/Cattail	-	16-Giant-S-6-AP	-	sediment	5	-
16-Giant-AP-7	-	23/9/2016	635696	6931974	aquatic plant	Sedge/Cattail	-	16-Giant-S-7-AP	-	sediment	2	-
16-Giant-AP-8	-	23/9/2016	635620	6931501	aquatic plant	Sedge/Cattail	-	16-Giant-S-8-AP	-	sediment	10	-
16-Giant-AP-8-BIO	-	23/9/2016	635620	6931501	aquatic plant	Sedge/Cattail	-	16-Giant-S-8-AP	-	sediment	10	-
16-Giant-AP-9	-	23/9/2016	635825	6931212	aquatic plant	Sedge/Cattail	-	16-Giant-S-9-AP	-	sediment	10	-
16-Giant-AP-10	-	23/9/2016	636001	6931231	aquatic plant	Sedge/Cattail	-	16-Giant-S-10-AP	-	sediment	5	-
16-Giant-AP-11	-	23/9/2016	634749	6934157	aquatic plant	Sedge/Cattail	-	16-Giant-S-11-AP	-	sediment	10	-
16-Giant-AP-11-BIO	-	23/9/2016	634749	6934157	aquatic plant	Sedge/Cattail	-	16-Giant-S-11-AP	-	sediment	10	-
16-Giant-AP-12	-	23/9/2016	634766	6934174	aquatic plant	Sedge/Cattail	-	16-Giant-S-12-AP	-	sediment	10	-
16-Giant-AP-13	-	23/9/2016	634800	6934177	aquatic plant	Sedge/Cattail	-	16-Giant-S-13-AP	-	sediment	5	-
16-Giant-AP-14	16-Giant-AP-14D	23/9/2016	634859	6934162	aquatic plant	Sedge/Cattail	-	16-Giant-S-14-AP	16-Giant-S-14D-AP	sediment	-	-
16-Giant-AP-14-BIO	-	23/9/2016	634859	6934162	aquatic plant	Sedge/Cattail	-	16-Giant-S-14-AP	16-Giant-S-14D-AP	sediment	-	-
16-Giant-AP-15	-	23/9/2016	634929	6934154	aquatic plant	Sedge/Cattail	-	16-Giant-S-15-AP	-	sediment	5	-
16-Giant-AP-16	-	23/9/2016	634969	6934184	aquatic plant	Sedge/Cattail	-	16-Giant-S-16-AP	-	sediment	15	-
16-Giant-AP-16-BIO	-	23/9/2016	634969	6934184	aquatic plant	Sedge/Cattail	-	16-Giant-S-16-AP	-	sediment	15	-
16-Giant-AP-17	-	23/9/2016	635066	6934189	aquatic plant	Sedge/Cattail	-	16-Giant-S-17-AP	-	sediment	15	-
16-Giant-AP-18	-	23/9/2016	635139	6934177	aquatic plant	Sedge/Cattail	-	16-Giant-S-18-AP	-	sediment	15	-
16-Giant-AP-19	-	23/9/2016	635150	6934156	aquatic plant	Sedge/Cattail	-	16-Giant-S-19-AP	-	sediment	10	-
16-Giant-AP-20	-	23/9/2016	635453	6934036	aquatic plant	Sedge/Cattail	-	16-Giant-S-20-AP	-	sediment	10	-
16-Giant-AP-21	-	23/9/2016	638032	6935008	aquatic plant	Sedge/Cattail	-	16-Giant-S-21-AP	-	sediment	5	-
16-Giant-AP-22	-	23/9/2016	638008	6934958	aquatic plant	Sedge/Cattail	-	16-Giant-S-22-AP	-	sediment	5	-
16-Giant-AP-23	16-Giant-AP-23-D	23/9/2016	638008	6934617	aquatic plant	Sedge/Cattail	-	16-Giant-S-23-AP	16-Giant-S-23D-AP	sediment	10	-
16-Giant-AP-23-BIO	-	23/9/2016	638008	6934617	aquatic plant	Sedge/Cattail	-	16-Giant-S-23-AP	16-Giant-S-23D-AP	sediment	10	-
16-Giant-AP-24	-	23/9/2016	637992	6934656	aquatic plant	Sedge/Cattail	-	16-Giant-S-24-AP	-	sediment	10	-
16-Giant-AP-25	-	23/9/2016	637965	6934690	aquatic plant	Sedge/Cattail	-	16-Giant-S-25-AP	-	sediment	10	-
16-Giant-AP-26	-	23/9/2016	637940	6934734	aquatic plant	Sedge/Cattail	-	16-Giant-S-26-AP	-	sediment	5	-
16-Giant-AP-27	-	23/9/2016	637855	6934849	aquatic plant	Sedge/Cattail	-	16-Giant-S-27-AP	-	sediment	10	-
16-Giant-AP-28	-	23/9/2016	637804	6934836	aquatic plant	Sedge/Cattail	-	16-Giant-S-28-AP	-	sediment	10	-
16-Giant-AP-29	-	23/9/2016	637812	6934887	aquatic plant	Sedge/Cattail	-	16-Giant-S-29-AP	-	sediment	10	-
16-Giant-AP-30	-	23/9/2016	637747	6934900	aquatic plant	Sedge/Cattail	-	16-Giant-S-30-AP	-	sediment	15	-

Notes:
(1) Some co-located samples are representative of several vegetation or tissue samples.
(2) Soil types: SA=Sand; PO=Peat/organic material; CL=Clay; SI=Silt; CO=Coarse (gravel).

Table 6: Shoreline Sediment Chemistry Results
Giant Mine HHERA Data Gaps

	Location	16-GIANT-S-01-AP	16-GIANT-S-02-AP	16-GIANT-S-03-AP	16-GIANT-S-03-D-AP	16-GIANT-S-04-AP	16-GIANT-S-05-AP	16-GIANT-S-06-AP	16-GIANT-S-07-AP	16-GIANT-S-08-AP	16-GIANT-S-09-AP	16-GIANT-S-10-AP	16-GIANT-S-11-AP	16-GIANT-S-12-AP	16-GIANT-S-13-AP	16-GIANT-S-14-AP	16-GIANT-S-14-D-AP	16-GIANT-S-15-AP	16-GIANT-S-16-AP
	Sample Name	16-GIANT-S-1-AP	16-GIANT-S-2-AP	16-GIANT-S-3-AP	16-GIANT-S-3-D-AP	16-GIANT-S-4-AP	16-GIANT-S-5-AP	16-GIANT-S-6-AP	16-GIANT-S-7-AP	16-GIANT-S-8-AP	16-GIANT-S-9-AP	16-GIANT-S-10-AP	16-GIANT-S-11-AP	16-GIANT-S-12-AP	16-GIANT-S-13-AP	16-GIANT-S-14-AP	16-GIANT-S-14-DUP-AP	16-GIANT-S-15-AP	16-GIANT-S-16-AP
	Sample Date	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016
	Laboratory Sample ID	L1844932-1	L1844932-2	L1844932-3	L1844932-4	L1844932-5	L1844932-6	L1844932-7	L1844932-8	L1844932-9	L1844932-10	L1844932-11	L1844932-12	L1844932-13	L1844932-14	L1844932-15	L1844932-16	L1844932-17	L1844932-18
	Parent Lab Sample ID				L1844932-3												L1844932-15		
	Sample Code	N	N	N	FD	N	N	N	N	N	N	N	N	N	N	N	FD	N	N
	Sample Type	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Parameter	**Unit**																		
Metals																			
Aluminum (Al)	mg/kg	18300	18200	25600	22600	19500	23200	20600	10500	19100	18800	21400	9450	12200	11000	9460	10500	11400	16800
Antimony (Sb)	mg/kg	53.2	265	4.28	3.07	7.77	20.1	36.8	66.5	340	20.3	88.3	6.93	0.89	5.78	11.7	8.16	7.06	3.09
Arsenic (As)	mg/kg	241	964	36.3	25.1	133	282	277	1080	1300	128	1150	229	143	240	313	216	33.6	65.1
Barium (Ba)	mg/kg	80.6	110	248	225	148	206	113	101	80.2	153	56.0	95.0	88.7	99.3	93.7	105	84.5	144
Beryllium (Be)	mg/kg	0.50	0.51	1.00	0.91	0.56	0.78	0.56	0.28	0.56	0.61	0.37	0.34	0.35	0.40	0.41	0.40	0.35	0.65
Bismuth (Bi)	mg/kg	0.26	0.23	0.29	0.28	0.24	0.28	0.21	< 0.20	0.30	0.27	0.23	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.23
Boron (B)	mg/kg	9.6	28.4	15.8	13.7	9.1	11.1	12.3	25.9	12.3	9.8	6.1	8.6	< 5.0	5.7	6.7	5.7	< 5.0	7.3
Cadmium (Cd)	mg/kg	0.166	0.902	0.163	0.157	0.138	0.190	0.436	1.67	1.46	0.179	0.525	0.225	0.070	0.169	0.224	0.187	0.054	0.158
Calcium (Ca)	mg/kg	5950	13600	5670	5210	12300	6740	8320	74300	8570	7830	9400	14800	7080	13800	11800	9710	7010	9430
Chromium (Cr)	mg/kg	55.4	47.6	51.4	47.9	49.4	52.6	50.2	29.3	48.5	49.7	47.7	22.8	29.2	25.5	22.4	24.3	28.8	39.8
Copper (Cu)	mg/kg	54.3	139	30.1	28.2	39.1	43.4	49.0	190	311	48.7	258	18.0	10.1	13.9	21.4	21.2	14.1	18.9
Cobalt (Co)	mg/kg	17.6	30.1	14.1	12.6	14.3	17.7	16.6	44.7	24.1	15.3	45.2	5.23	4.51	5.49	5.84	6.02	6.67	8.47
Iron (Fe)	mg/kg	27100	29400	30100	27500	27700	31900	29700	19500	30700	24900	41100	11500	12200	14800	13800	14600	11100	19000
Lead (Pb)	mg/kg	12.2	25.3	11.1	10.1	10.1	12.5	11.7	30.4	128	15.4	69.6	6.74	4.32	5.54	9.38	7.55	4.63	7.59
Lithium (Li)	mg/kg	32.0	29.0	42.6	40.2	32.4	37.0	32.1	15.9	29.6	33.3	28.6	17.3	21.6	21.0	14.1	13.9	19.3	33.8
Magnesium (Mg)	mg/kg	11000	11300	11400	10600	11800	12300	13000	9620	10700	10100	16500	5350	4650	4830	4610	5290	4510	6610
Manganese (Mn)	mg/kg	410	549	418	389	405	653	354	355	261	294	530	148	146	240	303	315	183	602
Mercury (Hg)	mg/kg	0.0162	0.0351	0.0152	0.0139	0.0193	0.0160	0.0253	0.0677	0.159	0.0238	0.104	0.0602	0.0148	0.126	0.0747	0.0684	0.0262	0.0263
Molybdenum (Mo)	mg/kg	1.06	10.5	0.75	0.68	0.94	1.37	1.79	4.33	3.95	1.27	1.04	1.11	0.36	0.93	2.61	1.85	1.59	0.83
Nickel (Ni)	mg/kg	46.8	73.8	35.8	32.4	35.0	42.7	42.9	39.3	82.3	38.5	73.6	15.0	14.8	15.0	16.7	17.5	15.6	22.7
Phosphorus (P)	mg/kg	556	843	600	575	698	583	547	600	547	522	515	792	672	746	803	730	439	585
Potassium (K)	mg/kg	3320	3450	5550	4720	3310	3900	2800	2050	2810	3900	1640	770	840	780	1110	1270	850	1860
Selenium (Se)	mg/kg	0.27	1.27	< 0.20	< 0.20	0.22	0.47	0.34	0.79	1.12	0.26	0.68	0.63	0.27	0.38	0.28	0.28	< 0.20	0.78
Silver (Ag)	mg/kg	0.21	0.70	0.15	0.13	0.11	0.23	0.20	0.88	2.26	0.25	1.94	0.11	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Sodium (Na)	mg/kg	622	1810	847	717	521	687	706	1100	669	720	245	321	225	275	352	357	164	259
Strontium (Sr)	mg/kg	35.5	88.0	62.4	59.4	41.8	55.7	53.8	111	62.9	45.3	27.3	66.1	28.9	63.1	55.3	46.4	31.8	52.0
Thallium (Tl)	mg/kg	0.165	0.230	0.272	0.261	0.180	0.239	0.166	0.173	0.236	0.195	0.111	0.072	0.092	0.099	0.115	0.108	0.112	0.155
Tin (Sn)	mg/kg	< 1.0	2.0	1.7	< 1.0	< 1.0	< 1.0	< 1.0	1.3	3.2	< 1.0	< 1.0	2.3	< 1.0	< 1.0	1.8	< 1.0	< 1.0	1.0
Titanium (Ti)	mg/kg	722	544	960	926	710	764	611	335	544	817	403	193	278	219	229	261	253	423
Uranium (U)	mg/kg	1.60	4.17	2.15	2.32	3.39	1.90	4.22	6.38	4.80	2.01	1.46	34.8	8.55	37.7	26.1	22.1	10.9	26.3
Vanadium (V)	mg/kg	51.4	51.9	56.8	53.0	54.8	60.9	60.1	29.6	51.2	51.2	80.8	19.9	23.8	20.4	23.4	25.4	25.9	35.2
Zinc (Zn)	mg/kg	82.3	151	73.0	67.0	74.0	81.4	82.0	203	300	73.9	198	40.4	26.3	32.8	40.5	39.9	30.7	39.4
Zirconium (Zr)	mg/kg	11.6	6.7	23.5	22.8	9.3	14.8	10.4	4.6	10.9	16.7	5.8	4.9	2.6	3.7	5.2	4.4	2.4	4.9

Notes:
< Indicates parameter was below laboratory equipment detection limit.
> Indicates parameter detected above equipment analytical range.
- Chemical not analyzed or criteria not defined.
N Indicates non-field-duplicate samples.
FD Indicates sample was a field duplicate.

Table 6: Shoreline Sediment Chemistry Results
Giant Mine HHERA Data Gaps

Parameter	Unit	16-GIANT-S-17-AP	16-GIANT-S-18-AP	16-GIANT-S-19-AP	16-GIANT-S-20-AP	16-GIANT-S-21-AP	16-GIANT-S-22-AP	16-GIANT-S-23-AP	16-GIANT-S-23-D-AP	16-GIANT-S-24-AP	16-GIANT-S-25-AP	16-GIANT-S-26-AP	16-GIANT-S-27-AP	16-GIANT-S-28-AP	16-GIANT-S-29-AP	16-GIANT-S-30-AP
Sample Name		16-GIANT-S-17-AP	16-GIANT-S-18-AP	16-GIANT-S-19-AP	16-GIANT-S-20-AP	16-GIANT-S-21-AP	16-GIANT-S-22-AP	16-GIANT-S-23-AP	16-GIANT-S-23-DUP-AP	16-GIANT-S-24-AP	16-GIANT-S-25-AP	16-GIANT-S-26-AP	16-GIANT-S-27-AP	16-GIANT-S-28-AP	16-GIANT-S-29-AP	16-GIANT-S-30-AP
Sample Date		23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016
Laboratory Sample ID		L1844932-19	L1844932-20	L1844932-21	L1844932-22	L1844932-23	L1844932-24	L1844932-25	L1844932-26	L1844932-27	L1844932-28	L1844932-29	L1844932-30	L1844932-31	L1844932-32	L1844932-33
Parent Lab Sample ID									L1844932-25							
Sample Code		N	N	N	N	N	N	N	FD	N	N	N	N	N	N	N
Sample Type		Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Metals																
Aluminum (Al)	mg/kg	16200	12000	11000	12500	11500	8850	12100	14800	13600	12900	10400	13900	16400	13400	15600
Antimony (Sb)	mg/kg	6.84	5.23	6.48	10.2	0.55	< 0.10	1.41	1.73	0.99	1.70	0.51	0.78	19.4	22.5	57.5
Arsenic (As)	mg/kg	145	88.2	83.6	440	16.8	6.17	37.5	60.3	15.8	15.2	14.6	40.8	126	206	689
Barium (Ba)	mg/kg	109	141	103	109	59.2	59.5	62.7	76.1	84.8	77.4	55.4	96.3	108	79.3	111
Beryllium (Be)	mg/kg	0.60	0.40	0.34	0.44	0.35	0.23	0.47	0.50	0.46	0.40	0.36	0.47	0.55	0.45	0.53
Bismuth (Bi)	mg/kg	0.21	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.22	< 0.20	< 0.20	< 0.20
Boron (B)	mg/kg	5.6	5.5	5.4	5.9	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	5.8	< 5.0	6.5	5.9
Cadmium (Cd)	mg/kg	0.033	0.122	0.085	0.171	0.077	0.036	0.173	0.209	0.083	0.149	0.059	0.100	0.114	0.163	0.116
Calcium (Ca)	mg/kg	3590	17600	12900	7780	3480	2860	3440	3550	2910	2930	2310	3640	3070	6190	3930
Chromium (Cr)	mg/kg	38.7	26.0	22.9	28.2	29.4	28.0	28.1	31.9	32.2	31.1	26.2	37.6	39.8	32.5	36.7
Copper (Cu)	mg/kg	14.7	13.6	14.3	16.3	16.1	18.8	22.4	27.3	16.2	19.8	10.4	23.5	69.2	56.7	105
Cobalt (Co)	mg/kg	9.36	7.53	6.45	7.21	5.22	6.09	6.96	8.19	5.77	5.60	5.54	7.50	8.31	8.35	7.90
Iron (Fe)	mg/kg	19900	13900	12100	15200	12800	13200	10600	12900	14000	14200	12900	16900	19300	15000	16400
Lead (Pb)	mg/kg	8.78	5.41	6.77	10.8	7.14	3.26	8.59	9.68	6.27	7.52	5.14	8.84	25.8	13.3	7.10
Lithium (Li)	mg/kg	26.1	21.1	19.4	22.4	18.4	16.8	20.0	19.9	19.6	16.8	18.0	26.9	24.5	21.2	23.8
Magnesium (Mg)	mg/kg	6250	5700	4530	5110	5170	4910	5170	5800	5560	5520	4620	6830	7240	6440	6700
Manganese (Mn)	mg/kg	575	1050	453	522	156	156	142	164	141	138	140	171	187	156	181
Mercury (Hg)	mg/kg	0.0338	0.0533	0.0504	0.0776	0.0106	< 0.0050	0.0177	0.0243	0.0133	0.0158	0.0070	0.0106	0.0118	0.0206	0.0109
Molybdenum (Mo)	mg/kg	1.07	0.77	0.75	1.15	0.44	0.60	0.82	0.86	0.48	0.53	0.31	0.43	0.60	2.86	1.26
Nickel (Ni)	mg/kg	20.9	15.4	14.0	18.1	16.7	17.3	22.5	27.0	18.1	17.8	14.6	22.6	27.1	26.0	26.3
Phosphorus (P)	mg/kg	373	581	526	734	519	551	596	693	488	526	447	515	467	598	463
Potassium (K)	mg/kg	1600	840	960	1370	1720	1790	1470	1770	1830	1720	1410	2020	1960	1690	2080
Selenium (Se)	mg/kg	< 0.20	0.91	0.26	0.33	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.25	0.24
Silver (Ag)	mg/kg	< 0.10	< 0.10	< 0.10	0.11	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.26	0.21	1.37
Sodium (Na)	mg/kg	189	168	183	184	258	300	222	257	239	253	194	283	259	456	254
Strontium (Sr)	mg/kg	20.8	56.5	51.6	36.4	19.0	8.55	22.8	24.9	21.4	20.4	14.5	43.3	22.7	32.8	25.3
Thallium (Tl)	mg/kg	0.127	0.081	0.085	0.117	0.106	0.094	0.105	0.124	0.125	0.121	0.094	0.141	0.151	0.119	0.149
Tin (Sn)	mg/kg	< 1.0	< 1.0	2.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.1	1.7	< 1.0	< 1.0
Titanium (Ti)	mg/kg	465	231	258	282	584	591	297	397	513	470	500	658	590	452	545
Uranium (U)	mg/kg	6.97	16.5	18.4	11.9	3.95	2.06	8.91	9.63	4.92	6.50	3.01	5.28	4.36	23.5	3.89
Vanadium (V)	mg/kg	42.1	23.9	22.4	25.5	30.4	28.7	31.9	38.1	32.9	33.1	26.7	38.7	40.8	34.5	39.8
Zinc (Zn)	mg/kg	33.2	29.3	24.3	53.9	36.3	26.6	42.1	47.3	38.8	39.3	31.9	46.3	97.8	88.7	155
Zirconium (Zr)	mg/kg	5.1	2.4	2.7	3.0	3.9	7.9	3.3	3.1	3.4	3.2	3.6	8.0	6.2	6.0	5.4

Notes:
< Indicates parameter was below labo
> Indicates parameter detected above
- Chemical not analyzed or criteria not
N Indicates non-field-duplicate sample
FD Indicates sample was a field duplic

Table 7: Aquatic Plant Chemistry Results
Giant Mine HHERA Data Gaps

	Location	16-GIANT-AP-01	16-GIANT-AP-02	16-GIANT-AP-03	16-GIANT-AP-03-D	16-GIANT-AP-04	16-GIANT-AP-05	16-GIANT-AP-06	16-GIANT-AP-07	16-GIANT-AP-08	16-GIANT-AP-09	16-GIANT-AP-10	16-GIANT-AP-11	16-GIANT-AP-12
	Sample Name	16-GIANT-AP-1	16-GIANT-AP-2	16-GIANT-AP-3	16-GIANT-AP-3-D	16-GIANT-AP-4	16-GIANT-AP-5	16-GIANT-AP-6	16-GIANT-AP-7	16-GIANT-AP-8	16-GIANT-AP-9	16-GIANT-AP-10	16-GIANT-AP-11	16-GIANT-AP-12
	Sample Date	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016
	Laboratory Sample ID	L1844974-1	L1844974-2	L1844974-3	L1844974-4	L1844974-5	L1844974-6	L1844974-7	L1844974-8	L1844974-9	L1844974-10	L1844974-11	L1844974-12	L1844974-13
	Parent Lab Sample ID				L1844974-3									
	Sample Type	N	N	N	FD	N	N	N	N	N	N	N	N	N
	Tissue Type	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants
Parameter	**Unit**													
1. Physical														
% Moisture	%	72.7	49.0	67.2	68.5	61.9	52.8	54.3	49.7	50.1	53.9	50.6	49.0	42.4
2. Metals														
Aluminum (Al)-Total	mg/kg dry	806	47.4	28.6	23.3	67.3	34.6	60.1	139	85.5	27.9	48.3	5.8	7.9
Aluminum (Al)-Total	mg/kg wet	220	24.2	9.38	7.34	25.6	16.4	27.4	69.7	42.7	12.8	23.9	2.93	4.55
Antimony (Sb)-Total	mg/kg dry	24.2	2.86	0.892	0.636	3.46	1.30	0.826	0.309	0.613	0.332	0.865	0.027	0.025
Antimony (Sb)-Total	mg/kg wet	6.60	1.46	0.292	0.200	1.32	0.615	0.378	0.155	0.306	0.153	0.428	0.0140	0.0142
Arsenic (As)-Total	mg/kg dry	146	11.2	5.59	4.29	10.8	7.49	5.37	11.4	3.27	2.99	16.0	4.07	1.20
Arsenic (As)-Total	mg/kg wet	39.9	5.71	1.83	1.35	4.12	3.54	2.45	5.73	1.63	1.38	7.93	2.07	0.693
Barium (Ba)-Total	mg/kg dry	11.0	11.6	3.52	3.18	8.52	18.0	9.89	12.3	11.7	13.3	12.3	18.5	15.6
Barium (Ba)-Total	mg/kg wet	3.01	5.91	1.16	1.00	3.25	8.50	4.52	6.19	5.82	6.12	6.10	9.43	9.02
Beryllium (Be)-Total	mg/kg dry	0.022	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Beryllium (Be)-Total	mg/kg wet	0.0060	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Bismuth (Bi)-Total	mg/kg dry	0.013	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Bismuth (Bi)-Total	mg/kg wet	0.0037	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Boron (B)-Total	mg/kg dry	30.2	36.8	12.2	7.8	13.8	29.1	23.7	36.6	26.3	26.6	28.2	11.8	12.8
Boron (B)-Total	mg/kg wet	8.25	18.8	3.98	2.46	5.24	13.7	10.8	18.4	13.1	12.3	14.0	5.99	7.39
Cadmium (Cd)-Total	mg/kg dry	0.0917	0.0313	0.0092	< 0.0050	0.0366	0.0394	0.0258	0.0153	0.0499	0.0137	0.0271	< 0.0050	< 0.0050
Cadmium (Cd)-Total	mg/kg wet	0.0250	0.0159	0.0030	0.0011	0.0139	0.0186	0.0118	0.0077	0.0249	0.0063	0.0134	< 0.0010	< 0.0010
Calcium (Ca)-Total	mg/kg dry	15300	7170	6280	5570	8270	9600	8820	9520	8130	5740	8130	4700	5960
Calcium (Ca)-Total	mg/kg wet	4170	3650	2060	1750	3150	4540	4030	4790	4060	2640	4020	2400	3440
Cesium (Cs)-Total	mg/kg dry	0.120	0.0069	0.0107	0.0096	0.0220	0.0068	0.0097	0.0131	0.0101	< 0.0050	0.0081	0.133	0.0878
Cesium (Cs)-Total	mg/kg wet	0.0326	0.0035	0.0035	0.0030	0.0084	0.0032	0.0044	0.0066	0.0050	0.0020	0.0040	0.0679	0.0506
Chromium (Cr)-Total	mg/kg dry	2.52	0.169	0.116	0.095	0.255	0.118	0.176	0.592	0.316	0.079	0.131	< 0.050	< 0.050
Chromium (Cr)-Total	mg/kg wet	0.687	0.086	0.038	0.030	0.097	0.056	0.081	0.298	0.158	0.036	0.065	< 0.010	0.022
Cobalt (Co)-Total	mg/kg dry	5.49	0.285	0.099	0.107	0.650	0.434	0.130	0.273	0.127	0.067	0.520	< 0.020	< 0.020
Cobalt (Co)-Total	mg/kg wet	1.50	0.145	0.0324	0.0338	0.247	0.205	0.0592	0.137	0.0631	0.0306	0.257	0.0078	0.0081
Copper (Cu)-Total	mg/kg dry	17.7	3.99	2.92	2.94	4.01	2.06	2.87	1.40	2.68	2.10	3.17	0.55	0.36
Copper (Cu)-Total	mg/kg wet	4.82	2.03	0.955	0.926	1.53	0.972	1.31	0.706	1.34	0.966	1.57	0.278	0.208
Iron (Fe)-Total	mg/kg dry	1970	175	91.6	77.6	162	97.6	121	271	185	80.1	149	66.2	54.0
Iron (Fe)-Total	mg/kg wet	536	89.2	30.0	24.4	61.6	46.1	55.5	136	92.5	36.9	73.5	33.7	31.1
Lead (Pb)-Total	mg/kg dry	2.39	0.169	0.069	0.059	0.173	0.075	0.070	0.232	0.271	0.064	0.194	< 0.020	< 0.020
Lead (Pb)-Total	mg/kg wet	0.652	0.0861	0.0227	0.0187	0.0661	0.0356	0.0319	0.116	0.135	0.0296	0.0960	0.0083	0.0109
Lithium (Li)-Total	mg/kg dry	2.51	< 0.50	0.69	0.50	0.65	1.15	0.55	0.84	< 0.50	0.86	0.69	< 0.50	0.70
Lithium (Li)-Total	mg/kg wet	0.69	0.21	0.22	0.16	0.25	0.54	0.25	0.42	0.21	0.39	0.34	0.13	0.40
Magnesium (Mg)-Total	mg/kg dry	4310	1970	2650	2370	2430	2130	2030	1550	2300	1180	1590	2380	3480
Magnesium (Mg)-Total	mg/kg wet	1180	1010	868	745	925	1010	925	781	1150	544	785	1220	2000
Manganese (Mn)-Total	mg/kg dry	563	200	158	123	158	504	439	318	285	571	231	146	151
Manganese (Mn)-Total	mg/kg wet	154	102	51.9	38.7	60.2	238	200	160	142	263	114	74.3	86.9
Mercury (Hg)-Total	mg/kg dry	0.0065	0.0061	< 0.0050	< 0.0050	0.0078	< 0.0050	< 0.0050	0.0052	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Mercury (Hg)-Total	mg/kg wet	0.0018	0.0031	0.0015	0.0013	0.0030	0.0022	0.0021	0.0026	0.0024	0.0022	0.0023	0.0024	0.0028
Molybdenum (Mo)-Total	mg/kg dry	5.43	0.574	0.705	0.565	2.37	1.11	1.05	0.178	0.204	2.31	1.76	0.283	0.151
Molybdenum (Mo)-Total	mg/kg wet	1.48	0.293	0.231	0.178	0.904	0.524	0.480	0.0897	0.102	1.07	0.872	0.144	0.0868
Nickel (Ni)-Total	mg/kg dry	10.6	1.02	0.63	0.74	4.67	0.94	0.31	0.61	0.71	0.36	0.89	< 0.20	< 0.20
Nickel (Ni)-Total	mg/kg wet	2.89	0.518	0.207	0.232	1.78	0.443	0.142	0.308	0.356	0.164	0.440	< 0.040	< 0.040
Phosphorus (P)-Total	mg/kg dry	1910	477	1390	1450	988	876	1430	651	752	920	735	969	999
Phosphorus (P)-Total	mg/kg wet	520	243	455	456	376	414	652	327	375	424	363	494	576
Potassium (K)-Total	mg/kg dry	26000	6840	12900	15600	9360	5940	8190	9090	7690	10800	5540	3460	2940
Potassium (K)-Total	mg/kg wet	7110	3490	4240	4930	3570	2810	3740	4570	3840	4990	2740	1760	1690
Rubidium (Rb)-Total	mg/kg dry	5.39	0.941	6.54	7.24	6.49	0.828	1.64	0.617	1.15	1.10	1.60	6.26	3.42
Rubidium (Rb)-Total	mg/kg wet	1.47	0.480	2.14	2.28	2.47	0.391	0.750	0.310	0.574	0.507	0.792	3.19	1.97
Selenium (Se)-Total	mg/kg dry	0.331	0.219	0.078	0.067	0.052	0.109	0.061	< 0.050	< 0.050	0.085	0.087	< 0.050	< 0.050
Selenium (Se)-Total	mg/kg wet	0.090	0.112	0.025	0.021	0.020	0.051	0.028	0.016	0.022	0.039	0.043	< 0.010	< 0.010
Silver (Ag)-Total	mg/kg dry	0.105	< 0.0050	< 0.0050	< 0.0050	0.0073	0.0055	< 0.0050	< 0.0050	0.0208	< 0.0050	0.0249	< 0.0050	< 0.0050
Silver (Ag)-Total	mg/kg wet	0.0287	0.0020	< 0.0010	< 0.0010	0.0028	0.0026	0.0013	0.0020	0.0104	0.0018	0.0123	< 0.0010	< 0.0010
Sodium (Na)-Total	mg/kg dry	10600	1360	433	390	2850	1830	839	1350	776	1720	856	1140	1120

Table 7: Aquatic Plant Chemistry Results
Giant Mine HHERA Data Gaps

Parameter	Unit													
	Location	16-GIANT-AP-13	16-GIANT-AP-14	16-GIANT-AP-14-D	16-GIANT-AP-15	16-GIANT-AP-16	16-GIANT-AP-17	16-GIANT-AP-18	16-GIANT-AP-19	16-GIANT-AP-20	16-GIANT-AP-21	16-GIANT-AP-22	16-GIANT-AP-23	16-GIANT-AP-23-D
	Sample Name	16-GIANT-AP-13	16-GIANT-AP-14	16-GIANT-AP-14-D	16-GIANT-AP-15	16-GIANT-AP-16	16-GIANT-AP-17	16-GIANT-AP-18	16-GIANT-AP-19	16-GIANT-AP-20	16-GIANT-AP-21	16-GIANT-AP-22	16-GIANT-AP-23	16-GIANT-AP-23-DUP
	Sample Date	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016
	Laboratory Sample ID	L1844974-14	L1844974-15	L1844974-16	L1844974-17	L1844974-18	L1844974-19	L1844974-20	L1844974-21	L1844974-22	L1844974-23	L1844974-24	L1844974-25	L1844974-26
	Parent Lab Sample ID			L1844974-15										L1844974-25
	Sample Type	N	N	FD	N	N	N	N	N	N	N	N	N	FD
	Tissue Type	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants
1. Physical														
% Moisture	%	36.1	49.7	43.2	51.4	53.7	61.9	56.9	70.9	45.1	49.8	62.7	47.3	56.1
2. Metals														
Aluminum (Al)-Total	mg/kg dry	6.8	6.6	7.8	14.6	70.4	11.8	13.5	18.2	16.7	28.5	39.0	14.4	20.0
Aluminum (Al)-Total	mg/kg wet	4.33	3.30	4.42	7.11	32.6	4.48	5.82	5.28	9.19	14.3	14.5	7.61	8.76
Antimony (Sb)-Total	mg/kg dry	0.032	0.027	0.039	0.084	0.056	0.099	0.082	0.147	0.034	< 0.010	< 0.010	< 0.010	< 0.010
Antimony (Sb)-Total	mg/kg wet	0.0204	0.0135	0.0221	0.0408	0.0257	0.0375	0.0352	0.0427	0.0185	0.0033	< 0.0020	< 0.0020	< 0.0020
Arsenic (As)-Total	mg/kg dry	1.20	1.70	1.69	4.89	3.07	12.3	12.3	20.6	1.83	1.03	0.362	0.662	0.917
Arsenic (As)-Total	mg/kg wet	0.769	0.855	0.958	2.37	1.42	4.70	5.28	5.99	1.01	0.515	0.135	0.349	0.402
Barium (Ba)-Total	mg/kg dry	18.6	25.8	30.7	22.0	57.1	34.8	18.7	32.2	118	31.2	87.1	36.5	45.3
Barium (Ba)-Total	mg/kg wet	11.9	13.0	17.4	10.7	26.4	13.2	8.05	9.38	64.6	15.7	32.5	19.2	19.9
Beryllium (Be)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Beryllium (Be)-Total	mg/kg wet	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0026	0.0033
Bismuth (Bi)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Bismuth (Bi)-Total	mg/kg wet	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Boron (B)-Total	mg/kg dry	9.0	13.2	15.6	10.6	13.1	14.0	6.6	7.4	21.0	18.5	22.7	14.4	18.3
Boron (B)-Total	mg/kg wet	5.77	6.67	8.86	5.14	6.06	5.33	2.83	2.16	11.5	9.27	8.45	7.61	8.01
Cadmium (Cd)-Total	mg/kg dry	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0061	0.0196	0.0064	0.0405	0.0164	< 0.0050	0.0054	0.0089	0.0140
Cadmium (Cd)-Total	mg/kg wet	< 0.0010	0.0011	< 0.0010	< 0.0010	0.0028	0.0075	0.0028	0.0118	0.0090	0.0010	0.0020	0.0047	0.0061
Calcium (Ca)-Total	mg/kg dry	4640	7060	7970	4700	6080	6750	4190	3970	9390	6670	8490	5990	7750
Calcium (Ca)-Total	mg/kg wet	2960	3550	4520	2280	2810	2570	1810	1150	5150	3350	3170	3150	3400
Cesium (Cs)-Total	mg/kg dry	0.166	0.0728	0.121	0.0994	0.106	0.0111	0.0172	0.0078	0.186	0.0051	0.0121	0.0988	0.115
Cesium (Cs)-Total	mg/kg wet	0.106	0.0367	0.0688	0.0483	0.0489	0.0042	0.0074	0.0023	0.102	0.0026	0.0045	0.0520	0.0503
Chromium (Cr)-Total	mg/kg dry	< 0.050	< 0.050	< 0.050	0.076	0.181	< 0.050	< 0.050	0.080	0.057	0.069	0.143	< 0.050	0.073
Chromium (Cr)-Total	mg/kg wet	0.018	0.014	0.026	0.037	0.084	0.017	0.015	0.023	0.031	0.035	0.053	0.018	0.032
Cobalt (Co)-Total	mg/kg dry	< 0.020	< 0.020	< 0.020	0.049	0.097	0.120	0.127	0.178	0.054	0.026	0.081	0.741	1.32
Cobalt (Co)-Total	mg/kg wet	0.0089	0.0099	0.0103	0.0239	0.0450	0.0458	0.0549	0.0519	0.0295	0.0128	0.0302	0.390	0.579
Copper (Cu)-Total	mg/kg dry	0.50	0.61	0.56	0.59	1.95	3.71	1.23	3.77	2.19	1.25	1.29	1.44	2.48
Copper (Cu)-Total	mg/kg wet	0.317	0.308	0.318	0.285	0.902	1.41	0.531	1.10	1.20	0.629	0.480	0.761	1.09
Iron (Fe)-Total	mg/kg dry	48.4	72.1	74.1	150	146	127	160	339	57.1	86.9	101	215	408
Iron (Fe)-Total	mg/kg wet	30.9	36.3	42.1	72.7	67.7	48.2	69.1	98.5	31.3	43.6	37.6	113	179
Lead (Pb)-Total	mg/kg dry	< 0.020	< 0.020	< 0.020	0.031	0.052	0.028	0.024	0.073	0.054	0.029	0.040	0.030	0.057
Lead (Pb)-Total	mg/kg wet	0.0090	0.0068	0.0104	0.0151	0.0241	0.0108	0.0103	0.0213	0.0298	0.0147	0.0149	0.0159	0.0252
Lithium (Li)-Total	mg/kg dry	< 0.50	1.03	1.11	< 0.50	< 0.50	0.60	< 0.50	0.52	< 0.50	< 0.50	0.77	< 0.50	0.60
Lithium (Li)-Total	mg/kg wet	0.32	0.52	0.63	0.11	0.21	0.23	0.17	0.15	0.12	< 0.10	0.29	0.25	0.26
Magnesium (Mg)-Total	mg/kg dry	2410	2770	2820	1480	2940	1480	1320	1080	2000	1130	1370	1500	1940
Magnesium (Mg)-Total	mg/kg wet	1540	1390	1600	720	1360	563	570	313	1100	566	510	792	851
Manganese (Mn)-Total	mg/kg dry	187	486	350	344	750	760	544	1050	1580	183	666	195	255
Manganese (Mn)-Total	mg/kg wet	120	245	199	167	347	289	234	304	868	91.6	248	103	112
Mercury (Hg)-Total	mg/kg dry	0.0063	0.0065	0.0072	< 0.0050	< 0.0050	0.0061	0.0074	< 0.0050	0.0067	< 0.0050	0.0054	0.0057	0.0071
Mercury (Hg)-Total	mg/kg wet	0.0040	0.0033	0.0041	0.0022	0.0023	0.0023	0.0032	0.0014	0.0037	0.0019	0.0020	0.0030	0.0031
Molybdenum (Mo)-Total	mg/kg dry	0.229	0.865	0.563	0.440	8.57	3.72	1.23	1.02	0.929	3.57	1.33	0.567	0.749
Molybdenum (Mo)-Total	mg/kg wet	0.146	0.435	0.320	0.214	3.97	1.42	0.532	0.295	0.510	1.79	0.497	0.298	0.328
Nickel (Ni)-Total	mg/kg dry	< 0.20	< 0.20	< 0.20	< 0.20	0.22	0.33	< 0.20	0.76	0.27	< 0.20	0.49	1.16	1.73
Nickel (Ni)-Total	mg/kg wet	< 0.040	< 0.040	< 0.040	0.041	0.102	0.127	< 0.040	0.221	0.149	0.069	0.183	0.612	0.760
Phosphorus (P)-Total	mg/kg dry	1000	720	680	370	964	1500	1290	1410	703	490	788	1120	1260
Phosphorus (P)-Total	mg/kg wet	639	363	386	180	446	572	557	409	386	246	294	588	554
Potassium (K)-Total	mg/kg dry	7470	6370	6480	9410	10300	10900	7480	12000	6190	10100	10300	13300	15100
Potassium (K)-Total	mg/kg wet	4780	3210	3680	4570	4790	4140	3220	3490	3400	5070	3820	7020	6630
Rubidium (Rb)-Total	mg/kg dry	11.9	7.48	9.53	19.3	12.1	7.90	8.50	5.84	14.9	1.27	4.28	20.0	24.5
Rubidium (Rb)-Total	mg/kg wet	7.61	3.77	5.41	9.38	5.59	3.01	3.66	1.70	8.17	0.636	1.59	10.6	10.7
Selenium (Se)-Total	mg/kg dry	< 0.050	< 0.050	< 0.050	< 0.050	0.061	< 0.050	0.053	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Selenium (Se)-Total	mg/kg wet	< 0.010	< 0.010	< 0.010	< 0.010	0.028	0.015	0.023	0.014	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Silver (Ag)-Total	mg/kg dry	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0096	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Silver (Ag)-Total	mg/kg wet	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0017	< 0.0010	0.0028	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Sodium (Na)-Total	mg/kg dry	284	231	303	52	187	201	137	233	36	< 20	< 20	80	199

Table 7: Aquatic Plant Chemistry Results
Giant Mine HHERA Data Gaps

	Location	16-GIANT-AP-24	16-GIANT-AP-25	16-GIANT-AP-26	16-GIANT-AP-27	16-GIANT-AP-28	16-GIANT-AP-29	16-GIANT-AP-30
	Sample Name	16-GIANT-AP-24	16-GIANT-AP-25	16-GIANT-AP-26	16-GIANT-AP-27	16-GIANT-AP-28	16-GIANT-AP-29	16-GIANT-AP-30
	Sample Date	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016
	Laboratory Sample ID	L1844974-27	L1844974-28	L1844974-29	L1844974-30	L1844974-31	L1844974-32	L1844974-33
	Parent Lab Sample ID							
	Sample Type	N	N	N	N	N	N	N
	Tissue Type	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants
Parameter	**Unit**							
1. Physical								
% Moisture	%	47.0	51.5	43.9	62.5	64.1	48.2	58.2
2. Metals								
Aluminum (Al)-Total	mg/kg dry	30.4	13.3	19.2	150	17.7	15.5	40.8
Aluminum (Al)-Total	mg/kg wet	16.1	6.45	10.8	56.1	6.36	8.01	17.0
Antimony (Sb)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	0.018	0.060	0.165
Antimony (Sb)-Total	mg/kg wet	0.0030	< 0.0020	0.0032	0.0032	0.0065	0.0312	0.0689
Arsenic (As)-Total	mg/kg dry	0.360	0.554	0.448	0.546	2.49	3.37	15.5
Arsenic (As)-Total	mg/kg wet	0.191	0.268	0.251	0.205	0.896	1.75	6.49
Barium (Ba)-Total	mg/kg dry	37.5	37.1	46.9	31.1	29.5	23.6	22.4
Barium (Ba)-Total	mg/kg wet	19.9	18.0	26.3	11.7	10.6	12.2	9.35
Beryllium (Be)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Beryllium (Be)-Total	mg/kg wet	< 0.0020	0.0021	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Bismuth (Bi)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Bismuth (Bi)-Total	mg/kg wet	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Boron (B)-Total	mg/kg dry	24.7	16.5	8.4	18.9	9.5	21.0	11.1
Boron (B)-Total	mg/kg wet	13.1	8.01	4.72	7.07	3.41	10.9	4.66
Cadmium (Cd)-Total	mg/kg dry	0.0110	0.0102	0.0137	0.0119	0.0095	0.0063	0.0168
Cadmium (Cd)-Total	mg/kg wet	0.0058	0.0049	0.0077	0.0045	0.0034	0.0033	0.0070
Calcium (Ca)-Total	mg/kg dry	6120	5200	4420	6060	6010	6630	5290
Calcium (Ca)-Total	mg/kg wet	3240	2520	2480	2270	2160	3430	2210
Cesium (Cs)-Total	mg/kg dry	0.0336	0.0290	0.0365	0.0338	0.104	0.0140	0.0418
Cesium (Cs)-Total	mg/kg wet	0.0178	0.0141	0.0205	0.0127	0.0375	0.0072	0.0175
Chromium (Cr)-Total	mg/kg dry	0.103	0.070	0.075	0.345	0.073	0.082	0.183
Chromium (Cr)-Total	mg/kg wet	0.055	0.034	0.042	0.129	0.026	0.043	0.076
Cobalt (Co)-Total	mg/kg dry	0.359	0.330	0.164	0.143	0.161	0.094	0.240
Cobalt (Co)-Total	mg/kg wet	0.190	0.160	0.0923	0.0538	0.0577	0.0485	0.100
Copper (Cu)-Total	mg/kg dry	2.09	2.16	2.20	1.74	3.06	1.30	2.46
Copper (Cu)-Total	mg/kg wet	1.11	1.05	1.23	0.651	1.10	0.672	1.03
Iron (Fe)-Total	mg/kg dry	183	117	84.6	259	100	88.5	623
Iron (Fe)-Total	mg/kg wet	97.3	56.5	47.5	97.1	36.0	45.8	260
Lead (Pb)-Total	mg/kg dry	0.062	0.032	0.040	0.168	0.068	0.021	0.106
Lead (Pb)-Total	mg/kg wet	0.0331	0.0157	0.0225	0.0629	0.0245	0.0107	0.0444
Lithium (Li)-Total	mg/kg dry	< 0.50	< 0.50	0.72	0.55	< 0.50	< 0.50	< 0.50
Lithium (Li)-Total	mg/kg wet	< 0.10	0.10	0.40	0.21	< 0.10	0.17	0.11
Magnesium (Mg)-Total	mg/kg dry	1720	1360	1420	1710	1640	1280	1580
Magnesium (Mg)-Total	mg/kg wet	909	657	800	642	588	664	660
Manganese (Mn)-Total	mg/kg dry	224	177	293	136	544	400	211
Manganese (Mn)-Total	mg/kg wet	119	85.8	164	50.9	196	207	88.1
Mercury (Hg)-Total	mg/kg dry	< 0.0050	0.0052	0.0068	< 0.0050	0.0056	< 0.0050	0.0051
Mercury (Hg)-Total	mg/kg wet	0.0026	0.0025	0.0038	0.0013	0.0020	0.0021	0.0021
Molybdenum (Mo)-Total	mg/kg dry	0.356	0.730	0.767	0.862	1.72	0.886	0.919
Molybdenum (Mo)-Total	mg/kg wet	0.189	0.354	0.431	0.323	0.618	0.459	0.384
Nickel (Ni)-Total	mg/kg dry	0.48	1.03	0.48	0.39	0.78	< 0.20	0.45
Nickel (Ni)-Total	mg/kg wet	0.254	0.499	0.268	0.148	0.282	0.081	0.187
Phosphorus (P)-Total	mg/kg dry	883	1300	767	539	1070	837	779
Phosphorus (P)-Total	mg/kg wet	468	628	431	202	386	434	326
Potassium (K)-Total	mg/kg dry	9590	12300	7760	10500	11000	8240	8490
Potassium (K)-Total	mg/kg wet	5080	5960	4360	3950	3960	4270	3550
Rubidium (Rb)-Total	mg/kg dry	10.2	9.24	7.75	6.64	15.5	2.60	7.74
Rubidium (Rb)-Total	mg/kg wet	5.39	4.48	4.35	2.49	5.56	1.35	3.24
Selenium (Se)-Total	mg/kg dry	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Selenium (Se)-Total	mg/kg wet	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Silver (Ag)-Total	mg/kg dry	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0051	< 0.0050	0.0107
Silver (Ag)-Total	mg/kg wet	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0018	< 0.0010	0.0045
Sodium (Na)-Total	mg/kg dry	51	< 20	51	77	183	287	69

Table 7: Aquatic Plant Chemistry Results
Giant Mine HHERA Data Gaps

	Location	16-GIANT-AP-01	16-GIANT-AP-02	16-GIANT-AP-03	16-GIANT-AP-03-D	16-GIANT-AP-04	16-GIANT-AP-05	16-GIANT-AP-06	16-GIANT-AP-07	16-GIANT-AP-08	16-GIANT-AP-09	16-GIANT-AP-10	16-GIANT-AP-11	16-GIANT-AP-12
	Sample Name	16-GIANT-AP-1	16-GIANT-AP-2	16-GIANT-AP-3	16-GIANT-AP-3-D	16-GIANT-AP-4	16-GIANT-AP-5	16-GIANT-AP-6	16-GIANT-AP-7	16-GIANT-AP-8	16-GIANT-AP-9	16-GIANT-AP-10	16-GIANT-AP-11	16-GIANT-AP-12
	Sample Date	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016
	Laboratory Sample ID	L1844974-1	L1844974-2	L1844974-3	L1844974-4	L1844974-5	L1844974-6	L1844974-7	L1844974-8	L1844974-9	L1844974-10	L1844974-11	L1844974-12	L1844974-13
	Parent Lab Sample ID				L1844974-3									
	Sample Type	N	N	N	FD	N	N	N	N	N	N	N	N	N
	Tissue Type	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants
Parameter	**Unit**													
Sodium (Na)-Total	mg/kg wet	2880	692	142	123	1080	866	384	680	387	791	423	580	643
Strontium (Sr)-Total	mg/kg dry	152	78.5	51.3	47.4	125	86.9	77.7	32.3	44.7	54.4	60.5	15.4	20.8
Strontium (Sr)-Total	mg/kg wet	41.4	40.0	16.8	14.9	47.5	41.1	35.5	16.2	22.3	25.0	29.9	7.86	12.0
Tellurium (Te)-Total	mg/kg dry	< 0.020	< 0.020	0.020	< 0.020	< 0.020	< 0.020	< 0.020	0.024	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Tellurium (Te)-Total	mg/kg wet	< 0.0040	0.0053	0.0066	< 0.0040	< 0.0040	0.0079	0.0079	0.0123	< 0.0040	0.0089	< 0.0040	< 0.0040	< 0.0040
Thallium (Tl)-Total	mg/kg dry	0.0147	< 0.0020	< 0.0020	< 0.0020	0.0026	0.0033	0.0028	0.0024	< 0.0020	< 0.0020	< 0.0020	0.0021	< 0.0020
Thallium (Tl)-Total	mg/kg wet	0.00400	0.00083	< 0.00040	< 0.00040	0.00097	0.00158	0.00128	0.00118	0.00088	< 0.00040	0.00086	0.00106	0.00076
Tin (Sn)-Total	mg/kg dry	0.26	< 0.10	< 0.10	< 0.10	0.11	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Tin (Sn)-Total	mg/kg wet	0.070	0.041	0.030	< 0.020	0.041	0.031	< 0.020	< 0.020	< 0.020	< 0.020	0.021	< 0.020	< 0.020
Uranium (U)-Total	mg/kg dry	0.435	0.0881	0.0031	0.0025	0.119	0.129	0.0190	0.0286	0.0093	0.0076	0.0289	< 0.0020	0.0031
Uranium (U)-Total	mg/kg wet	0.119	0.0449	0.00101	0.00078	0.0453	0.0611	0.00869	0.0144	0.00466	0.00351	0.0143	0.00087	0.00178
Vanadium (V)-Total	mg/kg dry	3.00	0.22	0.12	< 0.10	0.26	0.15	0.18	0.52	0.31	< 0.10	0.16	< 0.10	< 0.10
Vanadium (V)-Total	mg/kg wet	0.819	0.110	0.039	0.031	0.101	0.070	0.083	0.263	0.156	0.045	0.080	< 0.020	< 0.020
Zinc (Zn)-Total	mg/kg dry	40.7	32.7	22.6	21.5	21.0	22.9	14.6	11.5	56.5	25.1	18.2	10.4	8.62
Zinc (Zn)-Total	mg/kg wet	11.1	16.7	7.41	6.77	8.00	10.8	6.69	5.80	28.2	11.6	9.00	5.28	4.97
Zirconium (Zr)-Total	mg/kg dry	0.70	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zirconium (Zr)-Total	mg/kg wet	0.190	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	0.051	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040

Notes:

< Indicates parameter was below laboratory equipment detection limit.
> Indicates parameter detected above equipment analytical range.
- Chemical not analyzed or criteria not defined.
N Indicates non-field-duplicate samples.
FD Indicates sample was a field duplicate.

Table 7: Aquatic Plant Chemistry Results
Giant Mine HHERA Data Gaps

	Location	16-GIANT-AP-13	16-GIANT-AP-14	16-GIANT-AP-14-D	16-GIANT-AP-15	16-GIANT-AP-16	16-GIANT-AP-17	16-GIANT-AP-18	16-GIANT-AP-19	16-GIANT-AP-20	16-GIANT-AP-21	16-GIANT-AP-22	16-GIANT-AP-23	16-GIANT-AP-23-D
	Sample Name	16-GIANT-AP-13	16-GIANT-AP-14	16-GIANT-AP-14-D	16-GIANT-AP-15	16-GIANT-AP-16	16-GIANT-AP-17	16-GIANT-AP-18	16-GIANT-AP-19	16-GIANT-AP-20	16-GIANT-AP-21	16-GIANT-AP-22	16-GIANT-AP-23	16-GIANT-AP-23-DUP
	Sample Date	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016
	Laboratory Sample ID	L1844974-14	L1844974-15	L1844974-16	L1844974-17	L1844974-18	L1844974-19	L1844974-20	L1844974-21	L1844974-22	L1844974-23	L1844974-24	L1844974-25	L1844974-26
	Parent Lab Sample ID			L1844974-15										L1844974-25
	Sample Type	N	N	FD	N	N	N	N	N	N	N	N	N	FD
	Tissue Type	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants
Parameter	**Unit**													
Sodium (Na)-Total	mg/kg wet	182	116	172	25.3	86.7	76.3	58.9	67.8	20.0	6.8	4.1	42.0	87.5
Strontium (Sr)-Total	mg/kg dry	18.4	23.5	26.3	20.0	34.8	20.7	15.5	14.8	44.1	15.4	28.3	26.6	35.9
Strontium (Sr)-Total	mg/kg wet	11.8	11.8	14.9	9.72	16.1	7.90	6.67	4.31	24.2	7.73	10.6	14.0	15.8
Tellurium (Te)-Total	mg/kg dry	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Tellurium (Te)-Total	mg/kg wet	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Thallium (Tl)-Total	mg/kg dry	< 0.0020	< 0.0020	0.0030	< 0.0020	0.0133	0.0021	0.0034	0.0042	0.0089	< 0.0020	0.0025	0.0038	0.0063
Thallium (Tl)-Total	mg/kg wet	0.00124	0.00093	0.00170	0.00078	0.00616	0.00082	0.00147	0.00121	0.00486	0.00046	0.00094	0.00201	0.00277
Tin (Sn)-Total	mg/kg dry	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Tin (Sn)-Total	mg/kg wet	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Uranium (U)-Total	mg/kg dry	0.0039	0.0024	0.0020	0.0062	0.0509	0.0331	0.0403	0.0581	0.0028	0.0113	0.0065	0.0047	0.0149
Uranium (U)-Total	mg/kg wet	0.00249	0.00121	0.00116	0.00302	0.0236	0.0126	0.0173	0.0169	0.00153	0.00568	0.00244	0.00249	0.00654
Vanadium (V)-Total	mg/kg dry	< 0.10	< 0.10	< 0.10	< 0.10	0.16	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.14	< 0.10	< 0.10
Vanadium (V)-Total	mg/kg wet	< 0.020	< 0.020	< 0.020	0.027	0.076	< 0.020	0.020	0.024	0.029	0.038	0.051	< 0.020	0.034
Zinc (Zn)-Total	mg/kg dry	7.58	15.8	11.8	9.84	19.0	17.3	7.38	18.3	36.4	16.2	7.59	11.4	15.7
Zinc (Zn)-Total	mg/kg wet	4.85	7.95	6.73	4.78	8.78	6.60	3.18	5.32	20.0	8.14	2.83	5.98	6.89
Zirconium (Zr)-Total	mg/kg dry	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zirconium (Zr)-Total	mg/kg wet	< 0.040	0.071	< 0.040	< 0.040	0.048	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040

Notes:
< Indicates parameter was below laboratoı
> Indicates parameter detected above equ
- Chemical not analyzed or criteria not defiı
N Indicates non-field-duplicate samples.
FD Indicates sample was a field duplicate.

Table 7: Aquatic Plant Chemistry Results
Giant Mine HHERA Data Gaps

	Location	16-GIANT-AP-24	16-GIANT-AP-25	16-GIANT-AP-26	16-GIANT-AP-27	16-GIANT-AP-28	16-GIANT-AP-29	16-GIANT-AP-30
	Sample Name	16-GIANT-AP-24	16-GIANT-AP-25	16-GIANT-AP-26	16-GIANT-AP-27	16-GIANT-AP-28	16-GIANT-AP-29	16-GIANT-AP-30
	Sample Date	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016
	Laboratory Sample ID	L1844974-27	L1844974-28	L1844974-29	L1844974-30	L1844974-31	L1844974-32	L1844974-33
	Parent Lab Sample ID							
	Sample Type	N	N	N	N	N	N	N
	Tissue Type	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants	Aquatic Plants
Parameter	**Unit**							
Sodium (Na)-Total	mg/kg wet	26.8	9.6	28.7	28.8	65.9	149	29.0
Strontium (Sr)-Total	mg/kg dry	30.3	26.8	19.5	58.2	26.7	29.9	19.3
Strontium (Sr)-Total	mg/kg wet	16.0	13.0	10.9	21.8	9.61	15.5	8.05
Tellurium (Te)-Total	mg/kg dry	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Tellurium (Te)-Total	mg/kg wet	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Thallium (Tl)-Total	mg/kg dry	0.0036	0.0059	0.0141	0.0040	0.0090	< 0.0020	0.0044
Thallium (Tl)-Total	mg/kg wet	0.00192	0.00287	0.00793	0.00148	0.00324	0.00056	0.00186
Tin (Sn)-Total	mg/kg dry	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Tin (Sn)-Total	mg/kg wet	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Uranium (U)-Total	mg/kg dry	0.0316	0.0063	0.0179	0.104	0.0268	0.0074	0.0205
Uranium (U)-Total	mg/kg wet	0.0168	0.00306	0.0101	0.0389	0.00962	0.00383	0.00857
Vanadium (V)-Total	mg/kg dry	0.11	< 0.10	< 0.10	0.35	0.11	< 0.10	0.25
Vanadium (V)-Total	mg/kg wet	0.060	0.022	0.032	0.132	0.039	0.030	0.106
Zinc (Zn)-Total	mg/kg dry	21.9	13.5	14.2	13.7	22.6	21.2	41.3
Zinc (Zn)-Total	mg/kg wet	11.6	6.54	7.96	5.15	8.14	11.0	17.3
Zirconium (Zr)-Total	mg/kg dry	< 0.20	< 0.20	< 0.20	0.30	< 0.20	< 0.20	< 0.20
Zirconium (Zr)-Total	mg/kg wet	0.043	< 0.040	< 0.040	0.111	< 0.040	< 0.040	< 0.040

Notes:
< Indicates parameter was below laborato
> Indicates parameter detected above equ
- Chemical not analyzed or criteria not defi
N Indicates non-field-duplicate samples.
FD Indicates sample was a field duplicate.

Table 8: Results for Arsenic Bioaccessibility in Vegetation
Giant Mine HHERA Data Gaps

Sample ID	BA conc dw (mg/kg)	Plant conc dw (mg/kg)	%BA	LOD BA conc (mg/kg)	LOD % BA	% Moisture
16-Giant-AL-BIO-01	0.7	1.6	44	0.064	4.0	60
16-Giant-CB-13-BIO *	2.4	5.5	44	0.061	1.1	63
16-Giant-CR-15-BIO	0.5	0.94	56	0.038	4.0	44
16-Giant-AL-19-BIO	0.60	1.4	43	0.074	5.3	74
16-Giant-CR-51-BIO	4.6	12	38	0.046	0.38	55
16-Giant-AL-51-BIO	2.2	15	14	0.043	0.29	54
16-Giant-CR-59-BIO	10	35	28	0.035	0.10	45
16-Giant-AL-60-BIO	1.1	5.9	19	0.041	0.69	51
16-Giant-AL-61-BIO	0.87	3.5	25	0.053	1.5	62
16-Giant-CR-61-BIO	1.4	5.9	24	0.034	0.58	41
16-Giant-AP-8-BIO	12	13	89	0.063	0.48	71
16-Giant-AP-11-BIO	2.5	2.4	102	0.041	1.7	52
16-Giant-AP-16-BIO	1.0	0.86	118	0.023	2.6	11
16-Giant-AP-23-BIO	0.29	<0.5	NC	0.063	NC	68
16-Giant-AP-3-BIO *	3.2	3.8	83	0.042	1.1	52

Notes:
dw - dry weight
* - Average of the duplicate pair (BA conc) reported
NC - not calculated because As not detected in sample
CR/CB: Cranberry leaves; AL: alder leavesl; AP: aquatic plants
BA conc = concentration of bioaccessible element in soil
%BA = % bioaccessibility = 100% x bioaccessible As/total As;
LOD = limit of detection; LOD % BA = (LOD for bioaccess As Conc)/Total As * 100%.

Table 9: Co-located Soil Chemistry
Giant Mine HHERA Data Gaps

	Location	16-GIANT-S-01	16-GIANT-S-02	16-GIANT-S-03A	16-GIANT-S-03B	16-GIANT-S-03B-D	16-GIANT-S-04	16-GIANT-S-05	16-GIANT-S-06	16-GIANT-S-07	16-GIANT-S-08	16-GIANT-S-09	16-GIANT-S-10	16-GIANT-S-11	16-GIANT-S-12	16-GIANT-S-13	16-GIANT-S-14
	Sample Name	16-GIANT-S-01	16-GIANT-S-02	16-GIANT-S-03A	16-GIANT-S-03B	16-GIANT-S-03B-DUP	16-GIANT-S-04	16-GIANT-S-05	16-GIANT-S-06	16-GIANT-S-07	16-GIANT-S-08	16-GIANT-S-09	16-GIANT-S-10	16-GIANT-S-11	16-GIANT-S-12	16-GIANT-S-13	16-GIANT-S-14
	Sample Date	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	08/09/2016	08/09/2016
	Laboratory Sample ID	L1842861-1	L1842861-2	L1842861-3	L1842861-4	L1842861-5	L1842861-6	L1842861-7	L1842861-8	L1842861-9	L1842861-10	L1842861-11	L1842861-12	L1842861-13	L1842861-14	L1842861-15	L1842861-16
	Parent Lab Sample ID					L1842861-4											
	Sample Code	N	N	N	N	FD	N	N	N	N	N	N	N	N	N	N	N
	Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Parameter	**Unit**																
Metals																	
Aluminum (Al)	mg/kg	8860	4570	1050	5670	5510	3540	6760	10900	12000	3660	10400	8420	7470	9160	1660	2900
Antimony (Sb)	mg/kg	4.53	31.7	19.5	44.5	41.1	26.8	92.0	72.9	13.5	65.4	28.1	14.7	88.2	28.2	7.39	10.7
Arsenic (As)	mg/kg	104	204	213	151	136	137	419	533	371	311	499	362	658	484	71.1	38.2
Barium (Ba)	mg/kg	55.2	145	49.9	112	103	137	127	140	137	112	117	65.7	95.1	56.7	112	59.6
Beryllium (Be)	mg/kg	0.18	< 0.20	< 0.10	0.25	0.23	< 0.20	0.39	0.51	0.49	0.16	0.30	0.28	0.25	0.31	< 0.20	< 0.20
Bismuth (Bi)	mg/kg	< 0.20	< 0.40	< 0.20	< 0.20	< 0.20	< 0.40	< 0.20	< 0.20	0.24	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.40	< 0.40
Boron (B)	mg/kg	< 5.0	< 10	7.8	9.7	9.9	11	6.7	7.6	5.5	11.5	< 5.0	< 5.0	< 5.0	< 5.0	< 10	15
Cadmium (Cd)	mg/kg	0.116	0.468	0.244	0.359	0.328	0.226	0.422	0.619	0.307	0.524	0.215	0.088	0.303	0.067	0.401	0.136
Calcium (Ca)	mg/kg	5150	27900	17700	18600	18900	25700	18700	16300	8070	25100	3100	7240	8270	3420	10900	28200
Chromium (Cr)	mg/kg	27.6	8.5	2.54	12.9	12.3	10.1	12.3	18.4	22.6	7.13	22.1	22.2	18.5	23.2	2.7	4.0
Copper (Cu)	mg/kg	13.6	17.6	8.09	19.4	18.3	19.9	25.6	28.1	20.3	30.7	13.9	12.1	14.6	9.14	16.2	16.5
Cobalt (Co)	mg/kg	4.38	8.49	0.98	6.03	5.35	5.78	5.94	11.9	7.84	9.14	7.61	5.05	5.89	5.37	1.02	0.91
Iron (Fe)	mg/kg	15100	5330	2110	8300	7820	7400	10500	15700	16200	6420	15600	12200	10900	12300	1690	2400
Lead (Pb)	mg/kg	5.57	12.6	2.99	18.7	41.9	20.1	43.0	39.8	12.4	27.6	10.1	10.0	25.4	12.1	2.5	2.3
Lithium (Li)	mg/kg	15.4	< 4.0	< 2.0	7.8	7.5	< 4.0	5.1	12.3	23.4	3.1	12.1	18.3	15.8	19.7	< 4.0	< 4.0
Magnesium (Mg)	mg/kg	4700	4630	2550	5480	5240	3650	3950	5340	4310	3840	3410	4190	3790	3860	2650	3060
Manganese (Mn)	mg/kg	110	982	23.6	326	284	341	333	704	375	631	1240	858	1060	549	26.3	9.0
Mercury (Hg)	mg/kg	0.0352	0.156	0.119	0.166	0.152	0.142	0.309	0.204	0.0623	0.366	0.0757	0.0857	0.167	0.0717	0.079	0.073
Molybdenum (Mo)	mg/kg	1.02	1.05	1.58	1.48	1.48	0.30	0.91	0.63	0.92	3.69	1.11	0.42	0.78	0.89	1.54	24.3
Nickel (Ni)	mg/kg	14.2	13.8	4.21	14.4	13.6	9.5	18.4	21.7	17.3	11.6	15.6	12.7	13.9	12.7	6.3	4.3
Phosphorus (P)	mg/kg	255	970	466	1030	912	870	815	937	503	793	264	401	415	306	630	990
Potassium (K)	mg/kg	750	760	400	2140	2080	1120	1230	2190	1310	790	520	700	750	690	980	480
Selenium (Se)	mg/kg	0.23	< 0.40	0.53	0.21	0.22	< 0.40	0.31	0.33	0.32	0.49	< 0.20	< 0.20	0.23	< 0.20	< 0.40	0.59
Silver (Ag)	mg/kg	< 0.10	< 0.20	< 0.10	0.18	0.18	< 0.20	0.31	0.28	0.18	0.28	0.20	0.11	0.24	0.10	< 0.20	< 0.20
Sodium (Na)	mg/kg	79	210	169	261	263	< 100	297	339	184	257	106	133	103	112	140	250
Strontium (Sr)	mg/kg	22.0	108	61.7	74.9	73.6	22.9	52.4	49.8	38.5	92.5	14.2	19.7	36.0	16.9	92.1	177
Thallium (Tl)	mg/kg	0.067	< 0.10	< 0.050	0.055	0.055	< 0.10	0.051	0.081	0.085	< 0.050	0.111	0.070	0.078	0.076	< 0.10	< 0.10
Tin (Sn)	mg/kg	< 1.0	< 2.0	< 1.0	1.1	39.8	2.1	1.2	< 1.0	< 1.0	3.9	< 1.0	< 1.0	1.2	< 1.0	< 2.0	< 2.0
Titanium (Ti)	mg/kg	269	79.5	19.2	129	121	136	106	145	288	54.8	301	263	189	245	40.1	60.9
Uranium (U)	mg/kg	0.774	1.22	1.39	1.62	1.54	0.37	1.23	2.05	11.9	3.35	1.54	4.57	5.84	5.51	5.97	15.5
Vanadium (V)	mg/kg	27.0	11.6	4.28	16.4	15.1	11.9	18.8	24.4	29.8	16.0	30.9	20.3	17.3	21.8	4.05	6.47
Zinc (Zn)	mg/kg	19.4	40.8	14.9	35.8	35.7	73.3	48.2	76.3	57.3	61.3	28.3	30.6	51.2	26.4	45.6	6.7
Zirconium (Zr)	mg/kg	1.5	< 2.0	< 1.0	3.5	3.5	< 2.0	2.7	2.2	2.0	1.1	1.0	1.1	1.5	1.3	< 2.0	3.9

Notes:
< Indicates parameter was below laboratory equipment detection limit.
> Indicates parameter detected above equipment analytical range.
- Chemical not analyzed or criteria not defined.
N Indicates non-field-duplicate samples.
FD Indicates sample was a field duplicate.

Table 9: Co-located Soil Chemistry
Giant Mine HHERA Data Gaps

Parameter	Unit	16-GIANT-S-15	16-GIANT-S-16	16-GIANT-S-17	16-GIANT-S-18	16-GIANT-S-19	16-GIANT-S-20	16-GIANT-S-21	16-GIANT-S-22	16-GIANT-S-23
Location		16-GIANT-S-15	16-GIANT-S-16	16-GIANT-S-17	16-GIANT-S-18	16-GIANT-S-19	16-GIANT-S-20	16-GIANT-S-21	16-GIANT-S-22	16-GIANT-S-23
Sample Name		16-GIANT-S-15	16-GIANT-S-16	16-GIANT-S-17	16-GIANT-S-18	16-GIANT-S-19	16-GIANT-S-20	16-GIANT-S-21	16-GIANT-S-22	16-GIANT-S-23
Sample Date		08/09/2016	08/09/2016	08/09/2016	08/09/2016	08/09/2016	08/09/2016	08/09/2016	07/09/2016	08/09/2016
Laboratory Sample ID		L1842861-17	L1842861-18	L1842861-19	L1842861-20	L1842861-21	L1842861-22	L1842861-23	L1842861-24	L1842861-25
Parent Lab Sample ID										
Sample Code		N	N	N	N	N	N	N	N	N
Sample Type		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Metals										
Aluminum (Al)	mg/kg	6090	702	4400	8310	11000	2650	9990	6510	19500
Antimony (Sb)	mg/kg	14.5	30.1	12.3	2.17	1.53	6.16	6.22	38.1	8.36
Arsenic (As)	mg/kg	108	195	115	75.0	71.9	27.8	511	396	107
Barium (Ba)	mg/kg	119	50.1	57.2	15.8	63.5	31.1	149	91.9	166
Beryllium (Be)	mg/kg	0.30	< 0.10	0.14	0.23	0.36	< 0.20	0.30	0.31	0.87
Bismuth (Bi)	mg/kg	< 0.20	< 0.20	< 0.20	< 0.20	0.20	< 0.40	< 0.20	< 0.20	0.29
Boron (B)	mg/kg	8.9	17.8	< 5.0	< 5.0	< 5.0	15	< 5.0	11.1	10.8
Cadmium (Cd)	mg/kg	0.281	0.146	0.141	< 0.020	0.032	0.532	0.074	0.260	0.064
Calcium (Ca)	mg/kg	27800	22400	6740	360	2330	44200	5040	28500	5030
Chromium (Cr)	mg/kg	10.1	1.39	12.7	24.6	31.0	4.5	27.4	14.3	40.1
Copper (Cu)	mg/kg	19.0	7.75	11.3	6.73	14.1	135	9.56	23.8	23.3
Cobalt (Co)	mg/kg	5.61	1.02	3.67	5.91	6.15	9.22	7.44	4.38	10.2
Iron (Fe)	mg/kg	7120	1360	6420	12200	14500	2610	20700	8900	25100
Lead (Pb)	mg/kg	5.32	5.10	5.71	3.33	5.20	1.7	7.45	12.8	11.1
Lithium (Li)	mg/kg	4.5	< 2.0	6.8	19.3	22.7	< 4.0	19.4	9.2	36.2
Magnesium (Mg)	mg/kg	4060	2230	2770	2880	4870	2150	6320	3520	8630
Manganese (Mn)	mg/kg	209	108	79.0	63.6	128	384	4240	386	277
Mercury (Hg)	mg/kg	0.118	0.127	0.106	0.0097	0.0076	0.074	0.0329	0.217	0.0376
Molybdenum (Mo)	mg/kg	0.44	1.32	0.85	0.51	0.26	0.48	1.04	0.99	0.51
Nickel (Ni)	mg/kg	14.0	2.92	9.87	13.3	16.7	29.3	15.4	12.3	26.5
Phosphorus (P)	mg/kg	897	563	509	104	433	730	384	908	404
Potassium (K)	mg/kg	840	250	920	300	890	470	660	650	4240
Selenium (Se)	mg/kg	0.75	0.26	< 0.20	< 0.20	< 0.20	3.24	< 0.20	0.81	0.22
Silver (Ag)	mg/kg	0.11	< 0.10	< 0.10	< 0.10	< 0.10	< 0.20	< 0.10	0.19	0.12
Sodium (Na)	mg/kg	222	166	79	< 50	158	< 100	114	115	420
Strontium (Sr)	mg/kg	108	59.2	22.6	2.11	8.82	44.6	24.4	65.7	39.7
Thallium (Tl)	mg/kg	< 0.050	< 0.050	< 0.050	< 0.050	0.093	< 0.10	0.076	0.061	0.235
Tin (Sn)	mg/kg	< 1.0	1.4	< 1.0	< 1.0	< 1.0	< 2.0	2.3	< 1.0	1.2
Titanium (Ti)	mg/kg	83.6	9.4	145	284	458	27.5	266	129	667
Uranium (U)	mg/kg	2.29	0.238	0.477	0.508	1.57	0.92	5.87	10.5	3.36
Vanadium (V)	mg/kg	11.6	2.61	11.4	24.8	29.3	5.43	30.1	13.9	46.1
Zinc (Zn)	mg/kg	23.4	37.0	17.3	16.6	28.8	42.6	37.6	20.4	48.8
Zirconium (Zr)	mg/kg	3.7	< 1.0	1.3	1.8	6.9	< 2.0	< 1.0	2.5	23.0

Parameter	Unit	16-GIANT-S-24	16-GIANT-S-25	16-GIANT-S-26	16-GIANT-S-27	16-GIANT-S-28	16-GIANT-S-40	16-GIANT-S-41	16-GIANT-S-41-D	16-GIANT-S-42
Location		16-GIANT-S-24	16-GIANT-S-25	16-GIANT-S-26	16-GIANT-S-27	16-GIANT-S-28	16-GIANT-S-40	16-GIANT-S-41	16-GIANT-S-41-D	16-GIANT-S-42
Sample Name		16-GIANT-S-24	16-GIANT-S-25	16-GIANT-S-26	16-GIANT-S-27	16-GIANT-S-28	16-GIANT-S-40	16-GIANT-S-41	16-GIANT-S-41-DUP	16-GIANT-S-42
Sample Date		08/09/2016	08/09/2016	08/09/2016	08/09/2016	08/09/2016	09/09/2016	09/09/2016	09/09/2016	09/09/2016
Laboratory Sample ID		L1842861-26	L1842861-27	L1842861-28	L1842861-29	L1842861-30	L1842861-31	L1842861-32	L1842861-33	L1842861-34
Parent Lab Sample ID									L1842861-32	
Sample Code		N	N	N	N	N	N	N	FD	N
Sample Type		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Metals										
Aluminum (Al)	mg/kg	12700	11700	5440	14900	14100	13100	8010	8490	14000
Antimony (Sb)	mg/kg	60.3	17.3	38.1	1.94	10.1	14.7	75.0	62.6	9.28
Arsenic (As)	mg/kg	793	669	198	72.0	327	328	623	547	327
Barium (Ba)	mg/kg	80.6	46.0	140	95.5	80.0	75.7	183	140	71.9
Beryllium (Be)	mg/kg	0.43	0.30	< 0.20	0.51	0.39	0.24	< 0.20	< 0.20	0.29
Bismuth (Bi)	mg/kg	0.23	< 0.20	< 0.40	0.29	< 0.20	< 0.20	< 0.40	< 0.40	0.37
Boron (B)	mg/kg	< 5.0	< 5.0	< 10	5.0	< 5.0	< 5.0	< 10	< 10	5.2
Cadmium (Cd)	mg/kg	0.139	0.266	0.561	0.034	0.053	0.219	0.557	0.482	0.214
Calcium (Ca)	mg/kg	4250	3540	43600	5840	6250	5450	13400	12900	9030
Chromium (Cr)	mg/kg	37.1	24.3	10.5	43.2	41.0	38.3	23.0	23.7	44.7
Copper (Cu)	mg/kg	21.4	13.3	37.0	26.3	14.1	19.7	36.3	33.3	20.6
Cobalt (Co)	mg/kg	8.39	6.62	4.35	8.35	9.08	19.9	26.3	22.6	21.3
Iron (Fe)	mg/kg	18800	17700	5130	19400	18200	24200	12100	12900	22400
Lead (Pb)	mg/kg	19.4	8.65	6.8	5.66	7.22	19.7	61.3	60.9	28.6
Lithium (Li)	mg/kg	21.3	19.3	4.3	33.8	28.1	26.7	8.1	8.9	40.7
Magnesium (Mg)	mg/kg	5640	4470	3980	6770	6590	7670	5230	5530	6910
Manganese (Mn)	mg/kg	157	138	416	195	264	568	1340	1090	1080
Mercury (Hg)	mg/kg	0.228	0.0917	0.133	0.0144	0.0191	0.0734	0.262	0.281	0.0618
Molybdenum (Mo)	mg/kg	0.90	0.58	0.61	0.56	0.52	0.60	0.47	0.50	1.06
Nickel (Ni)	mg/kg	23.3	15.3	16.4	26.5	21.9	31.5	28.9	27.1	24.2
Phosphorus (P)	mg/kg	321	185	710	558	316	353	920	920	448
Potassium (K)	mg/kg	1240	590	300	1500	1050	610	810	770	1340
Selenium (Se)	mg/kg	0.29	< 0.20	1.22	< 0.20	< 0.20	< 0.20	< 0.40	< 0.40	< 0.20
Silver (Ag)	mg/kg	0.26	< 0.10	< 0.20	< 0.10	< 0.10	0.13	0.28	0.31	0.12
Sodium (Na)	mg/kg	177	86	< 100	237	211	62	140	130	129
Strontium (Sr)	mg/kg	15.9	9.98	56.1	17.6	14.8	14.7	34.8	33.6	19.1
Thallium (Tl)	mg/kg	0.100	0.101	< 0.10	0.170	0.102	0.088	< 0.10	< 0.10	0.130
Tin (Sn)	mg/kg	< 1.0	1.0	< 2.0	< 1.0	1.1	1.3	2.7	< 2.0	< 1.0
Titanium (Ti)	mg/kg	374	229	83.3	585	497	284	189	135	510
Uranium (U)	mg/kg	3.11	0.965	3.88	2.66	3.67	0.457	0.44	0.43	0.746
Vanadium (V)	mg/kg	33.5	41.7	11.2	38.6	34.5	45.0	29.4	29.2	45.5
Zinc (Zn)	mg/kg	36.5	33.5	91.6	33.6	38.6	64.6	66.1	64.4	125
Zirconium (Zr)	mg/kg	2.5	1.7	< 2.0	12.0	3.7	1.3	< 2.0	< 2.0	1.4

Notes:
< Indicates parameter was below labora
> Indicates parameter detected above e
- Chemical not analyzed or criteria not d
N Indicates non-field-duplicate samples.
FD Indicates sample was a field duplicat

Table 9: Co-located Soil Chemistry
Giant Mine HHERA Data Gaps

	Location	16-GIANT-S-43	16-GIANT-S-44	16-GIANT-S-45	16-GIANT-S-46	16-GIANT-S-47	16-GIANT-S-48	16-GIANT-S-49	16-GIANT-S-50A	16-GIANT-S-50B	16-GIANT-S-51	16-GIANT-S-51-D	16-GIANT-S-52	16-GIANT-S-53	16-GIANT-S-53-D	16-GIANT-S-54	16-GIANT-S-55	16-GIANT-S-56	16-GIANT-S-57
	Sample Name	16-GIANT-S-43	16-GIANT-S-44	16-GIANT-S-45	16-GIANT-S-46	16-GIANT-S-47	16-GIANT-S-48	16-GIANT-S-49	16-GIANT-S-50A	16-GIANT-S-50B	16-GIANT-S-51	16-GIANT-S-51-DUP	16-GIANT-S-52	16-GIANT-S-53	16-GIANT-S-53-DUP	16-GIANT-S-54	16-GIANT-S-55	16-GIANT-S-56	16-GIANT-S-57
	Sample Date	09/09/2016	09/09/2016	09/09/2016	09/09/2016	09/09/2016	09/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016
	Laboratory Sample ID	L1842861-35	L1842861-36	L1842861-37	L1842861-38	L1842861-39	L1842861-40	L1842861-41	L1842861-43	L1842861-42	L1842861-44	L1842861-45	L1842861-46	L1842861-47	L1842861-48	L1842861-49	L1842861-50	L1842861-51	L1842861-52
	Parent Lab Sample ID											L1842861-44			L1842861-47				
	Sample Code	N	N	N	N	N	N	N	N	N	N	FD	N	N	FD	N	N	N	N
	Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Parameter	**Unit**																		
Metals																			
Aluminum (Al)	mg/kg	10100	3140	6730	4020	12200	12200	20700	22800	19900	23500	23400	14300	17300	15700	16500	15100	17800	6290
Antimony (Sb)	mg/kg	17.5	10.3	21.7	9.47	20.2	15.0	1.43	9.09	2.79	42.9	48.7	39.2	50.0	58.2	13.8	9.19	28.9	0.94
Arsenic (As)	mg/kg	347	84.7	60.9	65.8	480	283	18.3	292	58.6	1500	1480	839	1120	1260	525	240	604	50.7
Barium (Ba)	mg/kg	74.0	25.1	83.7	89.7	102	72.5	188	182	174	189	189	94.3	71.3	75.9	94.1	62.5	85.5	20.2
Beryllium (Be)	mg/kg	0.21	< 0.10	0.29	0.17	0.24	0.25	0.84	0.92	0.93	0.92	0.89	0.33	0.31	0.29	0.49	0.37	0.49	0.15
Bismuth (Bi)	mg/kg	0.25	< 0.20	< 0.20	< 0.20	0.39	< 0.20	0.38	0.33	0.31	0.30	0.29	< 0.20	< 0.20	< 0.20	0.21	0.20	0.23	< 0.20
Boron (B)	mg/kg	< 5.0	8.5	8.3	6.2	< 5.0	8.1	11.9	9.5	14.8	7.6	7.8	< 5.0	< 5.0	5.5	< 5.0	< 5.0	< 5.0	< 5.0
Cadmium (Cd)	mg/kg	0.356	0.408	0.487	0.420	0.335	0.545	0.193	0.197	0.105	0.679	0.745	0.205	0.784	0.954	0.190	0.085	0.203	< 0.020
Calcium (Ca)	mg/kg	11500	16500	25300	25200	7980	10500	8090	12200	5910	15300	15300	6340	10500	13000	6630	4000	6660	519
Chromium (Cr)	mg/kg	30.3	10.5	15.7	16.5	41.0	45.3	52.7	47.5	43.1	44.5	43.6	38.0	40.6	37.6	45.9	46.2	37.6	20.0
Copper (Cu)	mg/kg	25.0	22.9	31.6	22.8	47.6	75.9	30.8	25.3	23.9	58.0	57.3	20.8	40.0	42.3	24.8	16.8	21.9	2.46
Cobalt (Co)	mg/kg	16.5	4.00	3.65	5.43	16.0	25.5	12.6	12.2	10.7	17.6	17.0	12.3	37.0	36.6	17.3	12.2	8.82	4.37
Iron (Fe)	mg/kg	18700	5890	8560	7120	25100	21500	28900	26600	26700	29800	28700	23100	27800	26000	22300	23300	21400	11800
Lead (Pb)	mg/kg	47.2	20.0	28.9	12.2	148	39.4	9.75	10.9	12.1	36.8	38.5	19.2	67.4	69.4	10.2	10.3	15.8	3.11
Lithium (Li)	mg/kg	24.3	4.4	8.9	3.3	23.1	17.5	45.2	36.1	38.8	27.8	26.3	22.6	29.8	25.6	22.9	32.7	26.7	20.0
Magnesium (Mg)	mg/kg	6430	3060	3500	3050	8980	8240	11900	8070	9540	9890	9520	7050	9850	8960	6810	8030	6170	3050
Manganese (Mn)	mg/kg	1490	117	116	271	341	517	425	312	356	855	886	493	966	1000	596	293	181	96.1
Mercury (Hg)	mg/kg	0.118	0.131	0.0857	1.30	0.0728	0.124	0.0102	0.0288	0.0173	0.180	0.262	0.121	0.244	0.306	0.0467	0.0381	0.115	< 0.0050
Molybdenum (Mo)	mg/kg	0.73	1.33	0.76	0.93	0.75	0.44	0.55	0.40	0.45	0.53	0.53	0.40	0.38	0.40	0.36	0.48	0.38	0.57
Nickel (Ni)	mg/kg	23.3	9.75	13.9	13.0	30.9	30.0	33.7	28.6	28.0	43.0	42.3	26.4	37.5	37.5	28.7	27.1	23.5	9.42
Phosphorus (P)	mg/kg	409	840	819	886	512	618	582	232	478	831	852	308	348	414	331	244	360	< 50
Potassium (K)	mg/kg	1010	1220	800	400	650	760	5200	2100	5050	2620	2540	650	730	720	960	1520	1180	260
Selenium (Se)	mg/kg	< 0.20	< 0.20	0.41	0.74	< 0.20	0.42	< 0.20	0.34	< 0.20	0.36	0.39	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.20	< 0.20
Silver (Ag)	mg/kg	0.26	0.14	0.18	0.11	0.25	0.24	0.12	< 0.10	0.16	0.47	0.56	0.18	0.31	0.32	0.10	< 0.10	< 0.10	< 0.10
Sodium (Na)	mg/kg	123	115	239	71	84	82	590	343	528	223	215	71	66	67	168	151	128	< 50
Strontium (Sr)	mg/kg	22.9	27.5	45.9	77.7	9.62	16.2	36.1	30.4	48.9	33.1	33.1	11.6	18.4	20.7	19.3	11.9	18.4	2.21
Thallium (Tl)	mg/kg	0.092	< 0.050	0.076	< 0.050	0.080	0.058	0.274	0.170	0.257	0.161	0.166	0.073	0.113	0.109	0.124	0.099	0.140	< 0.050
Tin (Sn)	mg/kg	< 1.0	< 1.0	2.8	< 1.0	2.2	< 1.0	1.1	1.1	1.8	1.2	1.1	< 1.0	< 1.0	1.0	1.0	< 1.0	< 1.0	< 1.0
Titanium (Ti)	mg/kg	375	67.8	119	76.1	306	164	863	566	744	376	376	284	358	319	494	460	406	274
Uranium (U)	mg/kg	0.601	0.311	1.47	3.79	1.30	1.42	2.13	1.54	1.89	4.61	4.53	0.650	0.709	0.716	2.00	4.68	1.72	0.417
Vanadium (V)	mg/kg	39.6	15.9	20.4	13.9	51.8	43.2	54.4	50.4	47.4	46.7	46.0	42.4	51.1	45.6	44.8	47.5	39.6	29.4
Zinc (Zn)	mg/kg	116	67.2	25.6	32.0	148	197	63.9	46.7	58.5	86.1	87.9	67.4	304	284	49.4	38.1	42.2	13.9
Zirconium (Zr)	mg/kg	1.8	< 1.0	2.8	1.5	1.2	1.3	23.1	12.3	24.9	4.1	3.2	2.1	1.7	1.5	2.5	3.6	2.4	2.2

Notes:
< Indicates parameter was below labora
> Indicates parameter detected above e
- Chemical not analyzed or criteria not d
N Indicates non-field-duplicate samples.
FD Indicates sample was a field duplicat

Table 9: Co-located Soil Chemistry
Giant Mine HHERA Data Gaps

Location		16-GIANT-S-58	16-GIANT-S-59	16-GIANT-S-60	16-GIANT-S-61	16-GIANT-S-70	16-GIANT-S-71	16-GIANT-S-73	16-GIANT-S-74	16-GIANT-S-75	16-GIANT-S-76	16-GIANT-S-77	16-GIANT-S-78	16-GIANT-S-79	16-GIANT-S-80	16-GIANT-S-81
Sample Name		16-GIANT-S-58	16-GIANT-S-59	16-GIANT-S-60	16-GIANT-S-61	16-GIANT-S-70	16-GIANT-S-71	16-GIANT-S-73	16-GIANT-S-74	16-GIANT-S-75	16-GIANT-S-76	16-GIANT-S-77	16-GIANT-S-78	16-GIANT-S-79	16-GIANT-S-80	16-GIANT-S-81
Sample Date		10/09/2016	10/09/2016	10/09/2016	10/09/2016	11/09/2016	11/09/2016	11/09/2016	11/09/2016	11/09/2016	11/09/2016	11/09/2016	11/09/2016	11/09/2016	11/09/2016	11/09/2016
Laboratory Sample ID		L1842861-53	L1842861-54	L1842861-55	L1842861-56	L1842861-57	L1842861-58	L1842861-59	L1842861-60	L1842861-61	L1842861-62	L1842861-63	L1842861-64	L1842861-65	L1842861-66	L1842861-67
Parent Lab Sample ID																
Sample Code		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sample Type		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Parameter	**Unit**															
Metals																
Aluminum (Al)	mg/kg	14200	19600	10800	2530	10600	4680	7240	9590	13700	10800	13100	19400	21200	10400	6630
Antimony (Sb)	mg/kg	14.7	1.29	30.7	27.5	170	91.3	138	111	20.0	5.31	5.30	1.77	2.87	57.6	45.1
Arsenic (As)	mg/kg	254	123	366	184	2080	785	1780	1360	453	118	111	69.4	50.8	742	404
Barium (Ba)	mg/kg	32.2	153	126	21.5	48.4	45.8	99.0	133	209	94.3	24.1	55.3	192	66.4	189
Beryllium (Be)	mg/kg	0.23	0.74	0.23	< 0.10	0.10	< 0.10	0.15	0.14	0.53	0.35	0.27	0.51	0.84	0.16	0.14
Bismuth (Bi)	mg/kg	< 0.20	0.30	< 0.20	< 0.20	0.26	< 0.20	0.21	0.21	< 0.20	< 0.20	0.21	0.25	0.27	< 0.20	< 0.20
Boron (B)	mg/kg	< 5.0	8.4	< 5.0	12.0	9.1	9.7	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	9.4	< 5.0	7.2
Cadmium (Cd)	mg/kg	0.153	0.107	0.789	0.457	1.16	0.485	1.09	1.27	1.10	0.187	0.079	0.089	0.097	1.06	0.455
Calcium (Ca)	mg/kg	3130	5250	8680	20200	34900	27100	24300	14200	10900	4120	1280	1610	6040	10500	17600
Chromium (Cr)	mg/kg	39.6	47.3	25.4	5.81	28.5	13.5	19.5	23.9	25.5	25.6	33.7	36.7	43.5	22.1	15.4
Copper (Cu)	mg/kg	16.2	23.7	20.6	31.7	70.3	81.6	135	65.6	54.2	10.1	16.9	20.8	23.0	32.8	38.3
Cobalt (Co)	mg/kg	10.2	10.2	11.9	4.17	22.5	10.7	19.0	20.7	25.2	7.32	7.23	8.16	11.6	10.2	10.6
Iron (Fe)	mg/kg	21200	25300	15600	4650	39100	18100	25700	28200	26300	17200	20300	21500	25600	20000	12400
Lead (Pb)	mg/kg	11.8	8.67	16.5	14.4	131	67.5	108	93.0	12.8	6.63	7.79	6.44	10.9	96.7	35.4
Lithium (Li)	mg/kg	29.5	36.0	18.7	2.2	16.6	7.2	10.4	8.2	8.2	20.5	23.7	30.1	33.8	8.2	6.9
Magnesium (Mg)	mg/kg	5370	8420	5250	1990	15400	5940	8480	5870	3350	4910	4980	5550	8710	5450	4690
Manganese (Mn)	mg/kg	130	265	1300	293	993	519	1210	890	1230	346	117	137	393	213	1430
Mercury (Hg)	mg/kg	0.0263	0.0267	0.0884	0.153	0.130	0.152	0.382	0.409	0.118	0.0403	0.0323	0.0283	0.0349	0.212	0.251
Molybdenum (Mo)	mg/kg	0.49	0.33	0.34	0.60	0.54	0.87	0.49	0.50	0.31	1.24	0.65	0.37	0.38	0.57	0.41
Nickel (Ni)	mg/kg	23.1	28.4	20.4	7.89	47.1	25.7	40.8	34.8	23.9	15.0	17.1	19.4	26.7	21.3	17.6
Phosphorus (P)	mg/kg	147	289	262	646	600	744	792	811	508	212	215	153	467	767	746
Potassium (K)	mg/kg	420	3110	330	620	670	590	550	660	300	1610	460	640	3850	1150	1240
Selenium (Se)	mg/kg	< 0.20	< 0.20	< 0.20	0.25	0.23	0.32	0.37	0.40	0.23	0.20	< 0.20	< 0.20	< 0.20	0.30	0.26
Silver (Ag)	mg/kg	< 0.10	< 0.10	0.18	0.13	0.89	0.54	0.67	0.76	0.14	< 0.10	< 0.10	< 0.10	< 0.10	0.37	0.22
Sodium (Na)	mg/kg	58	341	53	< 50	< 50	< 50	< 50	< 50	115	163	88	121	304	100	81
Strontium (Sr)	mg/kg	6.16	31.6	12.1	24.7	32.6	67.9	28.4	17.4	20.5	18.1	4.71	7.08	36.9	19.7	47.4
Thallium (Tl)	mg/kg	0.131	0.205	0.103	< 0.050	0.056	< 0.050	0.066	0.054	0.077	0.086	0.078	0.126	0.205	0.057	0.061
Tin (Sn)	mg/kg	< 1.0	1.1	1.1	< 1.0	< 1.0	1.9	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.3	1.8	6.0
Titanium (Ti)	mg/kg	380	645	245	43.1	72.1	47.1	63.3	191	640	405	401	441	718	576	135
Uranium (U)	mg/kg	0.677	2.67	0.357	0.402	0.119	0.148	0.268	0.341	0.492	1.82	0.547	0.841	3.14	0.631	0.350
Vanadium (V)	mg/kg	45.4	47.8	29.8	8.93	38.8	20.4	25.1	33.4	50.4	33.2	39.8	44.4	47.9	35.2	21.1
Zinc (Zn)	mg/kg	65.0	55.0	87.0	17.6	258	116	169	181	192	30.7	26.5	28.8	52.5	59.5	116
Zirconium (Zr)	mg/kg	3.0	6.4	1.1	1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.1	3.1	2.7	5.4	9.6	2.4	< 1.0

Notes:
< Indicates parameter was below labora
> Indicates parameter detected above e
- Chemical not analyzed or criteria not d
N Indicates non-field-duplicate samples.
FD Indicates sample was a field duplicat

Table 10: Chemistry Results for Alder Leaves
Giant Mine HHERA Data Gaps

Parameter	Unit	16-GIANT-AL-01	16-GIANT-AL-02	16-GIANT-AL-02-D	16-GIANT-AL-03	16-GIANT-AL-04	16-GIANT-AL-05	16-GIANT-AL-06	16-GIANT-AL-07	16-GIANT-AL-08	16-GIANT-AL-09	16-GIANT-AL-10	16-GIANT-AL-11	16-GIANT-AL-12	16-GIANT-AL-13	16-GIANT-AL-14	16-GIANT-AL-15	16-GIANT-AL-16	16-GIANT-AL-17
Sample Name		16-GIANT-AL-01	16-GIANT-AL-02	16-GIANT-AL-02-DUP	16-GIANT-AL-03	16-GIANT-AL-04	16-GIANT-AL-05	16-GIANT-AL-06	16-GIANT-AL-07	16-GIANT-AL-08	16-GIANT-AL-09	16-GIANT-AL-10	16-GIANT-AL-11	16-GIANT-AL-12	16-GIANT-AL-13	16-GIANT-AL-14	16-GIANT-AL-15	16-GIANT-AL-16	16-GIANT-AL-17
Sample Date		07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	08/09/2016	08/09/2016	08/09/2016	08/09/2016	08/09/2016	08/09/2016
Laboratory Sample ID		L1842829-1	L1842829-2	L1842829-41	L1842829-3	L1842829-4	L1842829-5	L1842829-6	L1842829-7	L1842829-8	L1842829-9	L1842829-10	L1842829-11	L1842829-12	L1842829-13	L1842829-14	L1842829-15	L1842829-16	L1842829-17
Parent Lab Sample ID				L1842829-2															
Sample Code		N	N	FD	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sample Type		Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves
1. Physical																			
% Moisture	%	62.8	63.5	60.8	56.4	59.0	57.2	59.2	57.1	58.5	57.7	57.7	57.8	61.4	53.9	64.3	67.6	61.3	61.7
2. Metals																			
Aluminum (Al)-Total	mg/kg dry	389	212	173	72.8	136	77.9	72.3	72.9	68.1	20.6	62.5	65.4	198	50.3	46.2	53.0	54.6	55.3
Aluminum (Al)-Total	mg/kg wet	145	77.2	67.8	31.7	55.8	33.4	29.5	31.3	28.3	8.69	26.4	27.6	76.2	23.2	16.5	17.2	21.1	21.2
Antimony (Sb)-Total	mg/kg dry	0.135	0.404	0.299	0.246	0.246	0.200	0.125	0.212	0.262	0.130	0.171	0.207	0.043	0.098	0.143	0.227	0.180	0.242
Antimony (Sb)-Total	mg/kg wet	0.0503	0.147	0.117	0.107	0.101	0.0859	0.0511	0.0909	0.109	0.0550	0.0722	0.0872	0.0167	0.0450	0.0509	0.0736	0.0695	0.0927
Arsenic (As)-Total	mg/kg dry	1.77	3.11	2.47	2.13	4.98	3.90	2.81	4.26	3.52	2.74	1.99	2.88	1.18	2.13	2.91	3.59	2.12	2.88
Arsenic (As)-Total	mg/kg wet	0.660	1.14	0.968	0.930	2.04	1.67	1.14	1.82	1.46	1.16	0.843	1.22	0.455	0.982	1.04	1.16	0.821	1.10
Barium (Ba)-Total	mg/kg dry	12.3	11.7	10.8	13.6	10.3	8.51	10.2	2.48	14.0	9.16	17.9	13.8	13.7	12.6	3.09	13.6	14.2	8.89
Barium (Ba)-Total	mg/kg wet	4.58	4.28	4.25	5.94	4.24	3.65	4.17	1.06	5.82	3.87	7.58	5.82	5.28	5.80	1.10	4.40	5.50	3.40
Beryllium (Be)-Total	mg/kg dry	0.036	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.016	< 0.010	0.012	0.011	0.100	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Beryllium (Be)-Total	mg/kg wet	0.0136	0.0031	0.0025	0.0028	0.0038	< 0.0020	< 0.0020	< 0.0020	0.0068	< 0.0020	0.0052	0.0046	0.0386	0.0025	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Bismuth (Bi)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Bismuth (Bi)-Total	mg/kg wet	0.0020	0.0023	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Boron (B)-Total	mg/kg dry	1.3	18.6	22.8	1.5	7.5	18.1	15.3	19.8	6.8	24.9	7.6	18.8	1.5	5.5	43.1	12.9	20.9	5.3
Boron (B)-Total	mg/kg wet	0.50	6.80	8.94	0.65	3.09	7.76	6.22	8.48	2.82	10.5	3.22	7.96	0.58	2.52	15.4	4.19	8.09	2.02
Cadmium (Cd)-Total	mg/kg dry	< 0.0050	0.0058	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Cadmium (Cd)-Total	mg/kg wet	0.0014	0.0021	0.0013	< 0.0010	0.0016	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0010	0.0011	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0010	< 0.0010
Calcium (Ca)-Total	mg/kg dry	8300	11200	11600	11700	11300	12500	14900	15500	9480	13000	16600	12200	6710	9200	12200	14300	13900	14500
Calcium (Ca)-Total	mg/kg wet	3090	4090	4540	5110	4640	5350	6070	6630	3940	5490	7020	5140	2590	4250	4350	4630	5380	5530
Cesium (Cs)-Total	mg/kg dry	0.163	0.0411	0.0361	0.0581	0.0234	0.0165	0.196	0.0992	0.675	0.150	0.604	0.272	0.251	0.0369	0.0768	0.0828	0.0073	0.107
Cesium (Cs)-Total	mg/kg wet	0.0607	0.0150	0.0142	0.0253	0.0096	0.0071	0.0799	0.0425	0.280	0.0634	0.256	0.115	0.0969	0.0170	0.0274	0.0268	0.0028	0.0408
Chromium (Cr)-Total	mg/kg dry	0.959	0.573	0.519	0.199	0.334	0.209	0.200	0.211	0.191	0.070	0.167	0.172	0.113	0.131	0.132	0.139	0.209	0.219
Chromium (Cr)-Total	mg/kg wet	0.357	0.209	0.203	0.087	0.137	0.089	0.082	0.090	0.079	0.030	0.071	0.073	0.044	0.060	0.047	0.045	0.081	0.084
Cobalt (Co)-Total	mg/kg dry	3.25	0.987	0.611	1.50	1.45	0.209	0.469	3.71	1.31	0.126	0.471	0.341	4.34	0.644	3.90	0.268	0.255	1.40
Cobalt (Co)-Total	mg/kg wet	1.21	0.360	0.240	0.654	0.595	0.0897	0.191	1.59	0.544	0.0533	0.199	0.144	1.67	0.297	1.39	0.0867	0.0986	0.538
Copper (Cu)-Total	mg/kg dry	4.65	3.25	3.07	3.32	2.04	3.00	5.88	4.90	5.63	6.52	4.30	4.77	4.51	3.01	6.05	4.67	3.48	3.82
Copper (Cu)-Total	mg/kg wet	1.73	1.19	1.20	1.45	0.838	1.29	2.40	2.10	2.34	2.76	1.82	2.01	1.74	1.39	2.16	1.51	1.35	1.46
Iron (Fe)-Total	mg/kg dry	517	358	318	163	242	171	185	163	146	74.9	111	126	92.3	90.9	81.4	128	127	134
Iron (Fe)-Total	mg/kg wet	192	131	125	71.2	99.2	73.4	75.3	70.1	60.5	31.7	46.9	53.2	35.6	41.9	29.1	41.4	49.1	51.4
Lead (Pb)-Total	mg/kg dry	0.362	0.394	0.275	0.172	0.194	0.131	0.087	0.155	0.192	0.073	0.171	0.253	0.090	0.121	0.101	0.144	0.123	0.181
Lead (Pb)-Total	mg/kg wet	0.135	0.144	0.108	0.0751	0.0797	0.0563	0.0355	0.0664	0.0797	0.0308	0.0724	0.107	0.0346	0.0557	0.0360	0.0467	0.0474	0.0693
Lithium (Li)-Total	mg/kg dry	0.74	0.65	< 0.50	< 0.50	< 0.50	< 0.50	0.96	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	1.23
Lithium (Li)-Total	mg/kg wet	0.27	0.24	0.19	< 0.10	0.14	0.10	0.39	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.14	< 0.10	< 0.10	< 0.10	0.13	0.47
Magnesium (Mg)-Total	mg/kg dry	3290	2730	2800	1730	2150	3530	2980	2010	2910	1820	3150	3350	2160	1980	2030	2930	3300	4240
Magnesium (Mg)-Total	mg/kg wet	1220	995	1100	755	882	1510	1210	860	1210	768	1330	1410	831	915	724	949	1280	1620
Manganese (Mn)-Total	mg/kg dry	77.0	128	106	91.7	173	54.8	55.7	63.7	529	161	635	388	172	104	65.9	286	63.2	98.2
Manganese (Mn)-Total	mg/kg wet	28.7	46.6	41.4	40.0	71.0	23.5	22.7	27.3	220	68.0	269	164	66.4	47.9	23.5	92.6	24.4	37.6
Mercury (Hg)-Total	mg/kg dry	0.0099	0.0108	0.0091	0.0109	0.0078	0.0099	0.0091	0.0076	0.0100	0.0089	0.0087	0.0107	0.0103	0.0079	0.0068	0.0119	0.0102	0.0110
Mercury (Hg)-Total	mg/kg wet	0.0037	0.0039	0.0036	0.0047	0.0032	0.0042	0.0037	0.0033	0.0042	0.0038	0.0037	0.0045	0.0040	0.0036	0.0024	0.0038	0.0039	0.0042
Molybdenum (Mo)-Total	mg/kg dry	0.080	0.434	0.219	0.028	0.046	0.093	0.239	0.152	0.026	0.389	0.213	0.306	0.038	0.033	0.115	0.084	0.581	0.228
Molybdenum (Mo)-Total	mg/kg wet	0.0299	0.158	0.0859	0.0121	0.0190	0.0399	0.0976	0.0651	0.0110	0.164	0.0901	0.129	0.0147	0.0151	0.0409	0.0271	0.225	0.0874
Nickel (Ni)-Total	mg/kg dry	3.47	1.51	2.24	2.21	1.57	0.29	0.71	2.81	12.1	0.64	2.48	2.41	4.74	1.79	3.19	0.69	0.73	2.73
Nickel (Ni)-Total	mg/kg wet	1.29	0.549	0.877	0.962	0.645	0.124	0.291	1.20	5.01	0.269	1.05	1.02	1.83	0.828	1.14	0.224	0.281	1.04
Phosphorus (P)-Total	mg/kg dry	1090	691	524	779	356	888	1900	931	1080	1160	690	916	2860	456	1050	777	971	940
Phosphorus (P)-Total	mg/kg wet	406	252	205	340	146	380	776	399	449	490	292	387	1100	210	373	251	375	360
Potassium (K)-Total	mg/kg dry	4350	8310	6950	2340	3930	3160	5050	2610	5630	3150	1640	2440	6090	1830	3130	2080	5000	2140
Potassium (K)-Total	mg/kg wet	1620	3030	2720	1020	1610	1350	2060	1120	2340	1330	695	1030	2350	844	1120	674	1930	818
Rubidium (Rb)-Total	mg/kg dry	16.0	4.83	3.48	5.20	3.35	4.20	13.0	6.13	42.9	12.9	23.4	15.8	28.3	6.00	9.32	12.8	1.33	13.1
Rubidium (Rb)-Total	mg/kg wet	5.95	1.76	1.36	2.27	1.37	1.80	5.29	2.63	17.8	5.45	9.92	6.69	10.9	2.77	3.33	4.16	0.516	5.03
Selenium (Se)-Total	mg/kg dry	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Selenium (Se)-Total	mg/kg wet	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.016	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.015	0.018
Silver (Ag)-Total	mg/kg dry	< 0.0050	0.0072	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Silver (Ag)-Total	mg/kg wet	0.0013	0.0026	0.0013	< 0.0010	0.0014	< 0.0010	0.0016	0.0017	< 0.0010	0.0017	< 0.0010	< 0.0010	0.0018	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Sodium (Na)-Total	mg/kg dry	21	26	22	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Sodium (Na)-Total	mg/kg wet	7.7	9.3	8.5	< 4.0	5.1	4.8	< 4.0	< 4.0	4.6	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Strontium (Sr)-Total	mg/kg dry	20.9	34.3	34.1	8.40	16.5	28.8	38.0	10.5	18.8	21.9	41.0	30.1	25.7	12.6	8.06	41.2	27.1	16.6
Strontium (Sr)-Total	mg/kg wet	7.77	12.5	13.4	3.66	6.78	12.3	15.5	4.49	7.82	9.24	17.4	12.7	9.93	5.83	2.88	13.3	10.5	6.37
Tellurium (Te)-Total	mg/kg dry	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Tellurium (Te)-Total	mg/kg wet	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Thallium (Tl)-Total	mg/kg dry	0.0057	0.0035	0.0030	< 0.0020	0.0026	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0031	< 0.0020	< 0.0020	< 0.0020
Thallium (Tl)-Total	mg/kg wet	0.00212	0.00126	0.00117	0.00062	0.00107	0.00069	0.00054	0.00069	0.00058	< 0.00040	0.00067	0.00057	< 0.00040	< 0.00040	0.00111	0.00059	< 0.00040	0.00045
Tin (Sn)-Total	mg/kg dry	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Tin (Sn)-Total	mg/kg wet	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Uranium (U)-Total	mg/kg dry	0.0843	0.0416	0.0401	0.0142	0.0359	0.0196	0.0162	0.0132	0.0216	0.0048	0.0323	0.0199	0.0149	0.0075	0.0073	0.0117	0.0103	0.0075
Uranium (U)-Total	mg/kg wet	0.0314	0.0152	0.0157	0.00618	0.0147	0.00839	0.00661	0.00565	0.00897	0.00202	0.0137	0.00841	0.00576	0.00347	0.00260	0.00380	0.00400	0.00288
Vanadium (V)-Total	mg/kg dry	0.95	0.61	0.56	0.20	0.40	0.25	0.22	0.24	0.18	< 0.10	0.15	0.16	< 0.10	0.14	0.12	0.15	0.21	0.20
Vanadium (V)-Total	mg/kg wet	0.355	0.223	0.218	0.087	0.163	0.107	0.088	0.102	0.073	0.032	0.062	0.069	0.037	0.065	0.045	0.047	0.080	0.075
Zinc (Zn)-Total	mg/kg dry	12.5	12.9	14.8	7.25	12.6	11.9	13.6	11.0	9.12	16.4	13.0	12.4	6.93	8.33	23.7	13.6	17.4	11.7
Zinc (Zn)-Total	mg/kg wet	4.64	4.71	5.80	3.16	5.15	5.08	5.56	4.71	3.79	6.92	5.49	5.25	2.67	3.84	8.46	4.40	6.72	4.46
Zirconium (Zr)-Total	mg/kg dry	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zirconium (Zr)-Total	mg/kg wet	0.042	0.069	0.059	0.050	0.045	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040

Notes:
< Indicates parameter was below laboratory equipment detection limit.
> Indicates parameter detected above equipment analytical range
- Chemical not analyzed or criteria not defined.
N Indicates non-field-duplicate samples.
FD Indicates sample was a field duplicate.

Table 10: Chemistry Results for Alder Leaves
Giant Mine HHERA Data Gaps

	Location	16-GIANT-AL-18	16-GIANT-AL-19	16-GIANT-AL-20	16-GIANT-AL-21	16-GIANT-AL-40	16-GIANT-AL-41	16-GIANT-AL-41-D	16-GIANT-AL-42	16-GIANT-AL-43
	Sample Name	16-GIANT-AL-18	16-GIANT-AL-19	16-GIANT-AL-20	16-GIANT-AL-21	16-GIANT-AL-40	16-GIANT-AL-41	16-GIANT-AL-41-DUP	16-GIANT-AL-42	16-GIANT-AL-43
	Sample Date	08/09/2016	08/09/2016	08/09/2016	08/09/2016	09/09/2016	09/09/2016	09/09/2016	09/09/2016	09/09/2016
	Laboratory Sample ID	L1842829-18	L1842829-19	L1842829-20	L1842829-21	L1842829-22	L1842829-23	L1842829-42	L1842829-24	L1842829-25
	Parent Lab Sample ID							L1842829-23		
	Sample Code	N	N	N	N	N	N	FD	N	N
	Sample Type	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves
Parameter	Unit									
1. Physical										
% Moisture	%	59.8	61.1	57.8	53.3	58.1	56.4	58.1	55.9	55.0
2. Metals										
Aluminum (Al)-Total	mg/kg dry	51.7	48.0	63.4	36.4	81.9	116	120	97.9	60.8
Aluminum (Al)-Total	mg/kg wet	20.8	18.7	26.8	17.0	34.3	50.6	50.3	43.1	27.4
Antimony (Sb)-Total	mg/kg dry	0.174	0.142	0.124	0.144	0.035	0.040	0.052	0.118	0.060
Antimony (Sb)-Total	mg/kg wet	0.0698	0.0551	0.0525	0.0672	0.0145	0.0172	0.0216	0.0521	0.0269
Arsenic (As)-Total	mg/kg dry	2.51	2.01	2.79	2.27	1.03	0.881	0.933	1.77	1.12
Arsenic (As)-Total	mg/kg wet	1.01	0.780	1.18	1.06	0.429	0.384	0.390	0.779	0.503
Barium (Ba)-Total	mg/kg dry	11.0	13.0	11.7	7.61	12.3	6.68	6.75	5.00	3.68
Barium (Ba)-Total	mg/kg wet	4.41	5.06	4.92	3.55	5.14	2.91	2.83	2.20	1.66
Beryllium (Be)-Total	mg/kg dry	0.014	< 0.010	0.023	< 0.010	0.018	0.036	0.032	< 0.010	< 0.010
Beryllium (Be)-Total	mg/kg wet	0.0057	0.0035	0.0098	< 0.0020	0.0075	0.0157	0.0133	< 0.0020	< 0.0020
Bismuth (Bi)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Bismuth (Bi)-Total	mg/kg wet	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Boron (B)-Total	mg/kg dry	3.7	3.0	1.7	18.5	8.1	2.9	3.2	6.3	4.4
Boron (B)-Total	mg/kg wet	1.48	1.18	0.73	8.63	3.38	1.25	1.34	2.77	1.98
Cadmium (Cd)-Total	mg/kg dry	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Cadmium (Cd)-Total	mg/kg wet	0.0018	< 0.0010	< 0.0010	< 0.0010	0.0015	0.0012	< 0.0010	0.0012	< 0.0010
Calcium (Ca)-Total	mg/kg dry	9810	12800	7760	13100	7010	6880	6400	11800	11800
Calcium (Ca)-Total	mg/kg wet	3940	4990	3270	6100	2930	3000	2680	5180	5310
Cesium (Cs)-Total	mg/kg dry	0.0939	0.0213	0.0970	0.0499	0.325	0.0853	0.0817	0.0867	0.0360
Cesium (Cs)-Total	mg/kg wet	0.0377	0.0083	0.0409	0.0233	0.136	0.0372	0.0342	0.0382	0.0162
Chromium (Cr)-Total	mg/kg dry	0.128	0.134	0.105	0.112	0.142	0.286	0.303	0.318	0.211
Chromium (Cr)-Total	mg/kg wet	0.051	0.052	0.044	0.052	0.059	0.125	0.127	0.140	0.095
Cobalt (Co)-Total	mg/kg dry	2.99	1.90	1.12	0.437	3.56	7.17	6.75	1.11	0.594
Cobalt (Co)-Total	mg/kg wet	1.20	0.739	0.471	0.204	1.49	3.13	2.83	0.490	0.268
Copper (Cu)-Total	mg/kg dry	4.14	3.14	3.90	3.76	4.10	3.88	4.05	3.86	2.67
Copper (Cu)-Total	mg/kg wet	1.67	1.22	1.65	1.76	1.72	1.69	1.70	1.70	1.20
Iron (Fe)-Total	mg/kg dry	110	101	166	97.5	106	177	186	208	130
Iron (Fe)-Total	mg/kg wet	44.2	39.2	70.0	45.5	44.4	77.1	77.7	91.7	58.3
Lead (Pb)-Total	mg/kg dry	0.191	0.141	0.101	0.111	0.098	0.127	0.104	0.170	0.103
Lead (Pb)-Total	mg/kg wet	0.0767	0.0546	0.0427	0.0517	0.0410	0.0555	0.0436	0.0749	0.0464
Lithium (Li)-Total	mg/kg dry	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Lithium (Li)-Total	mg/kg wet	< 0.10	< 0.10	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.12
Magnesium (Mg)-Total	mg/kg dry	1810	2490	2530	2540	1290	2780	2760	3170	3130
Magnesium (Mg)-Total	mg/kg wet	728	967	1070	1180	538	1210	1160	1400	1410
Manganese (Mn)-Total	mg/kg dry	242	195	61.5	121	263	152	144	265	134
Manganese (Mn)-Total	mg/kg wet	97.3	75.7	25.9	56.2	110	66.5	60.4	117	60.3
Mercury (Hg)-Total	mg/kg dry	0.0080	0.0099	0.0073	0.0073	0.0068	0.0090	0.0081	0.0094	0.0081
Mercury (Hg)-Total	mg/kg wet	0.0032	0.0038	0.0031	0.0034	0.0028	0.0039	0.0034	0.0041	0.0036
Molybdenum (Mo)-Total	mg/kg dry	0.035	0.027	0.029	0.148	0.048	< 0.020	< 0.020	0.081	0.028
Molybdenum (Mo)-Total	mg/kg wet	0.0140	0.0107	0.0121	0.0690	0.0201	0.0063	0.0070	0.0356	0.0127
Nickel (Ni)-Total	mg/kg dry	3.53	2.69	2.47	0.91	5.09	5.95	5.70	1.70	0.90
Nickel (Ni)-Total	mg/kg wet	1.42	1.05	1.04	0.423	2.13	2.60	2.38	0.749	0.406
Phosphorus (P)-Total	mg/kg dry	851	640	925	1530	964	780	831	1080	737
Phosphorus (P)-Total	mg/kg wet	342	249	390	715	403	340	348	477	332
Potassium (K)-Total	mg/kg dry	2050	3330	1560	2260	4940	2010	2110	6540	4380
Potassium (K)-Total	mg/kg wet	825	1290	658	1060	2070	879	884	2880	1970
Rubidium (Rb)-Total	mg/kg dry	11.3	3.44	11.4	9.39	31.9	7.72	8.17	14.3	8.12
Rubidium (Rb)-Total	mg/kg wet	4.53	1.34	4.83	4.38	13.4	3.37	3.42	6.32	3.66
Selenium (Se)-Total	mg/kg dry	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Selenium (Se)-Total	mg/kg wet	< 0.010	< 0.010	< 0.010	0.016	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Silver (Ag)-Total	mg/kg dry	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Silver (Ag)-Total	mg/kg wet	0.0016	0.0010	< 0.0010	0.0013	< 0.0010	< 0.0010	< 0.0010	0.0011	< 0.0010
Sodium (Na)-Total	mg/kg dry	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	50
Sodium (Na)-Total	mg/kg wet	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	6.2	6.2	22.7
Strontium (Sr)-Total	mg/kg dry	12.0	18.5	13.6	11.8	10.8	16.3	15.3	11.2	12.1
Strontium (Sr)-Total	mg/kg wet	4.80	7.20	5.74	5.51	4.54	7.12	6.40	4.93	5.45
Tellurium (Te)-Total	mg/kg dry	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Tellurium (Te)-Total	mg/kg wet	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Thallium (Tl)-Total	mg/kg dry	0.0028	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Thallium (Tl)-Total	mg/kg wet	0.00112	< 0.00040	0.00058	0.00067	< 0.00040	0.00048	0.00043	0.00043	0.00049
Tin (Sn)-Total	mg/kg dry	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Tin (Sn)-Total	mg/kg wet	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Uranium (U)-Total	mg/kg dry	0.0044	0.0062	0.0037	0.0057	0.0058	0.0069	0.0061	0.0059	0.0046
Uranium (U)-Total	mg/kg wet	0.00178	0.00242	0.00157	0.00264	0.00244	0.00300	0.00257	0.00262	0.00209
Vanadium (V)-Total	mg/kg dry	0.15	0.13	0.11	0.12	0.18	0.29	0.29	0.32	0.21
Vanadium (V)-Total	mg/kg wet	0.058	0.049	0.046	0.058	0.075	0.125	0.122	0.142	0.094
Zinc (Zn)-Total	mg/kg dry	12.4	11.0	10.9	7.93	10.9	7.16	7.57	12.6	10.2
Zinc (Zn)-Total	mg/kg wet	4.98	4.27	4.62	3.70	4.56	3.12	3.17	5.55	4.59
Zirconium (Zr)-Total	mg/kg dry	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zirconium (Zr)-Total	mg/kg wet	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040

	Location	16-GIANT-AL-44	16-GIANT-AL-45	16-GIANT-AL-51	16-GIANT-AL-51-D	16-GIANT-AL-52	16-GIANT-AL-53	16-GIANT-AL-53-D	16-GIANT-AL-54	16-GIANT-AL-55
	Sample Name	16-GIANT-AL-44	16-GIANT-AL-45	16-GIANT-AL-51	16-GIANT-AL-51-DUP	16-GIANT-AL-52	16-GIANT-AL-53	16-GIANT-AL-53-DUP	16-GIANT-AL-54	16-GIANT-AL-55
	Sample Date	09/09/2016	09/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016
	Laboratory Sample ID	L1842829-26	L1842829-27	L1842829-28	L1842829-43	L1842829-29	L1842829-30	L1842829-44	L1842829-31	L1842829-32
	Parent Lab Sample ID				L1842829-28			L1842829-30		
	Sample Code	N	N	N	FD	N	N	FD	N	N
	Sample Type	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves
Parameter	Unit									
1. Physical										
% Moisture	%	59.1	65.2	56.5	60.0	69.3	65.6	61.0	43.6	66.1
2. Metals										
Aluminum (Al)-Total	mg/kg dry	61.0	137	214	237	143	96.1	118	142	62.4
Aluminum (Al)-Total	mg/kg wet	24.9	47.5	93.0	94.9	43.8	33.1	46.0	80.3	21.1
Antimony (Sb)-Total	mg/kg dry	0.104	0.074	1.36	1.54	0.819	0.676	0.949	0.665	0.364
Antimony (Sb)-Total	mg/kg wet	0.0425	0.0257	0.593	0.614	0.251	0.232	0.370	0.375	0.123
Arsenic (As)-Total	mg/kg dry	1.34	1.87	15.6	17.9	11.4	6.47	8.72	7.95	3.79
Arsenic (As)-Total	mg/kg wet	0.546	0.649	6.80	7.17	3.49	2.23	3.40	4.49	1.28
Barium (Ba)-Total	mg/kg dry	6.74	9.88	6.76	5.75	4.84	4.60	4.35	8.93	6.34
Barium (Ba)-Total	mg/kg wet	2.75	3.44	2.94	2.30	1.48	1.58	1.70	5.04	2.15
Beryllium (Be)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	0.013	< 0.010	< 0.010	< 0.010	< 0.010
Beryllium (Be)-Total	mg/kg wet	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0041	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Bismuth (Bi)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Bismuth (Bi)-Total	mg/kg wet	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Boron (B)-Total	mg/kg dry	14.2	25.3	12.3	8.2	5.6	3.6	4.5	9.0	7.6
Boron (B)-Total	mg/kg wet	5.81	8.80	5.36	3.29	1.73	1.23	1.74	5.09	2.57
Cadmium (Cd)-Total	mg/kg dry	0.0058	0.0056	0.0101	0.0095	0.0057	0.0122	0.0260	< 0.0050	< 0.0050
Cadmium (Cd)-Total	mg/kg wet	0.0024	0.0020	0.0044	0.0038	0.0017	0.0042	0.0101	0.0027	< 0.0010
Calcium (Ca)-Total	mg/kg dry	14000	14000	14300	13300	10500	12900	15700	14700	8540
Calcium (Ca)-Total	mg/kg wet	5720	4870	6200	5340	3240	4440	6110	8310	2890
Cesium (Cs)-Total	mg/kg dry	0.0638	0.0192	0.0243	0.0242	0.302	0.0426	0.0487	0.102	0.0096
Cesium (Cs)-Total	mg/kg wet	0.0261	0.0067	0.0106	0.0097	0.0927	0.0147	0.0190	0.0578	0.0033
Chromium (Cr)-Total	mg/kg dry	0.255	0.514	0.607	0.799	0.342	0.267	0.357	0.403	0.198
Chromium (Cr)-Total	mg/kg wet	0.104	0.179	0.264	0.319	0.105	0.092	0.139	0.227	0.067
Cobalt (Co)-Total	mg/kg dry	0.291	0.691	0.675	0.893	3.50	2.72	2.86	0.708	1.32
Cobalt (Co)-Total	mg/kg wet	0.119	0.240	0.293	0.357	1.07	0.935	1.11	0.399	0.447
Copper (Cu)-Total	mg/kg dry	3.58	4.13	3.76	3.41	5.83	3.25	3.55	3.74	2.23
Copper (Cu)-Total	mg/kg wet	1.46	1.44	1.63	1.36	1.79	1.12	1.38	2.11	0.756
Iron (Fe)-Total	mg/kg dry	140	296	598	732	363	246	320	303	196
Iron (Fe)-Total	mg/kg wet	57.3	103	260	293	112	84.5	125	171	66.4
Lead (Pb)-Total	mg/kg dry	0.125	0.183	0.858	0.949	0.531	0.809	1.39	0.512	0.249
Lead (Pb)-Total	mg/kg wet	0.0509	0.0636	0.373	0.379	0.163	0.278	0.541	0.289	0.0844
Lithium (Li)-Total	mg/kg dry	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Lithium (Li)-Total	mg/kg wet	< 0.10	< 0.10	0.13	0.14	0.11	< 0.10	< 0.10	0.11	< 0.10
Magnesium (Mg)-Total	mg/kg dry	2290	2330	2650	2900	4030	3540	4060	2350	1370
Magnesium (Mg)-Total	mg/kg wet	937	811	1150	1160	1240	1220	1580	1330	465
Manganese (Mn)-Total	mg/kg dry	137	356	76.5	85.7	197	251	193	122	189
Manganese (Mn)-Total	mg/kg wet	55.9	124	33.2	34.3	60.4	86.3	75.1	68.6	63.8
Mercury (Hg)-Total	mg/kg dry	0.0083	0.0118	0.0092	0.0098	0.0074	0.0089	0.0089	0.0066	0.0093
Mercury (Hg)-Total	mg/kg wet	0.0034	0.0041	0.0040	0.0039	0.0023	0.0031	0.0035	0.0037	0.0032
Molybdenum (Mo)-Total	mg/kg dry	0.125	< 0.020	0.026	0.025	0.021	0.029	0.024	< 0.020	0.033
Molybdenum (Mo)-Total	mg/kg wet	0.0512	0.0062	0.0111	0.0099	0.0064	0.0101	0.0094	0.0050	0.0112
Nickel (Ni)-Total	mg/kg dry	0.50	0.65	2.41	1.57	4.95	3.97	3.70	0.83	1.61
Nickel (Ni)-Total	mg/kg wet	0.204	0.226	1.05	0.628	1.52	1.36	1.44	0.471	0.546
Phosphorus (P)-Total	mg/kg dry	770	427	916	733	1260	536	434	997	598
Phosphorus (P)-Total	mg/kg wet	315	148	398	293	387	184	169	563	203
Potassium (K)-Total	mg/kg dry	3960	5860	7880	5200	6880	1660	999	7960	12100
Potassium (K)-Total	mg/kg wet	1620	2040	3430	2080	2110	571	389	4490	4080
Rubidium (Rb)-Total	mg/kg dry	6.39	5.04	9.42	6.63	19.9	4.99	5.10	12.8	8.04
Rubidium (Rb)-Total	mg/kg wet	2.61	1.75	4.10	2.65	6.12	1.71	1.99	7.20	2.72
Selenium (Se)-Total	mg/kg dry	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Selenium (Se)-Total	mg/kg wet	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Silver (Ag)-Total	mg/kg dry	< 0.0050	< 0.0050	0.0064	0.0080	0.0058	< 0.0050	0.0052	0.0054	< 0.0050
Silver (Ag)-Total	mg/kg wet	< 0.0010	< 0.0010	0.0028	0.0032	0.0018	0.0012	0.0020	0.0031	< 0.0010
Sodium (Na)-Total	mg/kg dry	< 20	24	21	20	< 20	< 20	< 20	< 20	< 20
Sodium (Na)-Total	mg/kg wet	6.0	8.3	9.2	8.1	< 4.0	< 4.0	7.4	4.7	< 4.0
Strontium (Sr)-Total	mg/kg dry	15.5	13.7	15.1	15.5	12.2	11.2	14.1	21.3	11.6
Strontium (Sr)-Total	mg/kg wet	6.35	4.77	6.55	6.21	3.75	3.84	5.49	12.0	3.91
Tellurium (Te)-Total	mg/kg dry	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Tellurium (Te)-Total	mg/kg wet	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Thallium (Tl)-Total	mg/kg dry	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0052	0.0069	< 0.0020	< 0.0020
Thallium (Tl)-Total	mg/kg wet	< 0.00040	0.00041	0.00073	0.00078	0.00050	0.00180	0.00268	0.00097	< 0.00040
Tin (Sn)-Total	mg/kg dry	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Tin (Sn)-Total	mg/kg wet	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Uranium (U)-Total	mg/kg dry	0.0046	0.0100	0.0071	0.0074	0.0046	0.0041	0.0080	0.0093	0.0104
Uranium (U)-Total	mg/kg wet	0.00189	0.00348	0.00310	0.00297	0.00141	0.00140	0.00310	0.00524	0.00352
Vanadium (V)-Total	mg/kg dry	0.23	0.57	0.86	1.07	0.43	0.34	0.44	0.45	0.26
Vanadium (V)-Total	mg/kg wet	0.092	0.199	0.372	0.426	0.132	0.115	0.173	0.251	0.088
Zinc (Zn)-Total	mg/kg dry	20.7	21.8	14.2	17.4	7.99	30.5	49.4	14.6	10.6
Zinc (Zn)-Total	mg/kg wet	8.46	7.56	6.18	6.94	2.45	10.5	19.2	8.21	3.59
Zirconium (Zr)-Total	mg/kg dry	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.24	< 0.20	< 0.20
Zirconium (Zr)-Total	mg/kg wet	< 0.040	< 0.040	< 0.040	0.050	< 0.040	< 0.040	0.094	0.043	< 0.040

Notes:
< Indicates parameter was below laborator
> Indicates parameter detected above equi
- Chemical not analyzed or criteria not defin
N Indicates non-field-duplicate samples.
FD Indicates sample was a field duplicate.

Table 10: Chemistry Results for Alder Leaves
Giant Mine HHERA Data Gaps

Parameter	Unit	16-GIANT-AL-56	16-GIANT-AL-57	16-GIANT-AL-58	16-GIANT-AL-60	16-GIANT-AL-61	16-GIANT-AL-71	16-GIANT-AL-76	16-GIANT-AL-77
	Location	16-GIANT-AL-56	16-GIANT-AL-57	16-GIANT-AL-58	16-GIANT-AL-60	16-GIANT-AL-61	16-GIANT-AL-71	16-GIANT-AL-76	16-GIANT-AL-77
	Sample Name	16-GIANT-AL-56	16-GIANT-AL-57	16-GIANT-AL-58	16-GIANT-AL-60	16-GIANT-AL-61	16-GIANT-AL-71	16-GIANT-AL-76	16-GIANT-AL-77
	Sample Date	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	11/09/2016	11/09/2016	11/09/2016
	Laboratory Sample ID	L1842829-33	L1842829-34	L1842829-35	L1842829-36	L1842829-37	L1842829-38	L1842829-39	L1842829-40
	Parent Lab Sample ID								
	Sample Code	N	N	N	N	N	N	N	N
	Sample Type	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves	Alder Leaves
1. Physical									
% Moisture	%	57.8	58.8	57.9	56.0	46.7	54.5	57.6	53.6
2. Metals									
Aluminum (Al)-Total	mg/kg dry	128	94.3	94.0	80.3	47.7	39.2	35.2	38.4
Aluminum (Al)-Total	mg/kg wet	54.0	38.8	39.6	35.3	25.4	17.8	14.9	17.8
Antimony (Sb)-Total	mg/kg dry	0.748	0.033	0.872	1.37	0.578	0.433	0.144	0.066
Antimony (Sb)-Total	mg/kg wet	0.315	0.0137	0.367	0.602	0.308	0.197	0.0609	0.0308
Arsenic (As)-Total	mg/kg dry	8.10	1.03	7.92	10.0	5.25	4.51	1.67	0.875
Arsenic (As)-Total	mg/kg wet	3.42	0.426	3.34	4.42	2.80	2.05	0.707	0.406
Barium (Ba)-Total	mg/kg dry	12.3	8.89	7.37	6.67	3.18	8.63	7.43	4.18
Barium (Ba)-Total	mg/kg wet	5.18	3.66	3.10	2.94	1.70	3.93	3.15	1.94
Beryllium (Be)-Total	mg/kg dry	< 0.010	0.022	0.014	< 0.010	< 0.010	< 0.010	< 0.010	0.012
Beryllium (Be)-Total	mg/kg wet	0.0038	0.0089	0.0060	0.0032	< 0.0020	0.0036	0.0020	0.0058
Bismuth (Bi)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Bismuth (Bi)-Total	mg/kg wet	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Boron (B)-Total	mg/kg dry	5.6	1.2	2.4	2.4	49.7	8.4	4.3	4.1
Boron (B)-Total	mg/kg wet	2.37	0.51	1.01	1.07	26.5	3.80	1.82	1.91
Cadmium (Cd)-Total	mg/kg dry	< 0.0050	< 0.0050	0.0051	0.0075	< 0.0050	0.0053	< 0.0050	< 0.0050
Cadmium (Cd)-Total	mg/kg wet	0.0019	< 0.0010	0.0022	0.0033	0.0017	0.0024	0.0015	< 0.0010
Calcium (Ca)-Total	mg/kg dry	11000	5600	9470	13000	9420	13200	6100	7030
Calcium (Ca)-Total	mg/kg wet	4630	2300	3990	5710	5020	5990	2580	3260
Cesium (Cs)-Total	mg/kg dry	0.0135	0.312	0.138	0.0579	0.0197	0.0284	0.0053	0.0257
Cesium (Cs)-Total	mg/kg wet	0.0057	0.129	0.0583	0.0255	0.0105	0.0129	0.0022	0.0119
Chromium (Cr)-Total	mg/kg dry	0.375	0.177	0.265	0.239	0.158	0.102	0.116	0.060
Chromium (Cr)-Total	mg/kg wet	0.158	0.073	0.112	0.105	0.084	0.046	0.049	0.028
Cobalt (Co)-Total	mg/kg dry	1.47	1.45	5.57	1.89	0.989	1.12	0.746	1.86
Cobalt (Co)-Total	mg/kg wet	0.621	0.597	2.35	0.833	0.527	0.508	0.316	0.862
Copper (Cu)-Total	mg/kg dry	2.95	4.38	4.48	4.02	2.84	3.46	2.04	3.08
Copper (Cu)-Total	mg/kg wet	1.25	1.80	1.89	1.77	1.52	1.57	0.863	1.43
Iron (Fe)-Total	mg/kg dry	343	134	251	270	161	126	99.5	63.6
Iron (Fe)-Total	mg/kg wet	145	55.0	106	119	85.9	57.5	42.2	29.5
Lead (Pb)-Total	mg/kg dry	0.547	0.085	0.545	0.938	0.340	0.293	0.111	0.068
Lead (Pb)-Total	mg/kg wet	0.231	0.0351	0.230	0.413	0.181	0.133	0.0472	0.0316
Lithium (Li)-Total	mg/kg dry	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.62	< 0.50
Lithium (Li)-Total	mg/kg wet	< 0.10	< 0.10	0.11	< 0.10	< 0.10	< 0.10	0.26	< 0.10
Magnesium (Mg)-Total	mg/kg dry	1820	2520	1940	1960	1350	2810	3080	1990
Magnesium (Mg)-Total	mg/kg wet	769	1040	818	865	721	1280	1300	921
Manganese (Mn)-Total	mg/kg dry	68.9	85.6	90.0	117	32.3	74.7	92.5	121
Manganese (Mn)-Total	mg/kg wet	29.0	35.3	37.9	51.4	17.2	34.0	39.2	56.1
Mercury (Hg)-Total	mg/kg dry	0.0093	0.0088	0.0113	0.0090	0.0081	0.0107	0.0098	0.0082
Mercury (Hg)-Total	mg/kg wet	0.0039	0.0036	0.0047	0.0040	0.0043	0.0049	0.0041	0.0038
Molybdenum (Mo)-Total	mg/kg dry	0.023	0.047	0.023	0.022	< 0.020	0.027	0.063	0.025
Molybdenum (Mo)-Total	mg/kg wet	0.0096	0.0194	0.0095	0.0097	0.0090	0.0123	0.0266	0.0118
Nickel (Ni)-Total	mg/kg dry	1.53	2.05	4.74	1.83	1.04	2.48	1.02	3.42
Nickel (Ni)-Total	mg/kg wet	0.647	0.845	2.00	0.805	0.557	1.13	0.430	1.59
Phosphorus (P)-Total	mg/kg dry	620	1860	374	499	203	617	458	252
Phosphorus (P)-Total	mg/kg wet	261	765	158	220	108	281	194	117
Potassium (K)-Total	mg/kg dry	5390	6280	1130	1650	2880	2350	6300	666
Potassium (K)-Total	mg/kg wet	2280	2590	478	726	1530	1070	2670	309
Rubidium (Rb)-Total	mg/kg dry	4.32	22.7	3.49	4.91	5.69	4.59	3.90	3.10
Rubidium (Rb)-Total	mg/kg wet	1.82	9.35	1.47	2.16	3.03	2.09	1.65	1.44
Selenium (Se)-Total	mg/kg dry	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Selenium (Se)-Total	mg/kg wet	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.010
Silver (Ag)-Total	mg/kg dry	< 0.0050	< 0.0050	0.0074	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Silver (Ag)-Total	mg/kg wet	0.0016	0.0018	0.0031	0.0020	0.0023	0.0011	< 0.0010	0.0011
Sodium (Na)-Total	mg/kg dry	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Sodium (Na)-Total	mg/kg wet	5.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Strontium (Sr)-Total	mg/kg dry	18.0	8.10	9.53	7.99	7.51	23.4	15.8	6.89
Strontium (Sr)-Total	mg/kg wet	7.58	3.33	4.01	3.52	4.01	10.6	6.70	3.20
Tellurium (Te)-Total	mg/kg dry	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Tellurium (Te)-Total	mg/kg wet	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Thallium (Tl)-Total	mg/kg dry	0.0024	< 0.0020	< 0.0020	< 0.0020	0.0026	< 0.0020	< 0.0020	< 0.0020
Thallium (Tl)-Total	mg/kg wet	0.00100	0.00048	0.00058	0.00055	0.00141	< 0.00040	< 0.00040	< 0.00040
Tin (Sn)-Total	mg/kg dry	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Tin (Sn)-Total	mg/kg wet	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Uranium (U)-Total	mg/kg dry	0.0079	0.0205	0.0056	0.0031	0.0023	< 0.0020	0.0052	< 0.0020
Uranium (U)-Total	mg/kg wet	0.00334	0.00842	0.00235	0.00135	0.00121	0.00074	0.00222	0.00085
Vanadium (V)-Total	mg/kg dry	0.50	0.18	0.29	0.26	0.19	0.12	0.11	< 0.10
Vanadium (V)-Total	mg/kg wet	0.211	0.073	0.123	0.114	0.102	0.053	0.046	< 0.020
Zinc (Zn)-Total	mg/kg dry	9.98	11.3	7.77	11.1	10.7	9.21	8.34	9.79
Zinc (Zn)-Total	mg/kg wet	4.21	4.64	3.27	4.90	5.70	4.19	3.53	4.54
Zirconium (Zr)-Total	mg/kg dry	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zirconium (Zr)-Total	mg/kg wet	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040

Notes:
< Indicates parameter was below laborator
> Indicates parameter detected above equi
- Chemical not analyzed or criteria not defin
N Indicates non-field-duplicate samples.
FD Indicates sample was a field duplicate.

Table 11: Chemistry Results for Cranberry Leaves
Giant Mine HHERA Data Gaps

Parameter	Unit																		
Location		16-GIANT-CB-01	16-GIANT-CB-02	16-GIANT-CB-03	16-GIANT-CB-03-D	16-GIANT-CB-04	16-GIANT-CB-05	16-GIANT-CB-10	16-GIANT-CB-11	16-GIANT-CB-12	16-GIANT-CB-13	16-GIANT-CB-14	16-GIANT-CB-15	16-GIANT-CR-06	16-GIANT-CR-07	16-GIANT-CR-08	16-GIANT-CR-09	16-GIANT-CR-40	16-GIANT-CR-41
Sample Name		16-GIANT-CB-01	16-GIANT-CB-02	16-GIANT-CB-03	16-GIANT-CB-03-DUP	16-GIANT-CB-04	16-GIANT-CB-05	16-GIANT-CB-10	16-GIANT-CB-11	16-GIANT-CB-12	16-GIANT-CB-13	16-GIANT-CB-14	16-GIANT-CB-15	16-GIANT-CR-06	16-GIANT-CR-07	16-GIANT-CR-08	16-GIANT-CR-09	16-GIANT-CR-40	16-GIANT-CR-41
Sample Date		07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	08/09/2016	08/09/2016	08/09/2016	08/09/2016	08/09/2016	08/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	09/09/2016	09/09/2016
Laboratory Sample ID		L1842753-1	L1842753-2	L1842753-3	L1842753-41	L1842753-4	L1842753-5	L1842753-11	L1842753-12	L1842753-13	L1842753-15	L1842753-16	L1842753-10	L1842753-6	L1842753-7	L1842753-8	L1842753-9	L1842753-17	L1842753-18
Parent Lab Sample ID					L1842753-3														
Sample Code		N	N	N	FD	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sample Type		Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves
1. Physical																			
% Moisture	%	51.1	51.5	51.2	51.8	60.7	51.0	59.1	67.9	54.6	55.0	51.3	66.4	50.6	56.9	57.7	57.3	53.0	52.8
2. Metals																			
Aluminum (Al)-Total	mg/kg dry	261	119	121	106	114	246	349	181	150	224	192	79.9	217	167	128	128	129	116
Aluminum (Al)-Total	mg/kg wet	128	57.7	59.1	51.2	44.8	121	143	58.3	68.1	101	93.6	26.9	107	71.9	54.0	54.7	60.7	54.7
Antimony (Sb)-Total	mg/kg dry	0.151	0.391	0.323	0.287	0.331	0.612	1.87	0.549	0.344	0.292	0.515	0.087	0.643	0.356	0.229	0.140	0.055	0.042
Antimony (Sb)-Total	mg/kg wet	0.0739	0.190	0.158	0.138	0.130	0.300	0.765	0.176	0.156	0.132	0.251	0.0293	0.318	0.154	0.0970	0.0599	0.0257	0.0200
Arsenic (As)-Total	mg/kg dry	1.23	3.16	1.95	1.72	1.89	5.56	12.4	4.30	3.12	3.14	4.79	1.13	4.30	3.89	2.53	1.80	0.891	0.756
Arsenic (As)-Total	mg/kg wet	0.600	1.54	0.950	0.827	0.742	2.72	5.06	1.38	1.42	1.41	2.33	0.381	2.13	1.68	1.07	0.768	0.418	0.357
Barium (Ba)-Total	mg/kg dry	59.1	32.1	35.0	31.7	33.5	52.9	47.7	64.5	47.2	67.0	92.4	54.0	54.7	41.2	76.8	68.1	77.3	44.2
Barium (Ba)-Total	mg/kg wet	28.9	15.6	17.1	15.3	13.2	25.9	19.5	20.7	21.5	30.2	45.0	18.2	27.1	17.7	32.5	29.1	36.3	20.9
Beryllium (Be)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.011	< 0.010	< 0.010
Beryllium (Be)-Total	mg/kg wet	0.0025	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0049	< 0.0020	< 0.0020	0.0024	0.0039	0.0032	< 0.0020	0.0035	< 0.0020	0.0033	0.0046	< 0.0020	< 0.0020
Bismuth (Bi)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Bismuth (Bi)-Total	mg/kg wet	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Boron (B)-Total	mg/kg dry	7.1	13.1	10.8	9.7	10.7	12.7	26.0	14.7	8.5	7.7	8.5	7.3	15.3	23.8	15.6	18.3	17.7	10.3
Boron (B)-Total	mg/kg wet	3.48	6.38	5.26	4.70	4.21	6.22	10.7	4.73	3.86	3.48	4.15	2.47	7.55	10.3	6.61	7.82	8.29	4.87
Cadmium (Cd)-Total	mg/kg dry	0.0064	0.0245	< 0.0050	< 0.0050	< 0.0050	0.0098	0.0904	0.0077	0.0161	0.0091	0.0062	0.0064	0.0097	0.0196	0.0129	0.0080	0.0077	< 0.0050
Cadmium (Cd)-Total	mg/kg wet	0.0031	0.0119	0.0021	0.0020	0.0016	0.0048	0.0370	0.0025	0.0073	0.0041	0.0030	0.0022	0.0048	0.0084	0.0054	0.0034	0.0036	0.0023
Calcium (Ca)-Total	mg/kg dry	5610	7020	6460	5780	6270	6570	8870	5150	5950	5770	7320	4840	6910	5200	4150	5670	5710	4490
Calcium (Ca)-Total	mg/kg wet	2740	3410	3150	2790	2460	3220	3630	1650	2700	2600	3560	1630	3420	2240	1750	2420	2680	2120
Cesium (Cs)-Total	mg/kg dry	0.0301	0.0198	0.0174	0.0148	0.0168	0.0168	0.0261	0.0118	0.0316	0.0153	0.0309	0.0122	0.0092	0.0107	0.0240	0.0226	0.0233	0.0304
Cesium (Cs)-Total	mg/kg wet	0.0147	0.0096	0.0085	0.0071	0.0066	0.0083	0.0107	0.0038	0.0144	0.0069	0.0150	0.0041	0.0046	0.0046	0.0102	0.0097	0.0110	0.0143
Chromium (Cr)-Total	mg/kg dry	0.621	0.350	0.291	0.293	0.290	0.428	0.724	0.369	0.296	0.386	0.514	0.112	0.282	0.251	0.290	0.463	0.347	0.272
Chromium (Cr)-Total	mg/kg wet	0.304	0.170	0.142	0.141	0.114	0.210	0.296	0.119	0.134	0.174	0.250	0.038	0.139	0.108	0.123	0.198	0.163	0.128
Cobalt (Co)-Total	mg/kg dry	0.252	0.147	0.116	0.110	0.114	0.392	1.32	0.326	0.579	0.510	0.366	0.087	0.427	0.257	0.238	0.103	0.277	0.446
Cobalt (Co)-Total	mg/kg wet	0.123	0.0715	0.0567	0.0531	0.0448	0.192	0.542	0.105	0.263	0.230	0.178	0.0294	0.211	0.111	0.101	0.0439	0.130	0.211
Copper (Cu)-Total	mg/kg dry	2.60	2.24	2.34	2.36	2.31	2.44	6.17	1.79	2.91	2.55	3.26	2.29	2.51	3.07	2.71	3.06	2.67	2.45
Copper (Cu)-Total	mg/kg wet	1.27	1.09	1.14	1.14	0.906	1.20	2.52	0.577	1.32	1.15	1.59	0.771	1.24	1.33	1.15	1.31	1.25	1.16
Iron (Fe)-Total	mg/kg dry	304	199	199	174	179	288	529	207	204	237	294	48.6	212	188	151	108	181	136
Iron (Fe)-Total	mg/kg wet	148	96.4	97.0	83.8	70.5	141	216	66.6	92.7	107	143	16.3	105	80.9	63.8	46.2	84.8	64.1
Lead (Pb)-Total	mg/kg dry	0.249	0.318	0.276	0.247	0.256	0.461	1.35	0.395	0.431	0.444	0.499	0.079	0.663	0.246	0.197	0.142	0.115	0.082
Lead (Pb)-Total	mg/kg wet	0.122	0.154	0.135	0.119	0.100	0.226	0.552	0.127	0.196	0.200	0.243	0.0265	0.328	0.106	0.0835	0.0608	0.0538	0.0389
Lithium (Li)-Total	mg/kg dry	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.70	< 0.50	< 0.50	< 0.50	1.14	0.79	< 0.50	0.90	0.61	< 0.50	< 0.50	< 0.50	< 0.50
Lithium (Li)-Total	mg/kg wet	0.22	0.18	0.14	0.15	0.11	0.34	0.16	< 0.10	0.11	0.51	0.39	< 0.10	0.45	0.26	< 0.10	< 0.10	< 0.10	0.22
Magnesium (Mg)-Total	mg/kg dry	1770	1760	2200	2210	2120	1380	1420	946	1350	1350	1540	864	1360	1640	1050	1570	1400	1380
Magnesium (Mg)-Total	mg/kg wet	864	856	1080	1060	833	679	579	304	613	607	751	290	672	705	443	673	659	652
Manganese (Mn)-Total	mg/kg dry	217	464	112	111	109	1440	349	973	319	1220	101	404	1420	925	1930	2230	388	443
Manganese (Mn)-Total	mg/kg wet	106	225	54.5	53.7	42.6	707	143	313	145	551	49.4	136	702	399	818	953	182	209
Mercury (Hg)-Total	mg/kg dry	0.0125	0.0163	0.0161	0.0157	0.0150	0.0160	0.0216	0.0127	0.0151	0.0193	0.0127	0.0073	0.0191	0.0154	0.0083	0.0126	0.0110	0.0102
Mercury (Hg)-Total	mg/kg wet	0.0061	0.0079	0.0079	0.0076	0.0059	0.0078	0.0088	0.0041	0.0069	0.0087	0.0062	0.0024	0.0094	0.0067	0.0035	0.0054	0.0051	0.0048
Molybdenum (Mo)-Total	mg/kg dry	0.059	0.026	0.050	0.043	0.049	0.030	0.026	0.026	0.021	0.031	0.021	0.026	0.028	0.028	0.027	0.041	0.022	< 0.020
Molybdenum (Mo)-Total	mg/kg wet	0.0291	0.0127	0.0246	0.0208	0.0193	0.0145	0.0106	0.0084	0.0094	0.0140	0.0105	0.0088	0.0137	0.0119	0.0115	0.0174	0.0101	0.0063
Nickel (Ni)-Total	mg/kg dry	1.20	0.37	0.42	0.41	0.41	1.26	3.09	0.97	1.80	1.73	1.19	1.22	1.60	1.28	1.39	1.97	0.92	1.24
Nickel (Ni)-Total	mg/kg wet	0.587	0.177	0.203	0.200	0.163	0.617	1.26	0.313	0.819	0.778	0.578	0.411	0.788	0.552	0.589	0.842	0.430	0.584
Phosphorus (P)-Total	mg/kg dry	838	660	682	669	664	745	920	782	671	815	514	772	838	1130	659	613	904	841
Phosphorus (P)-Total	mg/kg wet	410	321	333	323	261	366	376	251	305	367	250	260	414	486	279	262	425	397
Potassium (K)-Total	mg/kg dry	3450	3110	2750	2780	2640	3270	4390	3490	2800	3390	2670	3100	3210	4560	2980	3000	4030	3760
Potassium (K)-Total	mg/kg wet	1690	1510	1340	1340	1040	1600	1800	1120	1270	1530	1300	1040	1580	1960	1260	1280	1890	1780
Rubidium (Rb)-Total	mg/kg dry	3.95	1.76	0.566	0.569	0.576	1.08	4.23	2.18	1.84	2.21	2.21	5.61	0.897	0.842	5.30	4.63	8.01	6.01
Rubidium (Rb)-Total	mg/kg wet	1.93	0.854	0.276	0.274	0.226	0.529	1.73	0.700	0.834	0.997	1.08	1.89	0.443	0.363	2.24	1.98	3.76	2.84
Selenium (Se)-Total	mg/kg dry	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.102	< 0.050	0.051	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.142	< 0.050	< 0.050
Selenium (Se)-Total	mg/kg wet	0.013	< 0.010	< 0.010	< 0.010	< 0.010	0.020	0.042	0.011	0.023	0.013	< 0.010	< 0.010	0.025	0.014	0.014	0.061	< 0.010	< 0.010
Silver (Ag)-Total	mg/kg dry	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0223	< 0.0050	0.0060	0.0056	< 0.0050	< 0.0050	0.0056	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Silver (Ag)-Total	mg/kg wet	0.0011	0.0017	0.0013	0.0010	0.0011	0.0020	0.0091	0.0010	0.0027	0.0025	0.0024	< 0.0010	0.0028	0.0013	0.0015	< 0.0010	0.0010	< 0.0010
Sodium (Na)-Total	mg/kg dry	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Sodium (Na)-Total	mg/kg wet	4.6	< 4.0	< 4.0	< 4.0	7.1	< 4.0	< 4.0	< 4.0	4.7	5.4	6.5	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	6.2	4.3
Strontium (Sr)-Total	mg/kg dry	10.6	17.4	14.3	13.0	14.1	8.72	11.4	4.83	7.18	6.35	10.8	12.6	10.8	8.13	8.19	13.1	9.94	8.44
Strontium (Sr)-Total	mg/kg wet	5.15	8.44	6.97	6.26	5.52	4.28	4.66	1.55	3.26	2.86	5.26	4.25	5.33	3.51	3.47	5.61	4.67	3.99
Tellurium (Te)-Total	mg/kg dry	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Tellurium (Te)-Total	mg/kg wet	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Thallium (Tl)-Total	mg/kg dry	0.0030	< 0.0020	< 0.0020	< 0.0020	0.0021	0.0026	0.0053	< 0.0020	0.0077	< 0.0020	0.0081	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0140	< 0.0020	< 0.0020
Thallium (Tl)-Total	mg/kg wet	0.00149	0.00089	0.00097	0.00076	0.00081	0.00126	0.00217	0.00051	0.00349	0.00090	0.00393	< 0.00040	0.00070	0.00071	0.00071	0.00597	0.00087	< 0.00040
Tin (Sn)-Total	mg/kg dry	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Tin (Sn)-Total	mg/kg wet	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Uranium (U)-Total	mg/kg dry	0.0326	0.0153	0.0219	0.0198	0.0198	0.0412	0.0173	0.0124	0.0125	0.0197	0.0166	0.0035	0.0182	0.0136	0.0258	0.101	0.0085	0.0043
Uranium (U)-Total	mg/kg wet	0.0159	0.00745	0.0107	0.00953	0.00777	0.0202	0.00708	0.00397	0.00570	0.00884	0.00811	0.00116	0.00900	0.00584	0.0109	0.0430	0.00400	0.00204
Vanadium (V)-Total	mg/kg dry	0.59	0.35	0.35	0.33	0.32	0.48	0.80	0.33	0.34	0.46	0.54	< 0.10	0.33	0.30	0.26	0.19	0.36	0.28
Vanadium (V)-Total	mg/kg wet	0.290	0.171	0.169	0.158	0.126	0.238	0.326	0.106	0.154	0.207	0.262	0.025	0.162	0.131	0.112	0.083	0.171	0.131
Zinc (Zn)-Total	mg/kg dry	11.5	14.8	7.47	7.61	7.24	9.90	17.9	13.4	8.81	6.53	6.89	5.24	11.8	10.7	8.42	4.39	18.1	7.38
Zinc (Zn)-Total	mg/kg wet	5.60	7.18	3.64	3.67	2.85	4.86	7.32	4.31	4.00	2.94	3.36	1.76	5.83	4.63	3.56	1.88	8.51	3.49
Zirconium (Zr)-Total	mg/kg dry	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zirconium (Zr)-Total	mg/kg wet	0.040	< 0.040	0.040	< 0.040	0.043	< 0.040	0.068	< 0.040	0.044	< 0.040	0.067	< 0.040	< 0.040	< 0.040	< 0.040	0.062	< 0.040	< 0.040

Notes:
< Indicates parameter was below laboratory equipment detection limit.
> Indicates parameter detected above equipment analytical range.
- Chemical not analyzed or criteria not defined.
N Indicates non-field-duplicate samples.
FD Indicates sample was a field duplicate.

Table 11: Chemistry Results for Cranberry Leaves
Giant Mine HHERA Data Gaps

	Location	16-GIANT-CR-41-D	16-GIANT-CR-45	16-GIANT-CR-51	16-GIANT-CR-51-D	16-GIANT-CR-52	16-GIANT-CR-53	16-GIANT-CR-53-D	16-GIANT-CR-55	16-GIANT-CR-56	16-GIANT-CR-57	16-GIANT-CR-58	16-GIANT-CR-59	16-GIANT-CR-60	16-GIANT-CR-61	16-GIANT-CR-70	16-GIANT-CR-71	16-GIANT-CR-73
	Sample Name	16-GIANT-CR-41-DUP	16-GIANT-CR-45	16-GIANT-CR-51	16-GIANT-CR-51-DUP	16-GIANT-CR-52	16-GIANT-CR-53	16-GIANT-CR-53-DUP	16-GIANT-CR-55	16-GIANT-CR-56	16-GIANT-CR-57	16-GIANT-CR-58	16-GIANT-CR-59	16-GIANT-CR-60	16-GIANT-CR-61	16-GIANT-CR-70	16-GIANT-CR-71	16-GIANT-CR-73
	Sample Date	09/09/2016	09/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	11/09/2016	11/09/2016	11/09/2016
	Laboratory Sample ID	L1842753-42	L1842753-19	L1842753-20	L1842753-43	L1842753-21	L1842753-22	L1842753-44	L1842753-23	L1842753-24	L1842753-25	L1842753-26	L1842753-27	L1842753-28	L1842753-29	L1842753-30	L1842753-31	L1842753-32
	Parent Lab Sample ID	L1842753-18			L1842753-20			L1842753-22										
	Sample Code	FD	N	N	FD	N	N	FD	N	N	N	N	N	N	N	N	N	N
	Sample Type	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves
Parameter	**Unit**																	
1. Physical																		
% Moisture	%	51.1	56.0	55.7	55.7	59.9	59.0	58.1	53.3	56.7	54.5	52.8	56.6	52.4	54.0	52.6	52.8	52.3
2. Metals																		
Aluminum (Al)-Total	mg/kg dry	108	89.5	180	232	475	164	153	148	282	110	293	232	159	145	293	183	124
Aluminum (Al)-Total	mg/kg wet	52.7	39.4	79.6	103	190	67.2	64.1	69.2	122	49.9	138	100	75.9	66.7	139	86.2	58.9
Antimony (Sb)-Total	mg/kg dry	0.039	0.036	1.10	1.64	3.16	1.06	1.17	0.956	1.75	0.113	2.57	4.07	2.32	0.944	3.76	2.16	1.39
Antimony (Sb)-Total	mg/kg wet	0.0190	0.0158	0.486	0.727	1.26	0.433	0.492	0.447	0.758	0.0512	1.21	1.77	1.10	0.435	1.78	1.02	0.664
Arsenic (As)-Total	mg/kg dry	0.783	1.00	10.9	15.3	31.0	8.80	9.38	8.32	15.4	1.62	18.9	25.6	14.6	6.09	39.3	19.4	11.7
Arsenic (As)-Total	mg/kg wet	0.383	0.441	4.85	6.77	12.4	3.61	3.93	3.89	6.65	0.736	8.95	11.1	6.97	2.80	18.6	9.15	5.58
Barium (Ba)-Total	mg/kg dry	47.9	20.1	32.8	22.2	51.0	26.7	16.6	23.5	24.9	63.2	54.2	23.6	34.1	39.2	13.5	28.9	46.5
Barium (Ba)-Total	mg/kg wet	23.4	8.82	14.5	9.82	20.4	10.9	6.95	11.0	10.8	28.8	25.6	10.2	16.3	18.0	6.40	13.6	22.2
Beryllium (Be)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Beryllium (Be)-Total	mg/kg wet	< 0.0020	< 0.0020	0.0021	< 0.0020	0.0035	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0023	0.0024	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Bismuth (Bi)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Bismuth (Bi)-Total	mg/kg wet	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0032	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0034	< 0.0020	< 0.0020
Boron (B)-Total	mg/kg dry	9.2	18.1	11.0	9.4	3.7	12.0	12.4	13.6	15.1	5.7	7.1	8.6	3.7	16.2	9.3	12.5	10.1
Boron (B)-Total	mg/kg wet	4.51	7.97	4.86	4.15	1.46	4.92	5.19	6.33	6.54	2.61	3.36	3.74	1.78	7.44	4.42	5.91	4.80
Cadmium (Cd)-Total	mg/kg dry	0.0077	0.0342	0.0078	0.0097	0.0211	0.0193	0.0150	0.0114	0.0354	0.0088	0.0299	0.0163	0.0232	0.0058	0.0295	0.0141	0.0094
Cadmium (Cd)-Total	mg/kg wet	0.0037	0.0150	0.0035	0.0043	0.0084	0.0079	0.0063	0.0053	0.0153	0.0040	0.0141	0.0071	0.0111	0.0026	0.0140	0.0067	0.0045
Calcium (Ca)-Total	mg/kg dry	4540	6750	14500	11300	7120	6910	7070	9080	7240	4840	6260	10400	6950	8050	8780	8810	6790
Calcium (Ca)-Total	mg/kg wet	2220	2970	6440	4990	2850	2830	2970	4240	3130	2200	2960	4520	3310	3710	4160	4160	3240
Cesium (Cs)-Total	mg/kg dry	0.0257	0.0158	0.0082	0.0101	0.0235	0.0120	0.0107	0.0077	0.0142	0.0282	0.0223	0.0150	0.0231	0.0124	0.0115	0.0130	0.0088
Cesium (Cs)-Total	mg/kg wet	0.0125	0.0070	0.0036	0.0045	0.0094	0.0049	0.0045	0.0036	0.0061	0.0128	0.0106	0.0065	0.0110	0.0057	0.0055	0.0061	0.0042
Chromium (Cr)-Total	mg/kg dry	0.255	0.316	0.495	0.657	1.12	0.453	0.430	0.460	0.793	0.218	0.662	0.644	0.377	0.250	0.788	0.503	0.300
Chromium (Cr)-Total	mg/kg wet	0.124	0.139	0.220	0.291	0.451	0.185	0.180	0.215	0.343	0.099	0.313	0.280	0.179	0.115	0.374	0.237	0.143
Cobalt (Co)-Total	mg/kg dry	0.451	0.164	0.410	0.375	0.948	0.324	0.287	0.252	0.457	0.121	0.664	0.577	0.400	0.284	0.678	0.311	0.195
Cobalt (Co)-Total	mg/kg wet	0.220	0.0719	0.182	0.166	0.380	0.133	0.121	0.118	0.198	0.0551	0.314	0.250	0.191	0.131	0.322	0.147	0.0931
Copper (Cu)-Total	mg/kg dry	2.61	3.36	2.24	1.92	4.82	2.24	2.01	2.00	2.98	1.61	5.62	2.71	2.70	3.05	3.54	1.92	2.05
Copper (Cu)-Total	mg/kg wet	1.28	1.48	0.993	0.849	1.93	0.919	0.842	0.933	1.29	0.735	2.65	1.18	1.29	1.40	1.68	0.907	0.977
Iron (Fe)-Total	mg/kg dry	117	179	394	568	1080	380	384	393	694	105	587	648	376	216	923	491	293
Iron (Fe)-Total	mg/kg wet	57.3	78.9	175	252	433	156	161	184	301	47.8	277	281	179	99.4	437	232	140
Lead (Pb)-Total	mg/kg dry	0.078	0.097	0.808	1.07	2.52	0.745	0.812	0.642	1.25	0.120	1.83	3.03	1.62	0.746	3.11	1.76	1.08
Lead (Pb)-Total	mg/kg wet	0.0379	0.0428	0.359	0.473	1.01	0.305	0.340	0.300	0.541	0.0546	0.865	1.31	0.771	0.343	1.48	0.832	0.515
Lithium (Li)-Total	mg/kg dry	< 0.50	< 0.50	< 0.50	< 0.50	0.67	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Lithium (Li)-Total	mg/kg wet	0.23	0.13	0.20	0.16	0.27	0.20	0.18	< 0.10	0.19	< 0.10	0.11	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Magnesium (Mg)-Total	mg/kg dry	1360	1370	3160	2820	1680	2040	1950	1260	2060	1030	1580	1780	1290	1080	2180	1480	1760
Magnesium (Mg)-Total	mg/kg wet	662	604	1400	1250	673	837	818	588	892	469	747	771	615	499	1030	696	841
Manganese (Mn)-Total	mg/kg dry	436	148	160	30.6	110	129	81.8	34.5	79.1	320	100	396	563	199	68.2	97.1	50.5
Manganese (Mn)-Total	mg/kg wet	213	64.9	70.7	13.6	44.2	52.7	34.3	16.1	34.2	145	47.3	172	268	91.6	32.3	45.8	24.1
Mercury (Hg)-Total	mg/kg dry	0.0082	0.0097	0.0130	0.0114	0.0192	0.0129	0.0141	0.0115	0.0193	0.0089	0.0138	0.0203	0.0165	0.0180	0.0165	0.0208	0.0164
Mercury (Hg)-Total	mg/kg wet	0.0040	0.0043	0.0058	0.0051	0.0077	0.0053	0.0059	0.0054	0.0083	0.0041	0.0065	0.0088	0.0079	0.0083	0.0078	0.0098	0.0078
Molybdenum (Mo)-Total	mg/kg dry	< 0.020	0.023	0.033	0.028	0.028	0.030	0.030	0.042	0.045	0.040	0.023	0.045	< 0.020	< 0.020	0.042	0.037	0.043
Molybdenum (Mo)-Total	mg/kg wet	0.0073	0.0102	0.0145	0.0126	0.0113	0.0124	0.0125	0.0196	0.0195	0.0181	0.0108	0.0193	0.0076	0.0045	0.0197	0.0175	0.0205
Nickel (Ni)-Total	mg/kg dry	1.32	0.45	1.18	0.89	2.68	1.15	0.94	0.59	1.06	0.40	1.97	1.09	1.24	0.71	1.34	0.66	0.54
Nickel (Ni)-Total	mg/kg wet	0.643	0.200	0.522	0.394	1.07	0.470	0.393	0.276	0.460	0.181	0.931	0.474	0.590	0.327	0.633	0.311	0.255
Phosphorus (P)-Total	mg/kg dry	867	1180	687	479	747	594	568	682	741	659	689	606	564	567	625	656	664
Phosphorus (P)-Total	mg/kg wet	424	519	305	212	299	243	238	319	321	300	325	263	269	261	296	309	316
Potassium (K)-Total	mg/kg dry	3760	6250	1940	1300	3170	2730	2470	2750	3410	2630	3690	3020	2280	2540	2520	2740	2680
Potassium (K)-Total	mg/kg wet	1840	2750	860	575	1270	1120	1030	1290	1480	1200	1740	1310	1090	1170	1200	1290	1280
Rubidium (Rb)-Total	mg/kg dry	5.72	5.00	0.357	0.363	2.30	1.24	0.904	0.399	0.859	4.33	1.74	0.880	2.28	2.41	1.72	1.81	2.34
Rubidium (Rb)-Total	mg/kg wet	2.80	2.20	0.158	0.161	0.920	0.509	0.379	0.187	0.372	1.97	0.823	0.382	1.09	1.11	0.814	0.851	1.11
Selenium (Se)-Total	mg/kg dry	< 0.050	< 0.050	0.234	0.072	0.058	0.060	0.066	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Selenium (Se)-Total	mg/kg wet	0.010	< 0.010	0.104	0.032	0.023	0.025	0.027	0.013	0.016	< 0.010	0.011	< 0.010	0.011	0.017	< 0.010	< 0.010	< 0.010
Silver (Ag)-Total	mg/kg dry	< 0.0050	< 0.0050	0.0069	0.0108	0.0165	0.0062	0.0060	0.0068	0.0091	< 0.0050	0.0144	0.0154	0.0090	< 0.0050	0.0221	0.0110	0.0088
Silver (Ag)-Total	mg/kg wet	< 0.0010	< 0.0010	0.0030	0.0048	0.0066	0.0025	0.0025	0.0032	0.0040	< 0.0010	0.0068	0.0067	0.0043	0.0017	0.0105	0.0052	0.0042
Sodium (Na)-Total	mg/kg dry	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Sodium (Na)-Total	mg/kg wet	< 4.0	7.7	5.1	7.1	7.4	4.0	< 4.0	6.1	7.9	< 4.0	7.3	4.6	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Strontium (Sr)-Total	mg/kg dry	8.80	7.23	18.3	14.3	12.0	11.6	9.59	14.3	10.2	5.53	5.43	10.2	5.49	6.41	6.41	15.6	6.03
Strontium (Sr)-Total	mg/kg wet	4.30	3.18	8.13	6.34	4.82	4.76	4.02	6.68	4.40	2.52	2.56	4.44	2.61	2.95	3.04	7.34	2.88
Tellurium (Te)-Total	mg/kg dry	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Tellurium (Te)-Total	mg/kg wet	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Thallium (Tl)-Total	mg/kg dry	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0037	0.0020	< 0.0020	< 0.0020	0.0022	< 0.0020	0.0029	0.0022	< 0.0020	< 0.0020	0.0023	< 0.0020	< 0.0020
Thallium (Tl)-Total	mg/kg wet	0.00042	0.00046	0.00064	0.00074	0.00150	0.00082	0.00074	0.00063	0.00094	0.00079	0.00138	0.00096	0.00064	0.00044	0.00111	0.00087	0.00065
Tin (Sn)-Total	mg/kg dry	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Tin (Sn)-Total	mg/kg wet	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Uranium (U)-Total	mg/kg dry	0.0041	0.0062	0.0063	0.0067	0.0122	0.0075	0.0056	0.0049	0.0093	0.0090	0.0116	0.0093	0.0046	0.0035	0.0049	0.0118	0.0021
Uranium (U)-Total	mg/kg wet	0.00202	0.00271	0.00280	0.00298	0.00487	0.00307	0.00236	0.00229	0.00401	0.00412	0.00548	0.00404	0.00218	0.00160	0.00231	0.00558	0.00099
Vanadium (V)-Total	mg/kg dry	0.24	0.36	0.63	0.89	1.48	0.57	0.55	0.63	1.07	0.18	0.77	0.66	0.44	0.28	1.01	0.65	0.38
Vanadium (V)-Total	mg/kg wet	0.115	0.158	0.281	0.396	0.594	0.235	0.229	0.293	0.464	0.084	0.363	0.288	0.212	0.127	0.477	0.304	0.180
Zinc (Zn)-Total	mg/kg dry	7.89	19.5	8.60	8.25	10.2	10.7	11.9	6.91	12.3	8.17	9.80	11.6	6.06	10.2	13.4	16.5	9.50
Zinc (Zn)-Total	mg/kg wet	3.86	8.56	3.81	3.66	4.10	4.39	5.00	3.23	5.30	3.72	4.63	5.03	2.89	4.70	6.37	7.80	4.53
Zirconium (Zr)-Total	mg/kg dry	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zirconium (Zr)-Total	mg/kg wet	< 0.040	< 0.040	< 0.040	0.041	0.074	0.049	< 0.040	< 0.040	0.069	< 0.040	0.087	0.065	< 0.040	< 0.040	0.050	0.043	< 0.040

Notes:
< Indicates parameter was below laboratory
> Indicates parameter detected above equi
- Chemical not analyzed or criteria not defin
N Indicates non-field-duplicate samples.
FD Indicates sample was a field duplicate.

Table 11: Chemistry Results for Cranberry Leaves
Giant Mine HHERA Data Gaps

	Location	16-GIANT-CR-74	16-GIANT-CR-75	16-GIANT-CR-76	16-GIANT-CR-77	16-GIANT-CR-78	16-GIANT-CR-79	16-GIANT-CR-80	16-GIANT-CR-81
	Sample Name	16-GIANT-CR-74	16-GIANT-CR-75	16-GIANT-CR-76	16-GIANT-CR-77	16-GIANT-CR-78	16-GIANT-CR-79	16-GIANT-CR-80	16-GIANT-CR-81
	Sample Date	11/09/2016	11/09/2016	11/09/2016	11/09/2016	11/09/2016	11/09/2016	11/09/2016	11/09/2016
	Laboratory Sample ID	L1842753-33	L1842753-34	L1842753-35	L1842753-36	L1842753-37	L1842753-38	L1842753-39	L1842753-40
	Parent Lab Sample ID								
	Sample Code	N	N	N	N	N	N	N	N
	Sample Type	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves	Cranberry Leaves
Parameter	**Unit**								
1. Physical									
% Moisture	%	51.8	50.8	54.9	54.4	48.5	52.3	52.9	52.4
2. Metals									
Aluminum (Al)-Total	mg/kg dry	46.8	53.2	33.6	108	91.7	45.4	53.7	94.6
Aluminum (Al)-Total	mg/kg wet	22.5	26.2	15.2	49.4	47.3	21.7	25.3	45.1
Antimony (Sb)-Total	mg/kg dry	0.381	0.452	0.139	0.254	0.175	0.162	0.196	0.176
Antimony (Sb)-Total	mg/kg wet	0.184	0.223	0.0628	0.116	0.0899	0.0775	0.0926	0.0838
Arsenic (As)-Total	mg/kg dry	3.93	3.87	1.24	2.28	1.56	1.15	1.71	1.44
Arsenic (As)-Total	mg/kg wet	1.89	1.91	0.559	1.04	0.804	0.549	0.806	0.687
Barium (Ba)-Total	mg/kg dry	29.5	33.9	33.2	77.4	74.6	47.7	22.4	64.3
Barium (Ba)-Total	mg/kg wet	14.2	16.7	15.0	35.3	38.4	22.8	10.5	30.6
Beryllium (Be)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Beryllium (Be)-Total	mg/kg wet	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Bismuth (Bi)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Bismuth (Bi)-Total	mg/kg wet	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Boron (B)-Total	mg/kg dry	7.5	11.8	17.1	7.1	7.6	15.0	18.5	11.2
Boron (B)-Total	mg/kg wet	3.59	5.79	7.71	3.22	3.91	7.18	8.72	5.35
Cadmium (Cd)-Total	mg/kg dry	0.0127	0.0073	0.0086	0.0125	0.0099	0.0268	0.0364	0.0115
Cadmium (Cd)-Total	mg/kg wet	0.0061	0.0036	0.0039	0.0057	0.0051	0.0128	0.0171	0.0055
Calcium (Ca)-Total	mg/kg dry	5550	7170	4230	5530	6600	5200	5350	5010
Calcium (Ca)-Total	mg/kg wet	2680	3530	1910	2520	3400	2480	2520	2390
Cesium (Cs)-Total	mg/kg dry	0.0314	0.0228	< 0.0050	0.0257	0.0275	< 0.0050	0.0052	0.0106
Cesium (Cs)-Total	mg/kg wet	0.0151	0.0112	0.0017	0.0117	0.0142	0.0013	0.0024	0.0050
Chromium (Cr)-Total	mg/kg dry	0.101	0.117	0.073	0.129	0.101	0.086	0.098	0.096
Chromium (Cr)-Total	mg/kg wet	0.049	0.058	0.033	0.059	0.052	0.041	0.046	0.046
Cobalt (Co)-Total	mg/kg dry	0.079	0.176	0.044	0.246	0.267	0.074	0.093	0.371
Cobalt (Co)-Total	mg/kg wet	0.0381	0.0867	0.0198	0.112	0.137	0.0354	0.0436	0.177
Copper (Cu)-Total	mg/kg dry	2.80	1.86	2.27	4.15	3.81	2.07	2.51	3.66
Copper (Cu)-Total	mg/kg wet	1.35	0.914	1.03	1.89	1.96	0.989	1.18	1.75
Iron (Fe)-Total	mg/kg dry	105	115	62.0	90.9	69.2	61.8	78.2	76.6
Iron (Fe)-Total	mg/kg wet	50.8	56.8	28.0	41.5	35.6	29.5	36.9	36.5
Lead (Pb)-Total	mg/kg dry	0.255	0.308	0.094	0.213	0.123	0.117	0.131	0.127
Lead (Pb)-Total	mg/kg wet	0.123	0.152	0.0422	0.0970	0.0631	0.0556	0.0617	0.0607
Lithium (Li)-Total	mg/kg dry	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Lithium (Li)-Total	mg/kg wet	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Magnesium (Mg)-Total	mg/kg dry	1690	1630	1780	1300	1120	1180	1000	1510
Magnesium (Mg)-Total	mg/kg wet	815	804	803	592	576	565	472	717
Manganese (Mn)-Total	mg/kg dry	86.2	163	257	557	649	251	332	632
Manganese (Mn)-Total	mg/kg wet	41.6	80.3	116	254	335	120	156	301
Mercury (Hg)-Total	mg/kg dry	0.0082	0.0117	0.0134	0.0124	0.0168	0.0100	0.0143	0.0126
Mercury (Hg)-Total	mg/kg wet	0.0039	0.0057	0.0060	0.0057	0.0087	0.0048	0.0067	0.0060
Molybdenum (Mo)-Total	mg/kg dry	0.038	< 0.020	0.210	< 0.020	< 0.020	0.056	0.036	< 0.020
Molybdenum (Mo)-Total	mg/kg wet	0.0181	0.0057	0.0950	0.0089	0.0073	0.0268	0.0168	0.0056
Nickel (Ni)-Total	mg/kg dry	0.49	0.39	0.20	1.75	1.14	0.67	0.29	1.71
Nickel (Ni)-Total	mg/kg wet	0.236	0.190	0.091	0.797	0.586	0.320	0.137	0.814
Phosphorus (P)-Total	mg/kg dry	927	721	881	814	575	734	721	747
Phosphorus (P)-Total	mg/kg wet	447	355	398	371	296	351	340	356
Potassium (K)-Total	mg/kg dry	3510	2770	4190	3330	2370	4000	3930	2740
Potassium (K)-Total	mg/kg wet	1690	1360	1890	1520	1220	1910	1850	1310
Rubidium (Rb)-Total	mg/kg dry	4.58	4.81	1.72	3.97	1.63	0.526	2.20	2.83
Rubidium (Rb)-Total	mg/kg wet	2.21	2.37	0.778	1.81	0.839	0.251	1.04	1.35
Selenium (Se)-Total	mg/kg dry	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Selenium (Se)-Total	mg/kg wet	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Silver (Ag)-Total	mg/kg dry	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Silver (Ag)-Total	mg/kg wet	0.0023	0.0014	< 0.0010	0.0013	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Sodium (Na)-Total	mg/kg dry	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Sodium (Na)-Total	mg/kg wet	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Strontium (Sr)-Total	mg/kg dry	4.35	6.28	6.43	7.28	5.73	9.28	4.65	7.37
Strontium (Sr)-Total	mg/kg wet	2.10	3.09	2.90	3.32	2.95	4.43	2.19	3.51
Tellurium (Te)-Total	mg/kg dry	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Tellurium (Te)-Total	mg/kg wet	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Thallium (Tl)-Total	mg/kg dry	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0034	< 0.0020	< 0.0020	< 0.0020
Thallium (Tl)-Total	mg/kg wet	0.00046	0.00043	0.00043	< 0.00040	0.00174	< 0.00040	< 0.00040	< 0.00040
Tin (Sn)-Total	mg/kg dry	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Tin (Sn)-Total	mg/kg wet	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Uranium (U)-Total	mg/kg dry	< 0.0020	< 0.0020	0.0024	< 0.0020	< 0.0020	0.0024	0.0023	< 0.0020
Uranium (U)-Total	mg/kg wet	0.00063	0.00082	0.00107	0.00080	0.00088	0.00115	0.00110	0.00089
Vanadium (V)-Total	mg/kg dry	0.14	0.11	< 0.10	0.13	< 0.10	< 0.10	0.11	0.12
Vanadium (V)-Total	mg/kg wet	0.069	0.056	0.037	0.057	0.050	0.041	0.051	0.058
Zinc (Zn)-Total	mg/kg dry	12.6	7.90	13.8	8.11	6.82	8.95	16.7	5.18
Zinc (Zn)-Total	mg/kg wet	6.07	3.89	6.23	3.70	3.52	4.27	7.87	2.47
Zirconium (Zr)-Total	mg/kg dry	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zirconium (Zr)-Total	mg/kg wet	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040

Notes:

< Indicates parameter was below laboratory
> Indicates parameter detected above equi
- Chemical not analyzed or criteria not defin
N Indicates non-field-duplicate samples.
FD Indicates sample was a field duplicate.

Table 12: Chemistry Results for Small Mammals
Giant Mine HHERA Data Gaps

Location		16-GIANT-BAIT	16-GIANT-DM-01	16-GIANT-DM-03	16-GIANT-DM-09	16-GIANT-DM-10	16-GIANT-DM-12	16-GIANT-DM-13	16-GIANT-DM-14	16-GIANT-DM-15	16-GIANT-DM-16	16-GIANT-DM-17	16-GIANT-DM-18	16-GIANT-DM-19	16-GIANT-DM-22	16-GIANT-DM-23	16-GIANT-DM-24	16-GIANT-DM-25	16-GIANT-DM-26	16-GIANT-DM-27	16-GIANT-DM-28	16-GIANT-DM-29	16-GIANT-DM-30
Sample Name		16-GIANT-BAIT	16-GIANT-DM-01	16-GIANT-DM-03	16-GIANT-DM-09	16-GIANT-DM-10	16-GIANT-DM-12	16-GIANT-DM-13	16-GIANT-DM-14	16-GIANT-DM-15	16-GIANT-DM-16	16-GIANT-DM-17	16-GIANT-DM-18	16-GIANT-DM-19	16-GIANT-DM-22	16-GIANT-DM-23	16-GIANT-DM-24	16-GIANT-DM-25	16-GIANT-DM-26	16-GIANT-DM-27	16-GIANT-DM-28	16-GIANT-DM-29	16-GIANT-DM-30
Sample Date		09/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	08/09/2016	08/09/2016	08/09/2016
Laboratory Sample ID		L1842843-51	L1842843-2	L1842843-4	L1842843-10	L1842843-11	L1842843-13	L1842843-14	L1842843-15	L1842843-16	L1842843-17	L1842843-24	L1842843-25	L1842843-26	L1842843-29	L1842843-30	L1842843-31	L1842843-32	L1842843-33	L1842843-34	L1842843-18	L1842843-19	L1842843-20
Parent Lab Sample ID																							
Sample Code		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sample Type		Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals
Parameter	Unit																						
1. Physical																							
% Moisture	%	4.54	66.4	68.7	72.2	68.5	69.7	67.8	69.0	70.7	65.0	69.2	69.2	69.6	70.3	70.0	71.7	63.2	69.8	70.0	67.6	71.3	73.7
2. Metals																							
Aluminum (Al)-Total	mg/kg dry	6.6	42.2	23.0	110	671	36.5	122	298	52.9	58.5	50.4	167	213	172	66.8	76.5	200	60.3	53.6	117	11.0	26.4
Aluminum (Al)-Total	mg/kg wet	6.27	14.2	7.21	30.7	212	11.1	39.4	92.4	15.5	20.5	15.5	51.4	64.6	51.1	20.1	21.6	73.5	18.2	16.1	37.9	3.15	6.95
Antimony (Sb)-Total	mg/kg dry	< 0.010	0.032	0.056	0.408	0.605	0.164	0.223	0.317	0.165	0.153	0.168	0.160	0.096	0.499	0.225	0.201	0.142	0.183	0.133	0.082	0.063	0.080
Antimony (Sb)-Total	mg/kg wet	< 0.0020	0.0108	0.0175	0.114	0.191	0.0496	0.0719	0.0983	0.0484	0.0535	0.0515	0.0494	0.0292	0.148	0.0675	0.0568	0.0523	0.0553	0.0399	0.0267	0.0182	0.0210
Arsenic (As)-Total	mg/kg dry	< 0.020	2.29	1.23	4.91	9.37	4.19	14.2	29.6	6.46	3.86	12.4	4.52	6.02	17.2	10.1	9.48	7.98	11.1	6.15	2.63	4.42	7.70
Arsenic (As)-Total	mg/kg wet	0.0127	0.771	0.386	1.37	2.96	1.27	4.57	9.17	1.89	1.35	3.82	1.39	1.83	5.10	3.02	2.68	2.94	3.36	1.84	0.851	1.27	2.02
Barium (Ba)-Total	mg/kg dry	1.71	7.75	16.1	5.65	9.92	10.3	7.41	7.32	7.06	10.8	10.6	6.30	6.02	22.6	7.55	5.23	3.58	3.81	4.19	7.71	6.33	11.0
Barium (Ba)-Total	mg/kg wet	1.63	2.61	5.04	1.57	3.13	3.11	2.39	2.27	2.07	3.77	3.25	1.94	1.83	6.71	2.27	1.48	1.32	1.15	1.26	2.50	1.81	2.89
Beryllium (Be)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	0.018	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Beryllium (Be)-Total	mg/kg wet	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0058	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Bismuth (Bi)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Bismuth (Bi)-Total	mg/kg wet	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0025	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Boron (B)-Total	mg/kg dry	9.0	3.0	3.0	1.2	1.6	1.0	3.7	1.3	1.9	3.9	2.3	2.5	1.3	2.4	1.8	2.2	3.2	1.8	4.3	2.1	1.5	3.3
Boron (B)-Total	mg/kg wet	8.59	1.02	0.94	0.34	0.50	0.31	1.19	0.41	0.55	1.38	0.72	0.78	0.40	0.70	0.55	0.62	1.19	0.56	1.29	0.68	0.42	0.88
Cadmium (Cd)-Total	mg/kg dry	0.0487	0.0530	0.0224	0.0243	0.0503	0.0172	0.0487	0.0234	0.258	0.0303	0.0169	0.0677	0.0735	0.105	0.0662	0.132	0.0706	0.0632	0.0636	0.0206	0.134	0.216
Cadmium (Cd)-Total	mg/kg wet	0.0465	0.0178	0.0070	0.0068	0.0159	0.0052	0.0157	0.0072	0.0757	0.0106	0.0052	0.0209	0.0223	0.0312	0.0199	0.0374	0.0260	0.0191	0.0190	0.0067	0.0384	0.0567
Calcium (Ca)-Total	mg/kg dry	452	29000	42900	42300	39700	49200	42900	39300	36000	35200	48300	31600	30200	59800	33200	25500	20200	23400	28500	35300	27100	32200
Calcium (Ca)-Total	mg/kg wet	431	9770	13400	11800	12500	14900	13800	12200	10600	12300	14900	9740	9180	17700	9970	7210	7440	7070	8550	11400	7760	8470
Cesium (Cs)-Total	mg/kg dry	0.0110	0.0920	0.100	0.0435	0.0815	0.102	0.106	0.0350	0.0572	0.253	0.0893	0.0523	0.0354	0.0661	0.130	0.0214	0.0483	0.115	0.0535	0.129	1.82	2.04
Cesium (Cs)-Total	mg/kg wet	0.0105	0.0310	0.0313	0.0121	0.0257	0.0310	0.0343	0.0109	0.0168	0.0884	0.0275	0.0161	0.0107	0.0196	0.0389	0.0060	0.0178	0.0347	0.0160	0.0419	0.520	0.536
Chromium (Cr)-Total	mg/kg dry	0.181	0.151	0.056	0.368	1.74	0.136	0.310	0.617	0.106	0.129	0.119	0.449	0.473	0.337	0.180	0.166	0.490	0.142	0.140	0.402	< 0.050	0.073
Chromium (Cr)-Total	mg/kg wet	0.173	0.051	0.017	0.102	0.550	0.041	0.100	0.191	0.031	0.045	0.037	0.138	0.144	0.100	0.054	0.047	0.180	0.043	0.042	0.130	0.014	0.019
Cobalt (Co)-Total	mg/kg dry	0.028	0.108	0.088	0.278	0.690	0.183	0.531	1.02	0.239	0.149	0.123	0.356	0.283	0.300	0.174	0.140	0.333	0.169	0.299	0.207	0.444	0.221
Cobalt (Co)-Total	mg/kg wet	0.0270	0.0363	0.0276	0.0773	0.218	0.0555	0.171	0.317	0.0700	0.0522	0.0379	0.110	0.0859	0.0889	0.0522	0.0395	0.123	0.0511	0.0898	0.0670	0.127	0.0581
Copper (Cu)-Total	mg/kg dry	4.14	10.1	9.60	13.5	10.4	11.6	10.1	11.4	11.5	9.98	9.69	11.1	12.3	10.1	13.1	13.2	10.2	11.1	11.2	8.87	8.58	8.79
Copper (Cu)-Total	mg/kg wet	3.95	3.38	3.01	3.76	3.27	3.52	3.26	3.53	3.37	3.49	2.98	3.43	3.75	2.99	3.94	3.73	3.77	3.36	3.37	2.87	2.46	2.31
Iron (Fe)-Total	mg/kg dry	24.7	255	243	452	1050	312	456	812	294	279	311	475	520	458	374	341	458	306	308	339	267	253
Iron (Fe)-Total	mg/kg wet	23.6	85.8	76.1	126	333	94.6	147	252	86.3	97.4	95.7	146	158	136	112	96.5	169	92.2	92.2	110	76.4	66.5
Lead (Pb)-Total	mg/kg dry	< 0.020	0.153	0.179	3.92	0.822	1.37	0.473	0.469	0.269	0.239	0.555	1.44	0.659	46.1	2.55	1.27	0.489	1.10	1.83	3.52	0.132	0.269
Lead (Pb)-Total	mg/kg wet	0.0076	0.0514	0.0562	1.09	0.259	0.414	0.153	0.145	0.0789	0.0837	0.171	0.444	0.200	13.7	0.766	0.358	0.180	0.333	0.548	1.14	0.0378	0.0706
Lithium (Li)-Total	mg/kg dry	< 0.50	< 0.50	< 0.50	< 0.50	1.10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Lithium (Li)-Total	mg/kg wet	< 0.10	< 0.10	< 0.10	< 0.10	0.35	< 0.10	< 0.10	0.11	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Magnesium (Mg)-Total	mg/kg dry	1560	1280	1760	1570	1640	1730	2010	1520	1650	1850	1870	1640	1640	2130	1700	1760	1680	1410	1890	1590	1290	1710
Magnesium (Mg)-Total	mg/kg wet	1490	432	550	438	518	525	649	473	485	648	575	506	498	632	509	496	618	425	566	516	369	448
Manganese (Mn)-Total	mg/kg dry	22.9	8.37	10.1	11.5	23.7	14.1	28.7	43.9	23.4	42.4	13.5	9.90	13.7	10.7	10.2	10.8	16.2	7.53	12.5	9.45	10.5	14.8
Manganese (Mn)-Total	mg/kg wet	21.9	2.82	3.17	3.20	7.48	4.28	9.25	13.6	6.87	14.8	4.14	3.05	4.15	3.16	3.06	3.06	5.98	2.27	3.74	3.06	3.00	3.88
Mercury (Hg)-Total	mg/kg dry	< 0.0050	0.0191	0.0144	0.0200	0.0684	0.0207	0.0175	0.0092	0.0119	0.0146	0.0101	0.0095	0.0134	0.0118	0.0184	0.0072	0.0054	0.0087	0.0074	0.0161	0.130	0.122
Mercury (Hg)-Total	mg/kg wet	< 0.0010	0.0064	0.0045	0.0056	0.0216	0.0063	0.0056	0.0029	0.0039	0.0051	0.0031	0.0029	0.0041	0.0035	0.0055	0.0020	0.0020	0.0026	0.0022	0.0052	0.0372	0.0319
Molybdenum (Mo)-Total	mg/kg dry	1.35	0.553	0.494	0.602	0.608	0.583	0.747	1.10	0.463	0.793	0.456	0.672	0.868	0.951	1.05	1.19	0.905	0.806	0.943	0.287	0.401	0.487
Molybdenum (Mo)-Total	mg/kg wet	1.29	0.186	0.155	0.168	0.192	0.176	0.241	0.341	0.136	0.277	0.140	0.207	0.263	0.282	0.315	0.336	0.333	0.243	0.283	0.0930	0.115	0.128
Nickel (Ni)-Total	mg/kg dry	0.98	0.90	0.64	0.98	1.70	0.56	0.90	1.78	0.74	1.09	0.54	0.50	0.70	0.81	0.54	0.88	0.74	0.88	0.59	0.71	0.49	0.58
Nickel (Ni)-Total	mg/kg wet	0.939	0.304	0.201	0.272	0.536	0.169	0.291	0.553	0.216	0.381	0.167	0.155	0.214	0.241	0.161	0.249	0.271	0.264	0.178	0.231	0.142	0.151
Phosphorus (P)-Total	mg/kg dry	3940	20200	31200	26700	24200	31400	29100	24700	26300	27200	35200	24700	26100	42300	28800	24800	20600	22100	24400	27300	24900	28900
Phosphorus (P)-Total	mg/kg wet	3760	6780	9770	7420	7640	9500	9400	7650	7710	9520	10800	7610	7920	12500	8650	7000	7570	6670	7330	8850	7140	7580
Potassium (K)-Total	mg/kg dry	5200	9270	10900	10500	9480	9980	11100	9970	11400	11700	12000	12400	12600	13100	12900	13600	11600	12500	12700	9820	11800	14000
Potassium (K)-Total	mg/kg wet	4970	3120	3410	2930	2990	3020	3570	3090	3350	4100	3700	3820	3830	3890	3860	3850	4290	3780	3790	3180	3390	3670
Rubidium (Rb)-Total	mg/kg dry	5.85	15.9	31.3	10.0	11.8	66.2	36.7	13.2	27.1	48.3	23.9	24.2	12.9	12.4	30.4	11.4	14.0	19.7	12.9	15.0	88.3	50.0
Rubidium (Rb)-Total	mg/kg wet	5.59	5.34	9.81	2.78	3.71	20.0	11.8	4.09	7.95	16.9	7.37	7.44	3.91	3.68	9.13	3.22	5.15	5.95	3.86	4.86	25.3	13.1
Selenium (Se)-Total	mg/kg dry	0.181	0.745	0.747	0.822	0.824	0.630	0.659	0.996	0.696	0.514	0.812	0.732	1.09	1.18	1.11	1.32	0.796	0.928	0.866	0.660	0.906	0.810
Selenium (Se)-Total	mg/kg wet	0.172	0.251	0.234	0.229	0.260	0.191	0.213	0.309	0.204	0.180	0.250	0.225	0.331	0.351	0.334	0.373	0.293	0.280	0.259	0.214	0.260	0.213
Silver (Ag)-Total	mg/kg dry	< 0.0050	0.0062	< 0.0050	< 0.0050	0.0087	< 0.0050	0.0058	0.0102	0.0158	0.0052	0.0067	< 0.0050	0.0081	0.0083	0.0164	0.0177	0.0082	0.0114	0.0055	< 0.0050	0.0161	0.0257
Silver (Ag)-Total	mg/kg wet	< 0.0010	0.0021	< 0.0010	0.0011	0.0028	< 0.0010	0.0019	0.0032	0.0046	0.0018	0.0021	0.0015	0.0025	0.0025	0.0049	0.0050	0.0030	0.0034	0.0016	< 0.0010	0.0046	0.0068
Sodium (Na)-Total	mg/kg dry	2890	4290	4680	5940	4010	5240	5040	4170	5130	4590	4760	4560	4740	5160	5270	5240	4790	4400	4890	3880	4600	5360
Sodium (Na)-Total	mg/kg wet	2760	1440	1470	1650	1260	1590	1620	1290	1500	1610	1460	1400	1440	1530	1580	1480	1760	1330	1460	1260	1320	1410
Strontium (Sr)-Total	mg/kg dry	4.10	9.08	9.86	12.0	13.8	12.8	13.0	11.3	10.5	13.4	13.7	7.58	8.19	18.4	13.2	8.90	6.44	7.31	10.7	11.1	14.0	21.3
Strontium (Sr)-Total	mg/kg wet	3.92	3.06	3.09	3.33	4.37	3.87	4.20	3.52	3.09	4.68	4.21	2.34	2.49	5.44	3.96	2.52	2.37	2.21	3.19	3.60	4.01	5.59
Tellurium (Te)-Total	mg/kg dry	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Tellurium (Te)-Total	mg/kg wet	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Thallium (Tl)-Total	mg/kg dry	< 0.0020	0.0028	< 0.0020	0.0025	0.0126	< 0.0020	0.0022	0.0062	< 0.0020	0.0043	< 0.0020	0.0020	0.0027	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0033	0.0122	< 0.0020
Thallium (Tl)-Total	mg/kg wet	< 0.00040	0.00094	0.00054	0.00068	0.00397	0.00055	0.00072	0.00193	0.00048	0.00151	< 0.00040	0.00062	0.00082	0.00054	< 0.00040	< 0.00040	0.00071	< 0.00040	< 0.00040	0.00108	0.00349	< 0.00040
Tin (Sn)-Total	mg/kg dry	< 0.10	< 0.10	0.12	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.12	< 0.10	0.12	0.11	< 0.10	0.28	0.12	< 0.10	0.16	0.18	< 0.10	0.15	0.18
Tin (Sn)-Total	mg/kg wet	< 0.020	< 0.020	0.037	0.027	0.020	0.024	< 0.020	< 0.020	0.024	0.042	0.029	0.036	0.035	0.022	0.083	0.033	0.024	0.047	0.053	0.028	0.043	0.048
Uranium (U)-Total	mg/kg dry	< 0.0020	0.0099	< 0.0020	0.0191	0.102	0.0045	0.0111	0.0180	0.0048	0.0079	0.0053	0.0122	0.0829	0.0200	0.0072	0.0106	0.0302	0.0080	0.0052	0.0188	< 0.0020	0.0038
Uranium (U)-Total	mg/kg wet	< 0.00040	0.00332	0.00062	0.00530	0.0320	0.00138	0.00356	0.00559	0.00142	0.00276	0.00164	0.00377	0.0252	0.00593	0.00216	0.00301	0.0111	0.00241	0.00156	0.00609	0.00056	0.00099
Vanadium (V)-Total	mg/kg dry	< 0.10	0.14	< 0.10	0.34	1.86	0.12	0.40	0.98	0.22	0.14	0.13	0.56	0.67	0.37	0.18	0.17	0.59	0.14	0.14	0.38	< 0.10	< 0.10
Vanadium (V)-Total	mg/kg wet	< 0.020	0.046	< 0.020	0.094	0.587	0.037	0.130	0.305	0.064	0.047	0.040	0.171	0.203	0.110	0.053	0.049	0.217	0.043	0.041	0.123	< 0.020	< 0.020
Zinc (Zn)-Total	mg/kg dry	24.1	81.5	98.6	99.2	85.8	110	86.3	85.9	97.1	97.5	110	86.3	86.8	114	89.2	90.9	72.4	80.3	81.9	79.9	92.1	86.2
Zinc (Zn)-Total	mg/kg wet	23.0	27.4	30.9	27.6	27.1	33.3	27.8	26.6	28.5	34.1	33.9	26.6	26.3	34.0	26.8	25.7	26.7	24.2	24.5	25.9	26.4	22.7
Zirconium (Zr)-Total	mg/kg dry	< 0.20	< 0.20	< 0.20	< 0.20	0.33	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.23	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zirconium (Zr)-Total	mg/kg wet	< 0.040	< 0.040	< 0.040	< 0.040	0.103	< 0.040	< 0.040	0.040	< 0.040	< 0.040	< 0.040	0.049	0.071	0.049	< 0.040	< 0.040	0.053	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040

Notes:
< Indicates parameter was below laboratory equipment detection limit.
> Indicates parameter detected above equipment analytical range.
- Chemical not analyzed or criteria not defined.
N Indicates non-field-duplicate samples.
FD Indicates sample was a field duplicate.

Table 12: Chemistry Results for Small Mammals
Giant Mine HHERA Data Gaps

Parameter	Unit	16-GIANT-DM-31	16-GIANT-DM-32	16-GIANT-DM-33	16-GIANT-DM-34	16-GIANT-DM-41	16-GIANT-DM-42	16-GIANT-DM-43A	16-GIANT-DM-43B	16-GIANT-DM44A	16-GIANT-DM44B
Location		16-GIANT-DM-31	16-GIANT-DM-32	16-GIANT-DM-33	16-GIANT-DM-34	16-GIANT-DM-41	16-GIANT-DM-42	16-GIANT-DM-43A	16-GIANT-DM-43B	16-GIANT-DM44A	16-GIANT-DM44B
Sample Name		16-GIANT-DM-31	16-GIANT-DM-32	16-GIANT-DM-33	16-GIANT-DM-34	16-GIANT-DM-41	16-GIANT-DM-42	16-GIANT-DM-43A	16-GIANT-DM-43B	16-GIANT-DM44A	16-GIANT-DM44B
Sample Date		08/09/2016	08/09/2016	08/09/2016	07/09/2016	09/09/2016	09/09/2016	09/09/2016	09/09/2016	09/09/2016	09/09/2016
Laboratory Sample ID		L1842843-21	L1842843-22	L1842843-23	L1842843-1	L1842843-35	L1842843-36	L1842843-37	L1842843-38	L1842843-39	L1842843-40
Parent Lab Sample ID									L1842843-37		L1842843-39
Sample Code		N	N	N	N	N	N	N	FD	N	FD
Sample Type		Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals
1. Physical											
% Moisture	%	76.7	76.1	71.9	74.8	69.7	69.5	76.0	75.6	71.1	66.3
2. Metals											
Aluminum (Al)-Total	mg/kg dry	52.8	18.5	67.8	73.9	75.1	81.1	81.8	46.4	225	20.4
Aluminum (Al)-Total	mg/kg wet	12.3	4.42	19.0	18.6	22.8	24.7	19.6	11.3	65.2	6.88
Antimony (Sb)-Total	mg/kg dry	0.077	0.072	0.225	0.085	0.062	0.028	0.029	0.048	0.121	0.013
Antimony (Sb)-Total	mg/kg wet	0.0180	0.0172	0.0632	0.0213	0.0190	0.0086	0.0071	0.0117	0.0351	0.0045
Arsenic (As)-Total	mg/kg dry	7.15	8.75	7.04	5.07	1.78	1.36	3.46	1.04	5.18	0.446
Arsenic (As)-Total	mg/kg wet	1.67	2.09	1.98	1.28	0.539	0.415	0.831	0.254	1.50	0.150
Barium (Ba)-Total	mg/kg dry	9.12	14.8	21.4	15.5	7.26	7.09	5.79	12.8	8.41	3.34
Barium (Ba)-Total	mg/kg wet	2.12	3.54	6.00	3.91	2.20	2.16	1.39	3.12	2.43	1.13
Beryllium (Be)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Beryllium (Be)-Total	mg/kg wet	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Bismuth (Bi)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Bismuth (Bi)-Total	mg/kg wet	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0029	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Boron (B)-Total	mg/kg dry	1.7	2.9	1.2	1.7	1.5	1.8	3.1	3.0	1.8	1.3
Boron (B)-Total	mg/kg wet	0.40	0.68	0.35	0.43	0.47	0.54	0.74	0.74	0.52	0.43
Cadmium (Cd)-Total	mg/kg dry	0.404	0.0289	0.841	0.178	0.0460	0.0284	0.196	0.164	0.0405	0.0117
Cadmium (Cd)-Total	mg/kg wet	0.0941	0.0069	0.236	0.0447	0.0140	0.0086	0.0470	0.0400	0.0117	0.0040
Calcium (Ca)-Total	mg/kg dry	31500	44600	34600	48900	37600	40300	31800	29000	46600	18700
Calcium (Ca)-Total	mg/kg wet	7340	10700	9710	12300	11400	12300	7650	7060	13500	6290
Cesium (Cs)-Total	mg/kg dry	1.16	0.108	4.34	1.99	0.0781	0.0567	2.65	0.0614	0.0449	0.0186
Cesium (Cs)-Total	mg/kg wet	0.269	0.0259	1.22	0.500	0.0237	0.0173	0.636	0.0150	0.0130	0.0063
Chromium (Cr)-Total	mg/kg dry	0.169	0.053	0.217	0.276	0.273	0.245	2.11	1.95	8.05	0.345
Chromium (Cr)-Total	mg/kg wet	0.039	0.013	0.061	0.069	0.083	0.075	0.506	0.474	2.33	0.116
Cobalt (Co)-Total	mg/kg dry	0.402	0.115	0.234	0.257	0.145	0.128	0.564	0.593	0.439	0.043
Cobalt (Co)-Total	mg/kg wet	0.0936	0.0274	0.0658	0.0646	0.0440	0.0391	0.135	0.145	0.127	0.0143
Copper (Cu)-Total	mg/kg dry	10.9	8.87	8.76	9.86	9.80	8.32	9.83	7.61	10.7	3.48
Copper (Cu)-Total	mg/kg wet	2.53	2.12	2.46	2.48	2.97	2.53	2.36	1.85	3.09	1.17
Iron (Fe)-Total	mg/kg dry	324	233	258	381	419	270	297	288	563	104
Iron (Fe)-Total	mg/kg wet	75.6	55.7	72.4	96.0	127	82.1	71.2	70.2	163	35.1
Lead (Pb)-Total	mg/kg dry	0.296	0.124	0.412	0.222	0.773	0.349	0.177	0.209	0.802	0.206
Lead (Pb)-Total	mg/kg wet	0.0690	0.0295	0.116	0.0558	0.234	0.106	0.0425	0.0508	0.232	0.0696
Lithium (Li)-Total	mg/kg dry	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Lithium (Li)-Total	mg/kg wet	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Magnesium (Mg)-Total	mg/kg dry	1710	2180	1470	1700	1590	1780	1690	1660	2000	734
Magnesium (Mg)-Total	mg/kg wet	399	520	414	428	482	542	406	404	578	247
Manganese (Mn)-Total	mg/kg dry	13.1	17.8	7.57	9.60	7.74	7.84	8.75	33.5	13.0	4.19
Manganese (Mn)-Total	mg/kg wet	3.06	4.24	2.13	2.41	2.35	2.39	2.10	8.15	3.76	1.41
Mercury (Hg)-Total	mg/kg dry	0.149	0.0118	0.121	0.198	0.189	0.0088	0.0741	0.0294	0.0137	0.0142
Mercury (Hg)-Total	mg/kg wet	0.0347	0.0028	0.0339	0.0497	0.0574	0.0027	0.0178	0.0072	0.0040	0.0048
Molybdenum (Mo)-Total	mg/kg dry	0.428	0.550	0.290	0.472	0.686	0.452	0.595	0.637	1.33	0.295
Molybdenum (Mo)-Total	mg/kg wet	0.0996	0.131	0.0814	0.119	0.208	0.138	0.143	0.155	0.385	0.0995
Nickel (Ni)-Total	mg/kg dry	0.68	0.44	0.48	0.79	0.36	0.55	1.80	2.40	5.48	0.41
Nickel (Ni)-Total	mg/kg wet	0.159	0.106	0.134	0.198	0.110	0.169	0.433	0.584	1.58	0.137
Phosphorus (P)-Total	mg/kg dry	29800	36300	27400	32000	28500	30700	28900	24000	35100	14100
Phosphorus (P)-Total	mg/kg wet	6930	8660	7710	8040	8660	9360	6940	5850	10100	4770
Potassium (K)-Total	mg/kg dry	14900	15400	11300	10800	11400	11200	14400	13100	11500	4080
Potassium (K)-Total	mg/kg wet	3460	3670	3180	2730	3460	3410	3470	3200	3310	1380
Rubidium (Rb)-Total	mg/kg dry	42.9	39.0	84.7	81.7	28.8	23.5	53.6	16.6	13.5	7.42
Rubidium (Rb)-Total	mg/kg wet	9.99	9.32	23.8	20.6	8.75	7.15	12.9	4.05	3.90	2.50
Selenium (Se)-Total	mg/kg dry	1.07	0.078	0.760	1.06	1.31	0.762	0.942	0.164	0.909	0.348
Selenium (Se)-Total	mg/kg wet	0.248	0.019	0.213	0.268	0.396	0.232	0.226	0.040	0.263	0.117
Silver (Ag)-Total	mg/kg dry	0.0508	< 0.0050	0.0212	0.0177	< 0.0050	0.0061	0.0398	< 0.0050	< 0.0050	< 0.0050
Silver (Ag)-Total	mg/kg wet	0.0118	< 0.0010	0.0059	0.0044	< 0.0010	0.0019	0.0096	< 0.0010	0.0012	< 0.0010
Sodium (Na)-Total	mg/kg dry	5210	5320	4620	5070	5340	4700	5180	5520	5150	1900
Sodium (Na)-Total	mg/kg wet	1210	1270	1300	1280	1620	1430	1250	1340	1490	642
Strontium (Sr)-Total	mg/kg dry	20.3	23.0	15.3	16.4	10.4	16.2	7.40	22.1	15.7	5.92
Strontium (Sr)-Total	mg/kg wet	4.73	5.50	4.29	4.13	3.17	4.93	1.78	5.39	4.54	1.99
Tellurium (Te)-Total	mg/kg dry	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Tellurium (Te)-Total	mg/kg wet	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Thallium (Tl)-Total	mg/kg dry	0.0026	< 0.0020	0.0026	0.0035	0.0061	< 0.0020	0.0082	< 0.0020	0.0022	< 0.0020
Thallium (Tl)-Total	mg/kg wet	0.00061	< 0.00040	0.00072	0.00087	0.00185	< 0.00040	0.00198	< 0.00040	0.00062	0.00059
Tin (Sn)-Total	mg/kg dry	0.13	0.17	0.10	0.12	0.18	0.15	0.87	0.49	0.82	< 0.10
Tin (Sn)-Total	mg/kg wet	0.031	0.040	0.029	0.030	0.055	0.045	0.208	0.120	0.237	0.032
Uranium (U)-Total	mg/kg dry	0.0075	0.0029	0.0084	0.0122	0.0060	0.0069	0.0046	0.0047	0.0183	0.0027
Uranium (U)-Total	mg/kg wet	0.00175	0.00069	0.00236	0.00308	0.00182	0.00209	0.00111	0.00114	0.00529	0.00090
Vanadium (V)-Total	mg/kg dry	0.15	< 0.10	0.19	0.24	0.21	0.21	0.19	0.15	0.77	< 0.10
Vanadium (V)-Total	mg/kg wet	0.034	< 0.020	0.052	0.060	0.065	0.064	0.047	0.038	0.224	< 0.020
Zinc (Zn)-Total	mg/kg dry	103	104	96.5	115	86.0	80.8	95.8	86.2	114	41.9
Zinc (Zn)-Total	mg/kg wet	23.9	24.9	27.1	28.9	26.1	24.6	23.0	21.0	33.0	14.1
Zirconium (Zr)-Total	mg/kg dry	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zirconium (Zr)-Total	mg/kg wet	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040

Parameter	Unit	16-GIANT-DM-46A	16-GIANT-DM-46B	16-GIANT-DM-47	16-GIANT-DM-48	16-GIANT-DM-49	16-GIANT-DM-50A	16-GIANT-DM-50B	16-GIANT-DM-54	16-GIANT-DM-55	16-GIANT-DM-56	16-GIANT-RV-02	16-GIANT-RV-04
Location		16-GIANT-DM-46A	16-GIANT-DM-46B	16-GIANT-DM-47	16-GIANT-DM-48	16-GIANT-DM-49	16-GIANT-DM-50A	16-GIANT-DM-50B	16-GIANT-DM-54	16-GIANT-DM-55	16-GIANT-DM-56	16-GIANT-RV-02	16-GIANT-RV-04
Sample Name		16-GIANT-DM-46A	16-GIANT-DM-46B	16-GIANT-DM-47	16-GIANT-DM-48	16-GIANT-DM-49	16-GIANT-DM-50A	16-GIANT-DM-50B	16-GIANT-DM-54	16-GIANT-DM-55	16-GIANT-DM-56	16-GIANT-RV-02	16-GIANT-RV-04
Sample Date		09/09/2016	09/09/2016	09/09/2016	09/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	10/09/2016	07/09/2016	07/09/2016
Laboratory Sample ID		L1842843-41	L1842843-42	L1842843-43	L1842843-44	L1842843-45	L1842843-47	L1842843-46	L1842843-48	L1842843-49	L1842843-50	L1842843-3	L1842843-5
Parent Lab Sample ID			L1842843-41					L1842843-45					
Sample Code		N	FD	N	N	N	N	FD	N	N	N	N	N
Sample Type		Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals
1. Physical													
% Moisture	%	69.2	67.0	70.3	70.5	74.3	68.5	70.5	76.7	67.2	71.1	73.1	72.5
2. Metals													
Aluminum (Al)-Total	mg/kg dry	53.5	159	35.3	51.1	59.4	48.7	76.1	271	89.0	118	31.4	25.4
Aluminum (Al)-Total	mg/kg wet	16.5	52.6	10.5	15.1	15.3	15.3	22.5	63.1	29.2	34.1	8.46	6.99
Antimony (Sb)-Total	mg/kg dry	0.160	0.198	0.116	0.101	0.465	0.382	0.187	0.824	0.504	0.498	0.099	0.072
Antimony (Sb)-Total	mg/kg wet	0.0492	0.0654	0.0343	0.0297	0.120	0.120	0.0553	0.192	0.165	0.144	0.0267	0.0197
Arsenic (As)-Total	mg/kg dry	5.43	7.29	2.91	2.26	5.16	8.92	4.27	13.2	6.47	8.54	10.2	7.17
Arsenic (As)-Total	mg/kg wet	1.67	2.41	0.864	0.667	1.32	2.81	1.26	3.08	2.13	2.47	2.76	1.97
Barium (Ba)-Total	mg/kg dry	4.80	6.52	4.63	8.16	4.71	5.96	7.27	7.78	2.47	6.75	13.1	8.67
Barium (Ba)-Total	mg/kg wet	1.48	2.15	1.38	2.41	1.21	1.88	2.15	1.82	0.811	1.95	3.52	2.38
Beryllium (Be)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Beryllium (Be)-Total	mg/kg wet	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Bismuth (Bi)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Bismuth (Bi)-Total	mg/kg wet	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Boron (B)-Total	mg/kg dry	3.6	6.0	3.9	30.3	2.0	2.7	2.3	3.5	2.9	3.0	3.3	3.6
Boron (B)-Total	mg/kg wet	1.11	1.98	1.16	8.95	0.50	0.85	0.69	0.81	0.95	0.86	0.88	0.98
Cadmium (Cd)-Total	mg/kg dry	0.0748	0.0636	0.0723	0.100	0.0529	0.0795	0.0389	0.272	0.0326	0.0441	0.333	0.332
Cadmium (Cd)-Total	mg/kg wet	0.0231	0.0210	0.0214	0.0295	0.0136	0.0251	0.0115	0.0635	0.0107	0.0127	0.0897	0.0911
Calcium (Ca)-Total	mg/kg dry	31800	43700	33300	38500	40600	27900	41600	31800	26800	27400	38600	36100
Calcium (Ca)-Total	mg/kg wet	9810	14400	9890	11400	10400	8790	12300	7430	8790	7920	10400	9930
Cesium (Cs)-Total	mg/kg dry	0.0354	0.0901	0.0510	0.0665	0.0157	0.0420	0.0331	2.16	0.0258	0.0986	3.96	1.86
Cesium (Cs)-Total	mg/kg wet	0.0109	0.0298	0.0151	0.0196	0.0040	0.0132	0.0098	0.505	0.0085	0.0285	1.07	0.513
Chromium (Cr)-Total	mg/kg dry	0.202	0.458	1.53	1.57	2.51	1.11	1.29	1.63	0.913	1.63	0.086	0.086
Chromium (Cr)-Total	mg/kg wet	0.062	0.151	0.454	0.463	0.646	0.350	0.380	0.380	0.300	0.472	0.023	0.024
Cobalt (Co)-Total	mg/kg dry	0.198	0.332	0.559	0.837	0.596	0.186	0.418	0.808	0.275	0.357	0.257	0.228
Cobalt (Co)-Total	mg/kg wet	0.0611	0.110	0.166	0.247	0.153	0.0586	0.123	0.189	0.0905	0.103	0.0692	0.0626
Copper (Cu)-Total	mg/kg dry	9.75	10.2	10.4	10.6	12.5	8.83	11.2	12.0	8.08	9.22	8.26	10.1
Copper (Cu)-Total	mg/kg wet	3.00	3.38	3.09	3.13	3.21	2.78	3.31	2.81	2.65	2.66	2.22	2.77
Iron (Fe)-Total	mg/kg dry	297	474	299	328	424	299	360	765	322	423	271	277
Iron (Fe)-Total	mg/kg wet	91.7	157	88.7	96.7	109	94.3	106	179	106	122	73.1	76.2
Lead (Pb)-Total	mg/kg dry	0.894	2.28	1.04	1.03	1.84	0.534	0.654	1.27	0.769	0.857	0.260	0.190
Lead (Pb)-Total	mg/kg wet	0.276	0.752	0.309	0.303	0.473	0.168	0.193	0.296	0.253	0.247	0.0699	0.0522
Lithium (Li)-Total	mg/kg dry	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Lithium (Li)-Total	mg/kg wet	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Magnesium (Mg)-Total	mg/kg dry	1690	2000	1650	1650	1880	1500	1710	2020	1520	1670	1530	1550
Magnesium (Mg)-Total	mg/kg wet	522	660	491	487	483	474	504	472	498	481	411	427
Manganese (Mn)-Total	mg/kg dry	7.32	10.5	10.0	8.45	7.06	11.8	9.08	57.3	12.1	12.0	8.81	8.47
Manganese (Mn)-Total	mg/kg wet	2.26	3.45	2.98	2.49	1.81	3.71	2.68	13.4	3.99	3.47	2.37	2.33
Mercury (Hg)-Total	mg/kg dry	0.0260	0.0131	0.0143	0.0153	0.0082	0.0194	0.0088	0.0879	0.0064	0.0127	0.170	0.136
Mercury (Hg)-Total	mg/kg wet	0.0080	0.0043	0.0042	0.0045	0.0021	0.0061	0.0026	0.0205	0.0021	0.0037	0.0457	0.0374
Molybdenum (Mo)-Total	mg/kg dry	0.593	0.720	0.955	0.862	1.24	1.06	0.986	0.711	0.811	0.804	0.488	0.487
Molybdenum (Mo)-Total	mg/kg wet	0.183	0.238	0.283	0.254	0.319	0.335	0.291	0.166	0.266	0.232	0.131	0.134
Nickel (Ni)-Total	mg/kg dry	0.50	0.91	1.41	1.52	2.25	1.28	1.43	1.88	1.29	1.65	0.76	0.51
Nickel (Ni)-Total	mg/kg wet	0.156	0.301	0.418	0.449	0.577	0.403	0.422	0.439	0.423	0.477	0.204	0.141
Phosphorus (P)-Total	mg/kg dry	27600	34200	28000	30200	34100	23100	31900	26400	21300	23500	29000	26900
Phosphorus (P)-Total	mg/kg wet	8510	11300	8310	8920	8750	7300	9420	6150	6980	6770	7810	7390
Potassium (K)-Total	mg/kg dry	12000	11600	12000	11400	14200	10200	11400	14600	9410	10800	12600	11300
Potassium (K)-Total	mg/kg wet	3700	3850	3550	3360	3640	3210	3380	3410	3090	3110	3400	3120
Rubidium (Rb)-Total	mg/kg dry	13.7	17.7	18.1	16.3	10.4	15.2	18.4	28.1	9.66	16.3	75.7	61.0
Rubidium (Rb)-Total	mg/kg wet	4.23	5.84	5.36	4.80	2.68	4.79	5.42	6.56	3.17	4.71	20.4	16.8
Selenium (Se)-Total	mg/kg dry	1.04	1.19	1.24	1.15	1.10	0.922	1.11	1.03	0.798	0.698	0.977	0.951
Selenium (Se)-Total	mg/kg wet	0.322	0.392	0.367	0.339	0.282	0.291	0.327	0.240	0.262	0.202	0.263	0.261
Silver (Ag)-Total	mg/kg dry	< 0.0050	< 0.0050	< 0.0050	0.0129	< 0.0050	< 0.0050	< 0.0050	0.0950	0.0066	0.0113	0.0353	0.0211
Silver (Ag)-Total	mg/kg wet	0.0012	0.0014	0.0011	0.0038	< 0.0010	0.0014	< 0.0010	0.0222	0.0022	0.0033	0.0095	0.0058
Sodium (Na)-Total	mg/kg dry	4830	4370	5190	5450	6040	4170	5100	5260	4230	4770	5630	5190
Sodium (Na)-Total	mg/kg wet	1490	1440	1540	1610	1550	1310	1510	1230	1390	1380	1520	1430
Strontium (Sr)-Total	mg/kg dry	10.3	10.2	8.35	10.2	9.59	6.52	10.4	17.0	8.73	7.61	19.9	16.5
Strontium (Sr)-Total	mg/kg wet	3.17	3.36	2.48	3.01	2.46	2.06	3.07	3.97	2.87	2.20	5.36	4.55
Tellurium (Te)-Total	mg/kg dry	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Tellurium (Te)-Total	mg/kg wet	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Thallium (Tl)-Total	mg/kg dry	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.0024	< 0.0020	< 0.0020	0.0040	0.0076
Thallium (Tl)-Total	mg/kg wet	< 0.00040	0.00056	0.00043	0.00053	< 0.00040	< 0.00040	< 0.00040	0.00055	< 0.00040	0.00044	0.00109	0.00208
Tin (Sn)-Total	mg/kg dry	0.23	0.21	0.32	0.30	0.66	0.45	0.26	0.27	0.29	0.30	0.15	0.15
Tin (Sn)-Total	mg/kg wet	0.071	0.069	0.095	0.088	0.170	0.143	0.077	0.063	0.096	0.085	0.042	0.040
Uranium (U)-Total	mg/kg dry	0.0038	0.0113	0.0023	0.0098	0.0072	0.0026	0.0085	0.0160	0.0023	0.0040	0.0084	0.0054
Uranium (U)-Total	mg/kg wet	0.00119	0.00374	0.00068	0.00288	0.00184	0.00083	0.00251	0.00373	0.00074	0.00115	0.00227	0.00149
Vanadium (V)-Total	mg/kg dry	0.19	0.62	0.12	0.16	0.20	0.16	0.21	0.75	0.32	0.46	< 0.10	< 0.10
Vanadium (V)-Total	mg/kg wet	0.060	0.205	0.035	0.048	0.051	0.052	0.061	0.174	0.104	0.132	0.022	< 0.020
Zinc (Zn)-Total	mg/kg dry	97.2	108	97.6	89.9	106	80.4	100	95.7	74.0	79.3	101	94.8
Zinc (Zn)-Total	mg/kg wet	30.0	35.5	29.0	26.5	27.2	25.3	29.6	22.3	24.3	22.9	27.2	26.1
Zirconium (Zr)-Total	mg/kg dry	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zirconium (Zr)-Total	mg/kg wet	0.051	0.043	0.053	< 0.040	< 0.040	< 0.040	0.053	0.040	0.044	< 0.040	< 0.040	< 0.040

Notes:

< Indicates parameter was below laborato
> Indicates parameter detected above equ
- Chemical not analyzed or criteria not defi
N Indicates non-field-duplicate samples.
FD Indicates sample was a field duplicate.

Table 12: Chemistry Results for Small Mammals
Giant Mine HHERA Data Gaps

Parameter	Unit	16-GIANT-RV-05	16-GIANT-RV-07	16-GIANT-RV-08	16-GIANT-RV-11	16-GIANT-RV-20	16-GIANT-RV-21	16-GIANT-SH-06
	Location	16-GIANT-RV-05	16-GIANT-RV-07	16-GIANT-RV-08	16-GIANT-RV-11	16-GIANT-RV-20	16-GIANT-RV-21	16-GIANT-SH-06
	Sample Name	16-GIANT-RV-05	16-GIANT-RV-07	16-GIANT-RV-08	16-GIANT-RV-11	16-GIANT-RV-20	16-GIANT-RV-21	16-GIANT-SH-06
	Sample Date	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016	07/09/2016
	Laboratory Sample ID	L1842843-6	L1842843-8	L1842843-9	L1842843-12	L1842843-27	L1842843-28	L1842843-7
	Parent Lab Sample ID							
	Sample Code	N	N	N	N	N	N	N
	Sample Type	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals	Small Mammals
1. Physical								
% Moisture	%	73.0	65.2	71.6	71.0	71.3	72.0	74.1
2. Metals								
Aluminum (Al)-Total	mg/kg dry	44.9	37.0	17.4	56.8	109	37.7	28.6
Aluminum (Al)-Total	mg/kg wet	12.1	12.9	4.94	16.4	31.4	10.6	7.41
Antimony (Sb)-Total	mg/kg dry	0.277	0.102	0.106	0.128	0.172	2.77	0.188
Antimony (Sb)-Total	mg/kg wet	0.0749	0.0353	0.0302	0.0370	0.0495	0.776	0.0487
Arsenic (As)-Total	mg/kg dry	7.63	3.47	6.85	5.24	12.1	98.8	6.43
Arsenic (As)-Total	mg/kg wet	2.06	1.21	1.95	1.52	3.47	27.7	1.67
Barium (Ba)-Total	mg/kg dry	6.97	2.98	8.19	8.16	9.82	11.8	5.44
Barium (Ba)-Total	mg/kg wet	1.88	1.04	2.33	2.36	2.82	3.30	1.41
Beryllium (Be)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Beryllium (Be)-Total	mg/kg wet	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Bismuth (Bi)-Total	mg/kg dry	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Bismuth (Bi)-Total	mg/kg wet	0.0021	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Boron (B)-Total	mg/kg dry	2.8	1.5	1.8	2.6	2.2	1.1	1.6
Boron (B)-Total	mg/kg wet	0.76	0.53	0.51	0.75	0.63	0.32	0.42
Cadmium (Cd)-Total	mg/kg dry	0.160	0.189	0.174	0.0748	0.171	0.993	0.138
Cadmium (Cd)-Total	mg/kg wet	0.0434	0.0657	0.0494	0.0216	0.0492	0.279	0.0358
Calcium (Ca)-Total	mg/kg dry	34900	27800	42400	34700	48100	25100	27400
Calcium (Ca)-Total	mg/kg wet	9420	9660	12100	10100	13800	7050	7100
Cesium (Cs)-Total	mg/kg dry	1.15	0.192	1.82	0.696	0.571	0.832	0.529
Cesium (Cs)-Total	mg/kg wet	0.310	0.0669	0.517	0.201	0.164	0.233	0.137
Chromium (Cr)-Total	mg/kg dry	0.130	0.142	< 0.050	0.166	0.338	0.124	0.082
Chromium (Cr)-Total	mg/kg wet	0.035	0.049	0.014	0.048	0.097	0.035	0.021
Cobalt (Co)-Total	mg/kg dry	0.238	0.134	0.221	0.240	0.357	0.351	0.247
Cobalt (Co)-Total	mg/kg wet	0.0642	0.0467	0.0630	0.0694	0.103	0.0984	0.0639
Copper (Cu)-Total	mg/kg dry	9.52	14.2	8.60	8.29	8.92	11.9	8.45
Copper (Cu)-Total	mg/kg wet	2.57	4.92	2.45	2.40	2.56	3.33	2.19
Iron (Fe)-Total	mg/kg dry	338	367	267	307	390	385	281
Iron (Fe)-Total	mg/kg wet	91.4	128	76.0	88.8	112	108	72.7
Lead (Pb)-Total	mg/kg dry	0.305	0.238	0.252	0.319	0.454	0.998	0.483
Lead (Pb)-Total	mg/kg wet	0.0825	0.0826	0.0718	0.0924	0.130	0.280	0.125
Lithium (Li)-Total	mg/kg dry	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Lithium (Li)-Total	mg/kg wet	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Magnesium (Mg)-Total	mg/kg dry	1280	1610	1340	1500	2050	1470	1250
Magnesium (Mg)-Total	mg/kg wet	347	559	383	435	588	412	324
Manganese (Mn)-Total	mg/kg dry	11.0	11.8	6.74	10.4	16.0	10.8	10.9
Manganese (Mn)-Total	mg/kg wet	2.98	4.11	1.92	3.03	4.61	3.03	2.83
Mercury (Hg)-Total	mg/kg dry	0.169	0.204	0.124	0.127	0.124	0.265	0.184
Mercury (Hg)-Total	mg/kg wet	0.0457	0.0709	0.0354	0.0369	0.0357	0.0742	0.0476
Molybdenum (Mo)-Total	mg/kg dry	0.507	0.568	0.372	0.484	0.495	0.548	0.467
Molybdenum (Mo)-Total	mg/kg wet	0.137	0.198	0.106	0.140	0.142	0.154	0.121
Nickel (Ni)-Total	mg/kg dry	0.49	0.25	0.45	0.73	0.63	0.45	0.51
Nickel (Ni)-Total	mg/kg wet	0.133	0.087	0.129	0.212	0.181	0.127	0.132
Phosphorus (P)-Total	mg/kg dry	23000	26000	27200	24500	36500	23700	21200
Phosphorus (P)-Total	mg/kg wet	6220	9050	7720	7110	10500	6650	5480
Potassium (K)-Total	mg/kg dry	11700	11700	12000	11800	12600	15100	12600
Potassium (K)-Total	mg/kg wet	3160	4080	3420	3400	3620	4220	3260
Rubidium (Rb)-Total	mg/kg dry	54.2	22.3	50.9	46.6	38.0	46.7	34.7
Rubidium (Rb)-Total	mg/kg wet	14.7	7.75	14.5	13.5	10.9	13.1	8.99
Selenium (Se)-Total	mg/kg dry	0.921	1.98	1.07	0.950	1.12	1.36	1.01
Selenium (Se)-Total	mg/kg wet	0.249	0.689	0.303	0.275	0.321	0.380	0.262
Silver (Ag)-Total	mg/kg dry	0.0529	0.0124	0.0375	0.0473	0.0666	0.0822	0.0969
Silver (Ag)-Total	mg/kg wet	0.0143	0.0043	0.0107	0.0137	0.0191	0.0230	0.0251
Sodium (Na)-Total	mg/kg dry	4270	5250	4380	4680	5320	4820	4610
Sodium (Na)-Total	mg/kg wet	1160	1830	1250	1360	1530	1350	1190
Strontium (Sr)-Total	mg/kg dry	8.69	6.78	13.3	13.8	15.1	11.2	13.5
Strontium (Sr)-Total	mg/kg wet	2.35	2.36	3.78	3.98	4.34	3.13	3.51
Tellurium (Te)-Total	mg/kg dry	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Tellurium (Te)-Total	mg/kg wet	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Thallium (Tl)-Total	mg/kg dry	0.0041	0.0054	0.0044	0.0020	0.0030	0.0023	< 0.0020
Thallium (Tl)-Total	mg/kg wet	0.00111	0.00189	0.00124	0.00059	0.00087	0.00063	0.00051
Tin (Sn)-Total	mg/kg dry	0.12	0.17	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Tin (Sn)-Total	mg/kg wet	0.033	0.060	< 0.020	< 0.020	0.029	0.027	< 0.020
Uranium (U)-Total	mg/kg dry	0.0062	0.0090	0.0032	0.0043	0.0399	0.0037	0.0065
Uranium (U)-Total	mg/kg wet	0.00167	0.00314	0.00092	0.00125	0.0115	0.00105	0.00170
Vanadium (V)-Total	mg/kg dry	0.12	0.12	< 0.10	0.16	0.32	0.12	< 0.10
Vanadium (V)-Total	mg/kg wet	0.032	0.042	< 0.020	0.047	0.092	0.034	0.022
Zinc (Zn)-Total	mg/kg dry	108	114	110	101	101	102	87.4
Zinc (Zn)-Total	mg/kg wet	29.1	39.7	31.3	29.3	29.0	28.7	22.7
Zirconium (Zr)-Total	mg/kg dry	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zirconium (Zr)-Total	mg/kg wet	< 0.040	< 0.040	< 0.040	< 0.040	0.049	< 0.040	< 0.040

Notes:

< Indicates parameter was below laborato
> Indicates parameter detected above equ
- Chemical not analyzed or criteria not defi
N Indicates non-field-duplicate samples.
FD Indicates sample was a field duplicate.

Table 13: Summary of Long Lake Sediment, Surface Water, and Soil Samples
Giant Mine HHERA Data Gaps

Sample ID	Duplicate Sample ID	Date collected (dd-mmm-yyyy)	GPS Coordinates (11V)		Sample type	Sample depth (cm)	Substrate Type[1]	Co-located sample		YSI Field Parameters				
			Easting	Northing				Sample ID	Sample type	Temperature (°C)	Conductivity (us/cm^c)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH
16-LongLake-SE-1	-	21-Sep-2016	632861	6929359	Sediment	4	SA	16-LongLake-SW-1	Surface Water	7.76	419	95.0	11.31	7.80
16-LongLake-SE-2	-	21-Sep-2016	632893	6929373	Sediment	4	SA	16-LongLake-SW-2	Surface Water	7.73	417	95.8	11.41	7.91
16-LongLake-SE-3	-	21-Sep-2016	632934	6929419	Sediment	3	SA	16-LongLake-SW-3	Surface Water	7.53	408	105.3	12.59	7.77
16-LongLake-SE-4	16-LongLake-SW-dup; 16-LongLake-SE-dup	21-Sep-2016	632961	6929468	Sediment	3	SA	16-LongLake-SW-4	Surface Water	7.27	356	102.6	12.38	7.97
16-LongLake-SE-5	-	21-Sep-2016	632785	6929374	Sediment	7	SA/PO	16-LongLake-SW-5	Surface Water	7.67	387	105.3	12.55	7.81
16-LongLake-SE-6	-	21-Sep-2016	632678	6929416	Sediment	7	SA/CO	16-LongLake-SW-6	Surface Water	9.27	415	99	11.36	8.02
16-LongLake-SE-7	-	21-Sep-2016	632647	6929408	Sediment	12	SA/SI	16-LongLake-SW-7	Surface Water	9.63	409	99.6	11.38	7.82
16-LongLake-SE-8	-	21-Sep-2016	632641	6929386	Sediment	10	SA	16-LongLake-SW-8	Surface Water	9.61	379	99.5	11.34	8.01
16-LongLake-SE-9	-	21-Sep-2016	632610	6929365	Sediment	5	SA	16-LongLake-SW-9	Surface Water	10.33	412	102.7	11.49	8.07
16-LongLake-SE-10	-	21-Sep-2016	632557	6929342	Sediment	5	SA	16-LongLake-SW-10	Surface Water	10.97	409	105.5	11.63	8.06
16-LongLake-S-1	-	21-Sep-2016	632915	6929795	Soil	15	PO	-	-	-	-	-	-	-
16-LongLake-S-2	-	21-Sep-2016	632935	6929716	Soil	15	CL/PO	-	-	-	-	-	-	-
16-LongLake-S-3	-	21-Sep-2016	633025	6929567	Soil	15	PO/SA	-	-	-	-	-	-	-
16-LongLake-S-4	-	21-Sep-2016	633201	6929521	Soil	15	PO/SA	-	-	-	-	-	-	-
16-LongLake-S-5	-	21-Sep-2016	633103	6929351	Soil	15	PO/CO	-	-	-	-	-	-	-
16-LongLake-S-6	16-LongLake-S-dup	21-Sep-2016	633001	6929300	Soil	15	PO/SA	-	-	-	-	-	-	-
16-LongLake-S-7	-	21-Sep-2016	633134	6929151	Soil	15	SA	-	-	-	-	-	-	-
16-LongLake-S-8	-	21-Sep-2016	633263	6929063	Soil	15	PO	-	-	-	-	-	-	-
16-LongLake-S-9	-	21-Sep-2016	633510	6929060	Soil	15	PO/SA	-	-	-	-	-	-	-
16-LongLake-S-10	-	21-Sep-2016	633551	6929181	Soil	15	PO	-	-	-	-	-	-	-

Notes:
(1) Soil types: SA=Sand; PO=Peat/organic material; CL=Clay; SI=Silt; CO=Coarse (gravel).

Table 14: Long Lake Surface Water Chemistry Results
Giant Mine HHERA Data Gaps

	Location	16-LONGLAKE0SW-01	16-LONGLAKE0SW-02	16-LONGLAKE0SW-03	16-LONGLAKE0SW-04	16-LONGLAKE0SW-04-D	16-LONGLAKE0SW-05	16-LONGLAKE0SW-06	16-LONGLAKE0SW-07	16-LONGLAKE0SW-08	16-LONGLAKE0SW-09	16-LONGLAKE0SW-10
	Sample Name	16-LONGLAKE0SW-1	16-LONGLAKE0SW-2	16-LONGLAKE0SW-3	16-LONGLAKE0SW-4	16-LONGLAKE0SW-DUP	16-LONGLAKE0SW-5	16-LONGLAKE0SW-6	16-LONGLAKE0SW-7	16-LONGLAKE0SW-8	16-LONGLAKE0SW-9	16-LONGLAKE0SW-10
	Sample Date	21/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016
	Laboratory Sample ID	L1832598-12	L1832598-13	L1832598-14	L1832598-15	L1832598-22	L1832598-16	L1832598-17	L1832598-18	L1832598-19	L1832598-20	L1832598-21
	Parent Lab Sample ID					L1832598-15						
	Sample Code	N	N	N	N	FD	N	N	N	N	N	N
	Sample Type	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Parameter	**Unit**											
1. Physical Tests												
Hardness	mg/L	127	126	127	131	127	142	127	125	129	136	132
2. Total Metals												
Aluminum (Al)-Total	mg/L	0.0035	0.0031	0.0852	0.0090	0.0097	0.0140	0.0200	0.547	< 0.0030	1.05	0.0509
Antimony (Sb)-Total	mg/L	0.00201	0.00200	0.00204	0.00198	0.00202	0.00195	0.00205	0.00230	0.00198	0.00230	0.00214
Arsenic (As)-Total	mg/L	0.0427	0.0423	0.0457	0.0416	0.0416	0.0416	0.0432	0.0579	0.0439	0.0600	0.0446
Barium (Ba)-Total	mg/L	0.0355	0.0357	0.0374	0.0369	0.0357	0.0370	0.0352	0.0415	0.0363	0.0419	0.0355
Beryllium (Be)-Total	mg/L	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Boron (B)-Total	mg/L	0.016	0.017	0.017	0.017	0.016	0.017	0.017	0.017	0.017	0.018	0.017
Cadmium (Cd)-Total	mg/L	< 0.0000050	< 0.0000050	0.0000161	< 0.0000050	< 0.0000050	< 0.0000050	0.0000075	0.0000351	< 0.0000050	0.0000505	0.0000065
Calcium (Ca)-Total	mg/L	30.6	30.7	31.0	32.2	30.8	34.5	31.1	29.8	31.6	33.1	32.1
Chromium (Cr)-Total	mg/L	< 0.00010	< 0.00010	0.00025	< 0.00010	< 0.00010	< 0.00010	0.00010	0.00190	< 0.00010	0.00413	0.00020
Cobalt (Co)-Total	mg/L	< 0.00010	< 0.00010	0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	0.00062	< 0.00010	0.00080	< 0.00010
Copper (Cu)-Total	mg/L	< 0.00050	< 0.00050	0.00063	< 0.00050	< 0.00050	< 0.00050	0.00054	0.00253	< 0.00050	0.00300	0.00061
Iron (Fe)-Total	mg/L	0.019	0.018	0.206	0.024	0.024	0.025	0.062	1.15	0.027	1.52	0.123
Lead (Pb)-Total	mg/L	< 0.000050	< 0.000050	0.000145	< 0.000050	< 0.000050	< 0.000050	0.000262	0.00163	< 0.000050	0.00249	0.000130
Lithium (Li)-Total	mg/L	0.0033	0.0034	0.0032	0.0037	0.0033	0.0043	0.0028	0.0038	0.0036	0.0067	0.0036
Magnesium (Mg)-Total	mg/L	12.4	12.0	12.0	12.2	12.2	13.6	11.9	12.2	12.3	12.9	12.7
Manganese (Mn)-Total	mg/L	0.0156	0.0148	0.0748	0.0160	0.0154	0.0244	0.0239	0.0864	0.0144	0.120	0.0350
Mercury (Hg)-Total	mg/L	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Molybdenum (Mo)-Total	mg/L	0.000434	0.000368	0.000875	0.000367	0.000350	0.000417	0.000736	0.000715	0.000371	0.000886	0.000781
Nickel (Ni)-Total	mg/L	0.00054	0.00052	0.00072	0.00057	0.00054	0.00050	0.00064	0.00219	0.00051	0.00285	0.00078
Potassium (K)-Total	mg/L	3.16	3.27	3.35	3.17	3.26	3.44	3.24	3.34	3.29	3.35	3.36
Selenium (Se)-Total	mg/L	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Silver (Ag)-Total	mg/L	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Sodium (Na)-Total	mg/L	28.4	28.8	28.4	29.2	28.5	29.8	27.7	27.7	29.6	27.9	29.0
Thallium (Tl)-Total	mg/L	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Tin (Sn)-Total	mg/L	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	0.00016	< 0.00010	0.00055	0.00056
Titanium (Ti)-Total	mg/L	< 0.00030	< 0.00030	0.00283	< 0.00030	0.00039	< 0.00030	0.00056	0.0225	< 0.00030	0.0463	0.00220
Uranium (U)-Total	mg/L	0.000578	0.000451	0.000732	0.000495	0.000484	0.00150	0.000704	0.000810	0.000484	0.00250	0.00130
Vanadium (V)-Total	mg/L	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00180	< 0.00050	0.00350	< 0.00050
Zinc (Zn)-Total	mg/L	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	0.0055	< 0.0030	0.0077	< 0.0030

Notes:
< Indicates parameter was below laboratory equipment detection limit.
> Indicates parameter detected above equipment analytical range.
- Chemical not analyzed or criteria not defined.
N Indicates non-field-duplicate samples.
FD Indicates sample was a field duplicate.

Table 15: Long Lake Sediment Chemistry Results
Giant Mine HHERA Data Gaps

	Location	16-LONGLAKE-SE-01	16-LONGLAKE-SE-02	16-LONGLAKE-SE-03	16-LONGLAKE-SE-04	16-LONGLAKE-SE-04-D	16-LONGLAKE-SE-05	16-LONGLAKE-SE-06	16-LONGLAKE-SE-07	16-LONGLAKE-SE-08	16-LONGLAKE-SE-09	16-LONGLAKE-SE-10
	Sample Name	16-LONGLAKE-SE-1	16-LONGLAKE-SE-2	16-LONGLAKE-SE-3	16-LONGLAKE-SE-4	16-LONGLAKE-SE-DUP	16-LONGLAKE-SE-5	16-LONGLAKE-SE-6	16-LONGLAKE-SE-7	16-LONGLAKE-SE-8	16-LONGLAKE-SE-9	16-LONGLAKE-SE-10
	Sample Date	21/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016
	Laboratory Sample ID	L1832598-1	L1832598-2	L1832598-3	L1832598-4	L1832598-11	L1832598-5	L1832598-6	L1832598-7	L1832598-8	L1832598-9	L1832598-10
	Parent Lab Sample ID					L1832598-4						
	Sample Code	N	N	N	N	FD	N	N	N	N	N	N
	Sample Type											
Parameter	**Unit**											
Metals												
Aluminum (Al)	mg/kg	2430	2170	2420	2650	2860	3990	3840	6900	3800	3340	3650
Antimony (Sb)	mg/kg	0.14	< 0.10	0.20	0.43	0.43	2.22	0.23	0.90	0.17	0.18	0.18
Arsenic (As)	mg/kg	7.54	8.93	7.46	21.4	21.2	96.8	8.19	46.9	17.0	12.9	18.6
Barium (Ba)	mg/kg	11.3	11.1	13.7	13.6	14.3	60.5	16.8	38.6	19.6	13.2	15.8
Beryllium (Be)	mg/kg	0.21	< 0.10	< 0.10	< 0.10	< 0.10	0.13	0.12	0.18	0.11	< 0.10	0.10
Bismuth (Bi)	mg/kg	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Boron (B)	mg/kg	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Cadmium (Cd)	mg/kg	0.020	< 0.020	< 0.020	0.022	0.020	0.088	0.021	0.110	0.059	0.032	0.023
Calcium (Ca)	mg/kg	945	734	882	942	1050	1940	1190	1550	1470	704	758
Chromium (Cr)	mg/kg	7.45	6.54	6.91	7.70	8.76	15.5	12.8	26.9	11.9	11.6	12.1
Copper (Cu)	mg/kg	2.62	2.02	2.48	2.97	3.03	35.6	7.21	12.4	5.93	2.69	3.83
Cobalt (Co)	mg/kg	1.32	1.16	1.35	1.62	1.75	3.43	2.67	6.13	2.82	1.84	2.18
Iron (Fe)	mg/kg	3910	3130	3480	3560	3890	8660	7070	12300	6750	5310	5740
Lead (Pb)	mg/kg	1.18	0.81	1.18	1.56	1.75	12.7	2.12	5.82	2.96	1.89	2.23
Lithium (Li)	mg/kg	6.6	5.5	7.1	6.9	7.8	10.2	9.8	17.5	10.9	10.5	11.6
Magnesium (Mg)	mg/kg	1430	1260	1380	1480	1620	2260	2120	5420	2370	2110	2190
Manganese (Mn)	mg/kg	39.5	56.9	43.7	51.0	55.1	313	73.8	165	108	81.4	85.6
Mercury (Hg)	mg/kg	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0178	< 0.0050	0.0074	< 0.0050	< 0.0050	< 0.0050
Molybdenum (Mo)	mg/kg	2.78	< 0.10	0.30	0.11	0.12	0.42	0.54	0.21	0.11	0.15	0.19
Nickel (Ni)	mg/kg	4.70	3.98	4.42	4.72	5.09	9.88	8.17	23.4	7.70	6.08	6.74
Phosphorus (P)	mg/kg	231	186	187	210	214	364	265	282	207	147	159
Potassium (K)	mg/kg	230	200	220	240	270	470	380	1020	560	340	330
Selenium (Se)	mg/kg	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Silver (Ag)	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Sodium (Na)	mg/kg	68	54	54	69	81	148	78	98	76	50	59
Strontium (Sr)	mg/kg	2.55	2.21	2.51	3.13	3.53	8.38	3.80	5.31	3.83	2.23	2.43
Thallium (Tl)	mg/kg	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.062	< 0.050	< 0.050	< 0.050
Tin (Sn)	mg/kg	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	17.3	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Titanium (Ti)	mg/kg	124	91.7	105	128	137	162	230	369	218	125	158
Uranium (U)	mg/kg	0.601	0.384	0.458	0.411	0.481	0.886	0.975	0.774	0.544	1.41	0.817
Vanadium (V)	mg/kg	7.46	5.32	6.01	6.71	7.14	10.3	16.0	22.7	11.0	9.26	9.32
Zinc (Zn)	mg/kg	19.0	8.7	9.6	10.4	11.1	67.6	12.6	35.9	30.7	13.4	13.4
Zirconium (Zr)	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.0	2.0	1.3	1.4	1.3	1.3

Notes:
< Indicates parameter was below laboratory equipment detection limit.
> Indicates parameter detected above equipment analytical range.
- Chemical not analyzed or criteria not defined.
N Indicates non-field-duplicate samples.
FD Indicates sample was a field duplicate.

Table 16: Long Lake Soil Chemistry Results
Giant Mine HHERA Data Gaps

	Location	16-LONGLAKE-S-01	16-LONGLAKE-S-02	16-LONGLAKE-S-03	16-LONGLAKE-S-04	16-LONGLAKE-S-05	16-LONGLAKE-S-06	16-LONGLAKE-S-06-D	16-LONGLAKE-S-07	16-LONGLAKE-S-08	16-LONGLAKE-S-09	16-LONGLAKE-S-10
	Sample Name	16-LONGLAKE-S-1	16-LONGLAKE-S-2	16-LONGLAKE-S-3	16-LONGLAKE-S-4	16-LONGLAKE-S-5	16-LONGLAKE-S-6	16-LONGLAKE-S-DUP	16-LONGLAKE-S-7	16-LONGLAKE-S-8	16-LONGLAKE-S-9	16-LONGLAKE-S-10
	Sample Date	21/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016
	Laboratory Sample ID	L1832653-1	L1832653-2	L1832653-3	L1832653-4	L1832653-5	L1832653-6	L1832653-11	L1832653-7	L1832653-8	L1832653-9	L1832653-10
	Parent Lab sample ID							L1832653-6				
	Sample Code	N	N	N	N	N	N	FD	N	N	N	N
	Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Parameter	**Unit**											
Metals												
Aluminum (Al)	mg/kg	507	17800	6310	4650	8490	5470	6400	6530	4490	8370	4570
Antimony (Sb)	mg/kg	3.34	3.33	5.03	0.52	0.46	17.6	5.14	2.73	11.8	4.35	2.88
Arsenic (As)	mg/kg	48.3	115	129	10.8	16.2	28.7	35.6	56.4	102	38.0	41.3
Barium (Ba)	mg/kg	5.05	73.5	46.6	35.4	48.5	56.1	56.4	36.4	24.9	160	40.0
Beryllium (Be)	mg/kg	< 0.10	0.49	0.11	0.12	< 0.10	0.14	0.13	0.15	< 0.10	0.26	0.16
Bismuth (Bi)	mg/kg	< 0.20	0.21	< 0.20	< 0.20	< 0.20	0.48	0.25	< 0.20	< 0.20	< 0.20	< 0.20
Boron (B)	mg/kg	< 5.0	< 5.0	< 5.0	< 5.0	6.1	8.0	5.6	< 5.0	< 5.0	13.9	< 5.0
Cadmium (Cd)	mg/kg	0.087	0.091	0.182	0.132	0.291	11.2	4.43	0.353	0.177	0.338	0.134
Calcium (Ca)	mg/kg	4110	469	2480	6660	13700	9060	7080	1510	3170	16900	8610
Chromium (Cr)	mg/kg	0.60	27.1	20.4	18.5	28.5	104	70.2	21.9	15.0	24.0	15.0
Copper (Cu)	mg/kg	1.20	42.8	11.2	17.7	86.0	71.8	50.8	10.2	15.8	52.1	20.3
Cobalt (Co)	mg/kg	0.65	5.37	4.86	6.53	12.4	11.1	9.45	4.02	3.04	6.31	4.00
Iron (Fe)	mg/kg	324	17900	8890	7040	14600	11000	12300	9080	6290	15900	6990
Lead (Pb)	mg/kg	< 0.50	20.1	8.17	2.72	6.23	500	163	12.4	26.3	35.4	5.40
Lithium (Li)	mg/kg	< 2.0	12.2	8.0	8.1	11.1	8.9	9.1	13.0	5.2	11.0	4.9
Magnesium (Mg)	mg/kg	1470	2950	2650	3250	5530	3910	4650	3350	2300	4920	2880
Manganese (Mn)	mg/kg	28.5	92.4	110	202	385	663	317	168	96.5	501	163
Mercury (Hg)	mg/kg	0.0615	0.0373	0.0571	0.0236	0.0266	0.116	0.130	0.0282	0.0766	0.0378	0.0364
Molybdenum (Mo)	mg/kg	0.15	0.52	0.35	0.80	0.60	2.27	1.31	0.23	0.50	1.25	0.39
Nickel (Ni)	mg/kg	1.16	12.0	13.1	15.7	31.2	45.0	36.2	12.2	8.62	17.1	11.4
Phosphorus (P)	mg/kg	200	446	310	477	2400	672	694	275	645	703	406
Potassium (K)	mg/kg	170	290	370	1280	1410	1380	1520	530	510	1040	530
Selenium (Se)	mg/kg	< 0.20	< 0.20	< 0.20	< 0.20	0.23	< 0.20	< 0.20	< 0.20	< 0.20	0.25	< 0.20
Silver (Ag)	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.25	0.15	0.23	< 0.10	0.22	< 0.10
Sodium (Na)	mg/kg	407	139	70	225	344	213	202	79	244	470	131
Strontium (Sr)	mg/kg	11.0	4.28	9.02	12.1	19.5	22.4	20.7	4.16	7.59	62.2	24.1
Thallium (Tl)	mg/kg	< 0.050	0.112	< 0.050	< 0.050	< 0.050	0.061	0.070	< 0.050	< 0.050	< 0.050	< 0.050
Tin (Sn)	mg/kg	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	19.4	32.5	< 2.0	< 2.0	2.6	< 2.0
Titanium (Ti)	mg/kg	8.5	170	216	206	236	212	236	219	117	258	202
Uranium (U)	mg/kg	< 0.050	1.13	0.585	0.557	0.530	1.27	1.06	0.603	0.468	2.94	1.01
Vanadium (V)	mg/kg	0.64	38.3	21.5	16.1	26.9	17.4	20.5	16.9	11.6	19.4	14.2
Zinc (Zn)	mg/kg	13.8	50.9	40.9	28.6	137	83.8	70.5	41.3	51.7	216	32.1
Zirconium (Zr)	mg/kg	< 1.0	1.4	< 1.0	1.1	< 1.0	1.2	< 1.0	< 1.0	< 1.0	1.7	2.3

Notes:
< Indicates parameter was below laboratory equipment detection limit.
> Indicates parameter detected above equipment analytical range.
- Chemical not analyzed or criteria not defined.
N Indicates non-field-duplicate samples.
FD Indicates sample was a field duplicate.

Table 17: Results for Arsenic Bioaccessibility in Sediment at Long Lake
Giant Mine HHERA Data Gaps

SAMPLE ID	BA conc dw (mg/kg)	Sediment conc dw (mg/kg)	%BA	Filtrate conc (mg/L)	Sediment conc ww (mg/kg)	% Filtrate of sediment conc ww	% Mobile of total	% Moisture	LOD BA conc (mg/kg)	LOD % BA
16-Long Lake-SE-2	3.4	9.0	38	0.0084	7.1	0.12	38	21	0.20	2.2
16-Long Lake-SE-4	6	20	30	0.15	15	0.97	31	23	0.20	1.0
16-Long Lake-SE-5	49	100	49	0.096	61	0.16	49	39	0.20	0.20
16-Long Lake-SE-7	23	42	55	0.017	34	0.050	55	19	0.20	0.48
16-Long Lake-SE-10	9.4	18	52	0.012	14	0.086	52	22	0.20	1.1

Notes:
dw - dry weight; ww - wet weight
BA conc = concentration of bioaccessible element in dewatered sediment; Sediment conc = concentration (dw) of element in dewatered and dried sediment;
%BA = % bioaccessibility = 100% x bioaccessible As/total As;
Filtrate conc = concentration of element in filtrate (water) removed from sediment;
Sediment conc ww = wet weight sediment concentration, dewatered sediment concentration corrected for percent moisture (see cover letter);
% Filtrate of sediment conc ww = 100% x filtrate conc/Sediment conc ww;
% Mobile of total = 100% x (BA conc corrected for percent moisture + filtrate conc)/sediment conc ww;
LOD = limit of detection; LOD % BA = (LOD for bioaccess As Conc)/Total As * 100%.

Table 18: Results for Arsenic Bioaccessibility in Soil at Long Lake
Giant Mine HHERA Data Gaps

SAMPLE ID	BA conc dw (mg/kg)	Soil conc dw (mg/kg)	%BA	LOD BA conc (mg/kg)	LOD % BA
16-Giant-S-2 (Long Lake)	50	160	31	0.20	0.13
16-Giant-S-3 (Long Lake)	49	160	30	0.20	0.13
16-Giant-S-7 (Long Lake)	29	73	39	0.20	0.27
16-Giant-S-8 (Long Lake) *	89	210	42	0.20	0.10
16-Giant-S-10 (Long Lake)	19	50	38	0.20	0.40

Notes:
dw - dry weight
BA conc = concentration of bioaccessible element in soil
%BA = % bioaccessibility = 100% x bioaccessible As/total As;
LOD = limit of detection; LOD % BA = (LOD for bioaccess As Conc)/Total As * 100%.
* - Average of the duplicate pair (BA conc) reported

ATTACHMENT A

Photographs

Photograph 1: View of sediment sampling in Yellowknife Bay.

Photograph 2: View of sediment sampling processing in Yellowknife Bay.

Photograph 3: View of a wetland soil sampling location located at Giant Mine.

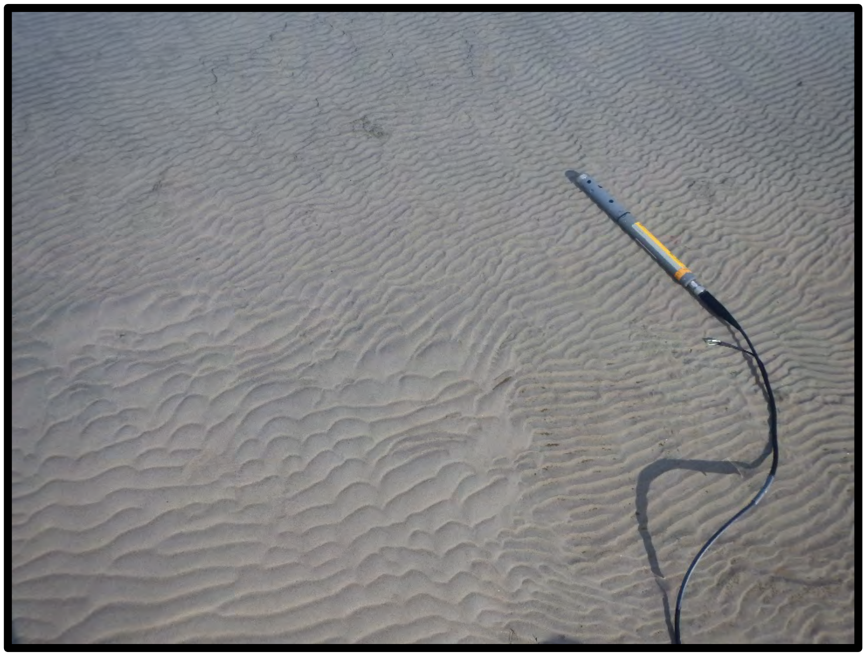
Photograph 4: View of an outcrop soil sampling station located at Giant Mine.

Photograph 5: Aquatic plant and sediment sampling along Baker Creek at Giant Mine.

Photograph 6: Soil sampling co-located with vegetation samples at Giant Mine.

Photograph 7: Alder (left) and cranberry (right) vegetation samples at Giant Mine.

Photograph 8: Small mammal tissue sampling at Giant Mine.



Photograph 9: Surface Water sampling at Long Lake.

ATTACHMENT B

Lab Reports

Environmental Sciences Group

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ANALYTICAL SCIENCES DIVISION
ANALYSIS REPORT COVER NOTE

Report Number: RMC-CCS-ES-16-038
Report Date: 1 December 2016
Sample(s) reported: 45
Issue Status: Final
Analysis commenced on: 3 October 2016

The following data are reported in this report: total arsenic, bioaccessible extracted arsenic, and percent bioaccessibility for 15 soil, 15 sediment and 15 plant samples.

Methods

All samples were received in good condition with the exception of two sediment samples found with leaking bags at the time of arrival (2016 SQ-1S-100-1 and 16-LongLake-SE-10).

Sediment samples were dewatered by filtration through 1.5 µm glass fiber filters (Whatman 1827-090, binder free, grade 934-AH, 90mm diameter) using vacuum filtration. The filtrates were frozen in vials until the time of analysis. Soil and dewatered sediment samples were oven dried, lightly ground to eliminate clumps, and sieved to a particle size of 250 µm. Plant samples were freeze dried and homogenized with a coffee grinder.

To obtain the bioaccessible arsenic for the human receptor, the ESG Glycine method (based on U.S. EPA SW-846 Method 1340) was employed. Each dried and homogenized sample was subsampled with a spatula, and soil and sediment samples were extracted in 50 mL extraction vessels with a 0.4 M solution of glycine adjusted to pH 1.5 in a liquid-to-(dry) solid ratio of 100:1. Plant samples were extracted using a liquid-to-(wet) solid ratio of 10:1 to simulate exposure to food. The extraction was carried out with end-over-end mixing at body temperature (37°C) for 1 hour.

All extracts and filtrates were analysed for total arsenic by ICP-MS, and total arsenic in sediment (dewatered <250 µm fraction), soil (<250 µm fraction) and plant samples were obtained by aqua regia digestions and analysis using ICP-MS at the Analytical Services Unit (ASU) at Queen's University, a CALA accredited laboratory.

To calculate % bioaccessibility, the following equation was used:

$$\% \, Bioaccessibility = \frac{Bioaccessible\ concentration\ \left(\frac{mg}{kg}\right)}{Total\ concentration\ (\frac{mg}{kg})} \times 100\%$$

Equation 1

To calculate % filtrate of sediment, the sediment dry weight (dw) concentration was first converted to wet weight using percent moisture:

$$Concentration\ \left(\frac{mg}{kg}ww\right) = \frac{Concentration\ \left(\frac{mg}{kg}dw\right) \times (100 - percent\ moisture)}{100}$$

Equation 2

The % filtrate of sediment is the concentration of arsenic in the water phase of the wet sediment (i.e., the filtrate concentration) as a fraction of the wet weight concentration:

$$\% \, Filtrate\ of\ sediment = \frac{Filtrate\ concentration\ (\frac{mg}{L})}{Sediment\ concentration\ (\frac{mg}{kg}ww)} \times 100\%$$

Equation 3

The % mobile arsenic in the sediment is the sum of the % bioaccessible and % filtrate arsenic.

Quality Assurance and Quality Control

Quality Assurance and Quality Control (QA/QC) samples were included for every eight samples during the bioaccessibility extraction and included a blank, standard reference material NIST 2711, blank spike and a sample duplicate. Blank samples were all below the limit of detection (0.2 mg/kg). The bioaccessibility of all standard reference material NIST 2711 samples were within the control limits established within the ESG laboratory. All spike recoveries were acceptable (100 ± 20 %). Precision was acceptable for all results with relative percent difference ($RPD = 100\% \times |\, value\ 1 - value\ 2| / (average\ of\ value\ 1\ and\ 2)$) less than 30%.

The QC results were reviewed for report ASU 15993 (Arsenic in extracts, arsenic in filtrates, arsenic in soil and arsenic in plants). The results for duplicates, blanks, 1643e CRM, EU-H-4 CRM and MESS 3 CRM and controls were all acceptable.

Data Interpretation and Limitations

Percent bioaccessibility for soil and sediment samples ranged from 7.0 to 55 %. Percent bioaccessibility for plant samples ranged from 14 to 118 %. Two plant samples (16-Giant-AP-11-BIO and 16-Giant-AP-16-BIO) had a percent bioaccessibility greater than 100 % (102 and 118%). Sample heterogeneity may have resulted in slight differences in the subsamples taken by ESG and by the laboratory conducting the total arsenic analysis, which may cause bioaccessibility to appear to be greater than 100%. Additionally the total arsenic concentration in sample 16-Giant-AP-16-BIO (0.86 mg/kg) was close to the limit of detection (0.50 mg/kg).

Data should be considered accurate to no more than two significant figures. This report is issued under final status.

The Environmental Sciences Group does not accept responsibility for the validity of procedures used to obtain or preserve the samples provided to the laboratory and does not accept any liability for the consequences of any acts taken or omissions made on the basis of the analysis or advice or interpretation provided. The results given relate only to the items tested.

Report authorized by:

Iris Koch, Senior Analytical and Arsenic Research Manager, ESG
Date: 1 December 2016

Arsenic Bioaccessibility in Soil, Sediment and Plants
PWGSC/Golder
FINAL ESG REPORT

ESG Bioaccessibility

Report ID:	RMC-CCS-ES-16-038
Date:	01-Dec-16
Extraction Method:	Glycine bioaccessibility extraction of soils, sediment and plants
Analytical Method:	Total As by ICP-MS
# Samples:	45 (15 sediment, 15 soil and 15 plant)

Concentrations in mg/kg, based on DRY WEIGHT (dw), unless otherwise noted.
BA conc = concentration of bioaccessible element in dewatered sediment; Sediment conc = concentration (DW) of element in dewatered and dried sediment;
%BA = % bioaccessibility = 100% x bioaccessible As/total As;
Filtrate conc = concentration of element in filtrate (water) removed from sediment;
Sediment conc ww = wet weight sediment concentration, dewatered sediment concentration corrected for percent moisture (see cover letter);
% Filtrate of sediment conc ww = 100% x filtrate conc/Sediment conc ww;
% Mobile of total = 100% x (BA conc corrected for percent moisture + filtrate conc)/sediment conc ww;
LOD = limit of detection; LOD % BA = (LOD for bioaccess As Conc)/Total As * 100%.

Sediment

	SAMPLE ID	BA conc dw (mg/kg)	Sediment conc dw (mg/kg)	%BA	Filtrate conc (mg/L)	Sediment conc ww (mg/kg)	% Filtrate of sediment conc ww	% Mobile of total	% Moisture	LOD BA conc (mg/kg)	LOD % BA
	2016 SQ-O-50-3	337	1400	24	0.25	1062	0.024	24	24	0.20	0.014
	2016 SQ-A-1	150	825	18	0.035	563	0.0062	18	32	0.20	0.024
	2016 SQ-A-2	130	840	16	0.046	646	0.0071	16	23	0.20	0.024
	2016 SQ-B-1	130	370	35	0.0068	187	0.0036	35	49	0.20	0.054
	2016 SQ-B-2	157	670	23	0.025	418	0.0060	23	38	0.20	0.030
	2016 SQ-1S-100-1	108	350	31	0.015	163	0.0092	31	53	0.20	0.057
	2016 SQ-C-1	17	62	28	0.0083	40	0.021	28	35	0.20	0.32
*	2016 SQ-O-50-1	269	1200	22	0.20	873	0.023	22	27	0.20	0.017
	2016 SQ-2S-100-1	214	630	34	0.020	249	0.0080	34	60	0.20	0.032
	2016 SQ-2S-100-3	88	320	28	0.0048	165	0.0029	28	48	0.20	0.063
	16-Long Lake-SE-4	6	20	30	0.15	15	0.97	31	23	0.20	1.0
	16-Long Lake-SE-5	49	100	49	0.096	61	0.16	49	39	0.20	0.20
	16-Long Lake-SE-7	23	42	55	0.017	34	0.050	55	19	0.20	0.48
	16-Long Lake-SE-10	9.4	18	52	0.012	14	0.086	52	22	0.20	1.1
*	16-Long Lake-SE-2	3.4	9.0	38	0.0084	7.1	0.12	38	21	0.20	2.2

Soil

SAMPLE ID	BA conc dw (mg/kg)	Soil conc dw (mg/kg)	%BA	LOD BA conc	LOD % BA
SL-F-01-1 B2	100	1400	7.1	0.20	0.014
TS-F-02-1 B2	156	290	54	0.20	0.069
TS-OC-02-1 B2	310	1100	28	0.20	0.018
TS-OC-01-1 B2	561	2000	28	0.20	0.010
TS-OC-04-1 B2	274	1800	15	0.20	0.011
* SL-F-08-1	124	300	41	0.20	0.067
SL-OC-04-1	1803	4300	42	0.20	0.005
SL-WL-C6-1	317	900	35	0.20	0.022
SL-F-03-1	63	280	22	0.20	0.071
SL-WL-05-1	217	460	47	0.20	0.043
16-Giant-S-2 (Long Lake)	50	160	31	0.20	0.13
16-Giant-S-3 (Long Lake)	49	160	30	0.20	0.13
16-Giant-S-7 (Long Lake)	29	73	39	0.20	0.27
* 16-Giant-S-8 (Long Lake)	89	210	42	0.20	0.10
16-Giant-S-10 (Long Lake)	19	50	38	0.20	0.40

Plants

SAMPLE ID	BA conc dw (mg/kg)	Plant conc dw (mg/kg)	%BA	LOD BA conc	LOD % BA	% Moisture
16-Giant-AL-BIO-01	0.7	1.6	44	0.064	4.0	60
16-Giant-CR-15-BIO	0.5	0.94	56	0.038	4.0	44
16-Giant-AL-19-BIO	0.60	1.4	43	0.074	5.3	74
16-Giant-CR-51-BIO	4.6	12	38	0.046	0.38	55
16-Giant-AL-51-BIO	2.2	15	14	0.043	0.29	54
16-Giant-CR-59-BIO	10	35	28	0.035	0.10	45
16-Giant-AL-60-BIO	1.1	5.9	19	0.041	0.69	51
16-Giant-AL-61-BIO	0.87	3.5	25	0.053	1.5	62
16-Giant-CR-61-BIO	1.4	5.9	24	0.034	0.58	41
* 16-Giant-CB-13-BIO	2.4	5.5	44	0.061	1.1	63
16-Giant-AP-8-BIO	12	13	89	0.063	0.48	71
16-Giant-AP-11-BIO	2.5	2.4	102	0.041	1.7	52
16-Giant-AP-16-BIO	1.0	0.86	118	0.023	2.6	11
16-Giant-AP-23-BIO	0.29	<0.5	NC	0.063	NC	68
* 16-Giant-AP-3-BIO	3.2	3.8	83	0.042	1.1	52

* Average of the duplicate pair (BA conc) reported

NC not calculated because As not detected in sample

Arsenic Bioaccessibility in Soil, Sediment and Plants
PWGSC/Golder
FINAL ESG REPORT

ESG Bioaccessibility

Report ID:	RMC-CCS-ES-16-038
Date:	01-Dec-16
Extraction Method:	Glycine bioaccessibility extraction of soils, sediment and plants
Analytical Method:	Total As by ICP-MS
# Samples:	45 (15 sediment, 15 soil and 15 plant)

QAQC REPORT

Bioaccessibility Extraction QAQC
Extraction Blank

	BA conc dw (mg/kg)
Blank 1	< 0.20
Blank 2	< 0.20
Blank 3	< 0.20
Blank 4	< 0.20
Blank 5	< 0.20
Blank 6	< 0.20

Analytical Duplicates

	BA conc dw (mg/kg)
2016 SQ-O-50-1	276
2016 SQ-O-50-1 Dup	262
AVERAGE	269
RPD (%)	5.3
SL-F-08-1	127
SL-F-08-1 Dup	121
AVERAGE	124
RPD (%)	4.2
16-Giant-S-8 (Long Lake)	91
16-Giant-S-8 (Long Lake) Dup	87
AVERAGE	89
RPD (%)	5.2
16-Long Lake-SE-2	3.5
16-Long Lake-SE-2 Dup	3.3
AVERAGE	3.4
RPD (%)	7.0
16-Giant-CB-13-BIO	2.6
16-Giant-CB-13-BIO Dup	2.2
AVERAGE	2.4
RPD (%)	18
16-Giant-AP-3-BIO	3.2
16-Giant-AP-3-BIO Dup	3.2
AVERAGE	3.2
RPD (%)	0.97

Control Samples for Bioaccessibility Extraction

	%BA
NIST 2711 CRM 1	56
NIST 2711 CRM 2	59
NIST 2711 CRM 3	59
NIST 2711 CRM 4	56
NIST 2711 CRM 5	56
NIST 2711 CRM 6	58
ESG Control Limits	40 - 60

Total As Extraction Spike Recovery %

	%BA
Blank Spike 1	107
Blank Spike 2	107
Blank Spike 3	120
Blank Spike 4	114
Blank Spike 5	110
Blank Spike 6	112

Total As in Extracts QAQC from ASU

	As in Extract (ng/mL = ug/L)
Blank	<2.0; <2.0
Reporting limit	<2.0
Control	27; 29; 28; 27; 26
Control Target	25
% Recovery Control	**108; 116; 112; 108; 104**
1643e CRM	57; 61; 60
1643e Target	60
% Recovery 1643e CRM	**95; 101; 100**
EU-H-4 CRM	820
EU-H-4 Target	780
% Recovery EU-H-4 CRM	**105**
2016 SQ-O-50-1	2800
2016 SQ-O-50-1 Dup	2800
% RPD 2016 SQ-O-50-1 Dup	**0**
SL-F-08-1 B2	1300
SL-F-08-1 B2 Dup	1200
% RPD SL-F-08-1 B2 Dup	**8.0**
16-Giant-AL-51-BIO B5	100
16-Giant-AL-51-BIO B5 Dup	100
% RPD 16-Giant-AL-51-BIO B	**0**
SPK B6	540
SPK B6	540
% RPD SPK B6	0

Total As in Sample QAQC from ASU
Soil and Sediment

	As in Sample (ug/g)
Blank	<1.0; <1.0
Reporting limit	<1.0
MESS 3 CRM	19; 19
MESS 3 CRM Target	18
% Recovery MESS 3 CRM	**106; 106**
SQ-A-1	840
SQ-A-1 Dup	810
% RPD SQ-A-1 Dup	**3.6**
TS-OC-01-1	2000
TS-OC-01-1 Dup	2000
% RPD TS-OC-01-1 Dup	**0**
16-Giant S-3	160
16-Giant S-3 Dup	160
% RPD 16-Giant S-3 Dup	**0**

Total As in Sample QAQC from ASU
Plants

	As in Sample (ug/g)
Blank	<0.50
Reporting limit	0.50
Spinach SRM	<0.50
Spinach SRM Target	0.068
% Recovery Spinach SRM	n/a
CB-13-BIO	5.6
CB-13-BIO Dup	5.4
% RPD CB-13-BIO Dup	**3.6**
AP-23-BIO	<0.50
AP-23-BIO Dup	<0.50
% RPD AP-23-BIO Dup	n/a

Total As in Filtrate QAQC from ASU
Water

	As in Extract (ng/mL = ug/L)
Blank	<2.0; <2.0; <2.0
Reporting limit	<2.0
Control	25;22; 25
Control Target	25
% Recovery Control	**100; 88; 100**
1643e CRM	56; 55
1643e Target	60
% Recovery 1643e CRM	**93; 92**
EU-H-4 CRM	820; 860
EU-H-4 Target	780
% Recovery EU-H-4 CRM	**105; 110**
2016 SQ-O-50-1	200
2016 SQ-O-50-1 Dup	200
% RPD 2016 SQ-O-50-1 Dup	**0**
16-Long Lake-SE-10	12
16-Long Lake-SE-10 Dup	12
16-Long Lake-SE-10 Dup	**0**

Analytical Services Unit
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Biosciences Complex, Queen's University
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Tel: 613 533-2642 Fax: 613 533-2897

ASU #	**15993**		Report ID:	ASU 15993 As Extracts-1
Client:	**ESG**		Date Submitted:	28-Oct-16
	16-053		Date Tested:	18-Nov-16
Site:	**Golder**		Date:	21-Nov-16
Technique:	**ICP-MS**		Matrix:	Bioaccessibility Extracts
Report of Analysis of Extracts: all results in ng/ml				
Results relate only to the items tested				
	2016 SQ-O-50-1 B1 *	**2016 SQ-O-50-3 B1**	**2016 SQ-A-1 B1**	**2016 SQ-A-2 B1**
Arsenic	2800	3500	1500	1300
	2016 SQ-B-1 B1	**2016 SQ-B-2 B1**	**2016 SQ-1S-100-1 B1**	**2016 SQ-C-1 B1**
Arsenic	1300	1600	1100	170
	2016 SQ-O-50-1 DUP B1	**2711 B1**	**BLK B1**	**SPK B1**
Arsenic	2600	600	<2.0	540
	2016 SQ-2S-100-1 B2	**2016 SQ-2S-100-3 B2**	**SL-F-08-1 B2 ***	**SL-F-01-1 B2**
Arsenic	2200	870	1300	990
	TS-F-02-1 B2	**TS-OC-02-1 B2**	**TS-OC-01-1 B2**	**TS-OC-04-1 B2**
Arsenic	1600	3200	5800	2800
	SL-F-08-1 DUP B2	**2711 B2**	**BLK B2**	**SPK B2**
Arsenic	1200	630	<2.0	550
	SL-OC-04-1 B3	**SL-WL-C6-1 B3**	**SL-F-03-1 B3**	**SL-WL-05-1 B3**
Arsenic	18000	2000	640	2200
	16-Giant-S-2 (Long Lake) B3	**16-Giant-S-3 (Long Lake) B3**	**16-Giant-S-7 (Long Lake) B3**	**16-Giant-S-8 (Long Lake) B3**
Arsenic	490	470	310	910
	16-Giant-S-8 (Long Lake) DUP B3	**2711 B3**	**BLK B3**	**SPK B3**
Arsenic	890	620	<2.0	540
	16-Giant-S-10 (Long Lake) B4	**16-Long Lake-SE-2 B4**	**16-Long Lake-SE-4 B4**	**16-Long Lake-SE-5 B4**
Arsenic	180	39	67	530
	16-Long Lake-SE-7 B4	**16-Long Lake-SE-10 B4**	**16-Giant-AL-BIO-01 B4**	**16-Giant-CR-15-BIO B4**
Arsenic	240	100	22	28
	16-Long Lake-SE-2 DUP B4	**2711 B4**	**BLK B4**	**SPK B4**
Arsenic	32	580	<2.0	540
	16-Giant-CB-13-BIO B5	**16-Giant-AL-19-BIO B5**	**16-Giant-CR-51-BIO B5**	**16-Giant-AL-51-BIO B5 ***
Arsenic	86	16	200	100
	16-Giant-CR-59-BIO B5	**16-Giant-AL-60-BIO B5**	**16-Giant-AL-61-BIO B5**	**16-Giant-CR-61-BIO B5**
Arsenic	560	56	33	82
	16-Giant-CB-13-BIO DUP B5	**2711 B5**	**BLK B5**	**SPK B5**
Arsenic	100	620	<2.0	510
	16-Giant-AP-3-BIO B6	**16-Giant-AP-8-BIO B6**	**16-Giant-AP-11-BIO B6**	**16-Giant-AP-16-BIO B6**
Arsenic	150	370	120	90

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	16-Giant-AP-23-BIO B6	**16-Giant-AP-3-BIO DUP B6**	**2711 B6**	**BLK B6**
Arsenic	9.0	160	580	<2.0
	SPK B6 *			
Arsenic	540			
Laboratory QA/QC				
	Blank	**Special Reporting Limit**		
Arsenic	<2.0; <2.0	<2.0		
	Control 1	**Control 1 Target**	**1643e CRM**	**1643e Target**
Arsenic	27; 29; 28; 27; 26	25	57; 61; 60	60
	EU-H-4 CRM	**EU-H-4 Target**	**2016 SQ-O-50-1 B1**	**2016 SQ-O-50-1 B1**
Arsenic	820	780	2800	2800
	SL-F-08-1 B2	**SL-F-08-1 B2**	**16-Giant-AL-51-BIO B5**	**16-Giant-AL-51-BIO B5**
Arsenic	1300	1200	100	100
	SPK B6	**SPK B6**		
Arsenic	540	540		
NOTES:	Scandium, Indium and Bismith were used as internal standards. Gas dilution (HMI) used: N.			
	* Averaged result of duplicate analyses; All extracts diluted x 10 prior to analysis.			
Prepared by:			Authorized by:	

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ASU #	15993	**Report ID:**	ASU 15993 Golder As Porewater-1
Client:	ESG	**Date Submitted:**	28-Oct-16
	16-053	**Date tested:**	21-Nov-16
Site:	Golder	**Date:**	22-Nov-16
		Matrix:	Porewater

Report of Analysis: all results in ng/ml

Results relate only to the items tested.

Sample	**As ***
2016 SQ-O-50-1	200
2016 SQ-O-50-1 Duplicate	200
2016 SQ-O-50-3	250
2016 SQ-A-1	35
2016 SQ-A-2	46
2016 SQ-B-1	6.8
2016 SQ-B-2	25
2016 SQ-1S-100-1	15
2016 SQ-C-1	8.3
2016 SQ-2S-100-1 **	-
2016 SQ-2S-100-3	4.8
16-Long Lake-SE-2	8.4
16-Long Lake-SE-4	150
16-Long Lake-SE-5	96
16-Long Lake-SE-7	17
16-Long Lake-SE-10	12
16-Long Lake-SE-10 Duplicate	12
Laboratory QA/QC	
Blank	<2.0
Control 1	25; 22
Control 1 Target	25
EU-H-4	820
EU-H-4 Target	780
1643e	56
1643e Target	60

Prepared by: ………………………… Authorization: ………………………

NOTES: Scandium, Indium and Bismith were used as internal standards. Gas dilution (HMI) used: N.

* Porewater samples were diluted x 10 prior to analysis due to limited sample volume and dissolved solid concentrations - reporting limits were raised accordingly.

** Plastic vial was supplied with a crack in it and no sample.

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ASU #	15993		**Report ID:**	ASU 15993 Golder As Porewater-2	
Client:	ESG		**Date Submitted:**	28-Nov-16	
	16-053		**Date tested:**	30-Nov-16	
Site:	Golder		**Date:**	30-Nov-16	
			Matrix:	Porewater	
Report of Analysis: all results in ng/ml					
Results relate only to the items tested.					
Sample	**As ***				
2016-SQ-2S-100-1	20				
Laboratory QA/QC					
Blank	<2.0				
Control 1	25				
Control 1 Target	25				
EU-H-4	860				
EU-H-4 Target	780				
1643e	55				
1643e Target	60				
Prepared by:	…………………………		Authorization:	………………………	
NOTES:	Scandium, Indium and Bismith were used as internal standards. Gas dilution (HMI) used: N.				
	* Porewater sample was diluted x 10 prior to analysis due to limited sample volume and dissolved solid concentrations - reporting limits were raised accordingly.				

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ASU #	15993		**Report ID:**	ASU 15993 Golder As-S1
Client:	ESG		**Date Submitted:**	28-Oct-16
	16-053		**Date tested:**	04-Nov-16
Site:	Golder		**Date:**	07-Nov-16
			Matrix:	Soil
Report of Analysis: all results in ug/g (unless otherwise noted)				
Results relate only to the items tested				
Sample	**As**			
SQ-0-50-1	1200			
SQ-0-50-3	1400			
SQ-A-1	840			
SQ-A-1 Duplicate	810			
SQ-A-2	840			
SQ-B-1	370			
SQ-B-2	670			
SQ-1S-100-1	350			
SQ-C-1	62			
SQ-2S-100-1	630			
SQ-2S-100-3	320			
SL-F-08-1	300			
SL-F-01-1	1400			
TS-F-02-1	290			
TS-OC-02-1	1100			
TS-OC-01-1	2000			
TS-OC-01-1 Duplicate	2000			
TS-OC-04-1	1800			
SL-OC-04-1	4300			
SL-WL-C6-1	900			
SL-F-03-1	280			
SL-WL-05-1	460			
16-Giant S-2	160			
16-Giant S-3	160			
16-Giant S-3 Duplicate	160			
16-Giant S-7	73			
16-Giant S-8	210			
16-Giant S-10	50			
16-Long Lake SE-2	9.0			
16-Long Lake SE-4	20			
16-Long Lake SE-5	100			
16-Long Lake SE-7	42			
16-Long Lake SE-10	18			

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Laboratory QA/QC				
Blank	<1.0			
Blank	<1.0			
MESS-3	19			
MESS-3	19			
MESS-3 Target	18			
Prepared by:	…………………………		Authorization:	………………………

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ASU #	15993	**Report ID:**	ASU 15993 Golder As Plants-1
Client:	ESG	**Date Submitted:**	28-Oct-16
	16-053	**Date tested:**	19-Nov-16
Site:	Golder	**Date:**	21-Nov-16
		Matrix:	Plants

Report of Analysis: all results in ug/g (unless otherwise noted)
Results relate only to the items tested

Sample	**As ****
AL-BIO-01	1.6
CR-15-BIO	0.94
CB-13-BIO	5.6
CB-13-BIO Duplicate	5.4
AL-19-BIO	1.4
CR-51-BIO	12
AL-51-BIO	15
CR-59-BIO	35
AL-60-BIO	5.9
AL-61-BIO	3.5
CR-61-BIO	5.9
AP-3-BIO	3.8
AP-8-BIO	13
AP-11-BIO	2.4
AP-16-BIO	0.86
AP-23-BIO	<0.5
AP-23-BIO Duplicate	<0.5
Laboratory QA/QC	
Blank	<0.5
Spinach	<0.5

Prepared by: .... Authorization: ....

NOTES: Scandium, Indium and Bismith were used as internal standards. Gas dilution (HMI) used: Y

** Samples were pre screened using ICP-OES. Any values found to be <5 ppm by ICP-OES were reanalyzed by ICP-MS.

GOLDER ASSOCIATES LTD
ATTN: Steven Fiddler
16820 107 Ave NW
EDMONTON AB T5P 4C3

Date Received: 21-SEP-16
Report Date: 12-OCT-16 08:56 (MT)
Version: FINAL REV. 2

Client Phone: 780-483-3499

Certificate of Analysis

Lab Work Order #: L1832598

Project P.O. #: NOT SUBMITTED

Job Reference: 13-1377-0044-23000-23002

C of C Numbers:

Legal Site Desc:

Comments: ADDITIONAL 11-OCT-16 12:39

12-OCT-2016 REVISED REPORT: WATERS PUT ON SEPARATE SAMPLE FROM SEDIMENT

Jessica Spira, Env. Tech. DIPL
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832598-1 16-LONGLAKE-SE-1							
Sampled By: TM/EN on 21-SEP-16							
Matrix: SEDIMENT							
Total Metals - CCME							
Miscellaneous Parameters							
Mercury (Hg)	<0.0050		0.0050	mg/kg	26-SEP-16	27-SEP-16	R3558279
Metals in Soil by CRC ICPMS							
Aluminum (Al)	2430		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Antimony (Sb)	0.14		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Arsenic (As)	7.54		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Barium (Ba)	11.3		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Beryllium (Be)	0.21		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Bismuth (Bi)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Boron (B)	<5.0		5.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cadmium (Cd)	0.020		0.020	mg/kg	26-SEP-16	27-SEP-16	R3558194
Calcium (Ca)	945		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Chromium (Cr)	7.45		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cobalt (Co)	1.32		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Copper (Cu)	2.62		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Iron (Fe)	3910		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lead (Pb)	1.18		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lithium (Li)	6.6		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Magnesium (Mg)	1430		20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Manganese (Mn)	39.5		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Molybdenum (Mo)	2.78		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Nickel (Ni)	4.70		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Phosphorus (P)	231		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Potassium (K)	230		100	mg/kg	26-SEP-16	27-SEP-16	R3558194
Selenium (Se)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Silver (Ag)	<0.10		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Sodium (Na)	68		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Strontium (Sr)	2.55		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Thallium (Tl)	<0.050		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Tin (Sn)	<2.0		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Titanium (Ti)	124		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Uranium (U)	0.601		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Vanadium (V)	7.46		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zinc (Zn)	19.0		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zirconium (Zr)	1.0		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
L1832598-2 16-LONGLAKE-SE-2							
Sampled By: TM/EN on 21-SEP-16							
Matrix: SEDIMENT							
Total Metals - CCME							
Miscellaneous Parameters							
Mercury (Hg)	<0.0050		0.0050	mg/kg	26-SEP-16	27-SEP-16	R3558279
Metals in Soil by CRC ICPMS							
Aluminum (Al)	2170		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Antimony (Sb)	<0.10		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Arsenic (As)	8.93		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Barium (Ba)	11.1		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Beryllium (Be)	<0.10		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Bismuth (Bi)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Boron (B)	<5.0		5.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cadmium (Cd)	<0.020		0.020	mg/kg	26-SEP-16	27-SEP-16	R3558194
Calcium (Ca)	734		50	mg/kg	26-SEP-16	27-SEP-16	R3558194

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832598-2 16-LONGLAKE-SE-2							
Sampled By: TM/EN on 21-SEP-16							
Matrix: SEDIMENT							
Metals in Soil by CRC ICPMS							
Chromium (Cr)	6.54		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cobalt (Co)	1.16		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Copper (Cu)	2.02		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Iron (Fe)	3130		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lead (Pb)	0.81		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lithium (Li)	5.5		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Magnesium (Mg)	1260		20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Manganese (Mn)	56.9		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Molybdenum (Mo)	<0.10		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Nickel (Ni)	3.98		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Phosphorus (P)	186		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Potassium (K)	200		100	mg/kg	26-SEP-16	27-SEP-16	R3558194
Selenium (Se)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Silver (Ag)	<0.10		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Sodium (Na)	54		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Strontium (Sr)	2.21		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Thallium (Tl)	<0.050		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Tin (Sn)	<2.0		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Titanium (Ti)	91.7		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Uranium (U)	0.384		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Vanadium (V)	5.32		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zinc (Zn)	8.7		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zirconium (Zr)	<1.0		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
L1832598-3 16-LONGLAKE-SE-3							
Sampled By: TM/EN on 21-SEP-16							
Matrix: SEDIMENT							
Total Metals - CCME							
Miscellaneous Parameters							
Mercury (Hg)	<0.0050		0.0050	mg/kg	26-SEP-16	27-SEP-16	R3558279
Metals in Soil by CRC ICPMS							
Aluminum (Al)	2420		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Antimony (Sb)	0.20		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Arsenic (As)	7.46		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Barium (Ba)	13.7		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Beryllium (Be)	<0.10		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Bismuth (Bi)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Boron (B)	<5.0		5.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cadmium (Cd)	<0.020		0.020	mg/kg	26-SEP-16	27-SEP-16	R3558194
Calcium (Ca)	882		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Chromium (Cr)	6.91		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cobalt (Co)	1.35		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Copper (Cu)	2.48		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Iron (Fe)	3480		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lead (Pb)	1.18		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lithium (Li)	7.1		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Magnesium (Mg)	1380		20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Manganese (Mn)	43.7		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Molybdenum (Mo)	0.30		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Nickel (Ni)	4.42		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Phosphorus (P)	187		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Potassium (K)	220		100	mg/kg	26-SEP-16	27-SEP-16	R3558194

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832598-3 16-LONGLAKE-SE-3							
Sampled By: TM/EN on 21-SEP-16							
Matrix: SEDIMENT							
Metals in Soil by CRC ICPMS							
Selenium (Se)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Silver (Ag)	<0.10		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Sodium (Na)	54		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Strontium (Sr)	2.51		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Thallium (Tl)	<0.050		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Tin (Sn)	<2.0		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Titanium (Ti)	105		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Uranium (U)	0.458		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Vanadium (V)	6.01		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zinc (Zn)	9.6		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zirconium (Zr)	<1.0		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
L1832598-4 16-LONGLAKE-SE-4							
Sampled By: TM/EN on 21-SEP-16							
Matrix: SEDIMENT							
Total Metals - CCME							
Miscellaneous Parameters							
Mercury (Hg)	<0.0050		0.0050	mg/kg	26-SEP-16	27-SEP-16	R3558279
Metals in Soil by CRC ICPMS							
Aluminum (Al)	2650		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Antimony (Sb)	0.43		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Arsenic (As)	21.4		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Barium (Ba)	13.6		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Beryllium (Be)	<0.10		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Bismuth (Bi)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Boron (B)	<5.0		5.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cadmium (Cd)	0.022		0.020	mg/kg	26-SEP-16	27-SEP-16	R3558194
Calcium (Ca)	942		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Chromium (Cr)	7.70		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cobalt (Co)	1.62		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Copper (Cu)	2.97		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Iron (Fe)	3560		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lead (Pb)	1.56		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lithium (Li)	6.9		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Magnesium (Mg)	1480		20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Manganese (Mn)	51.0		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Molybdenum (Mo)	0.11		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Nickel (Ni)	4.72		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Phosphorus (P)	210		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Potassium (K)	240		100	mg/kg	26-SEP-16	27-SEP-16	R3558194
Selenium (Se)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Silver (Ag)	<0.10		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Sodium (Na)	69		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Strontium (Sr)	3.13		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Thallium (Tl)	<0.050		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Tin (Sn)	<2.0		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Titanium (Ti)	128		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Uranium (U)	0.411		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Vanadium (V)	6.71		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zinc (Zn)	10.4		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zirconium (Zr)	<1.0		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832598-5 16-LONGLAKE-SE-5							
Sampled By: TM/EN on 21-SEP-16							
Matrix: SEDIMENT							
Total Metals - CCME							
Miscellaneous Parameters							
Mercury (Hg)	0.0178		0.0050	mg/kg	26-SEP-16	27-SEP-16	R3558279
Metals in Soil by CRC ICPMS							
Aluminum (Al)	3990		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Antimony (Sb)	2.22		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Arsenic (As)	96.8		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Barium (Ba)	60.5		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Beryllium (Be)	0.13		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Bismuth (Bi)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Boron (B)	<5.0		5.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cadmium (Cd)	0.088		0.020	mg/kg	26-SEP-16	27-SEP-16	R3558194
Calcium (Ca)	1940		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Chromium (Cr)	15.5		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cobalt (Co)	3.43		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Copper (Cu)	35.6		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Iron (Fe)	8660		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lead (Pb)	12.7		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lithium (Li)	10.2		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Magnesium (Mg)	2260		20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Manganese (Mn)	313		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Molybdenum (Mo)	0.42		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Nickel (Ni)	9.88		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Phosphorus (P)	364		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Potassium (K)	470		100	mg/kg	26-SEP-16	27-SEP-16	R3558194
Selenium (Se)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Silver (Ag)	<0.10		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Sodium (Na)	148		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Strontium (Sr)	8.38		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Thallium (Tl)	<0.050		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Tin (Sn)	17.3		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Titanium (Ti)	162		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Uranium (U)	0.886		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Vanadium (V)	10.3		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zinc (Zn)	67.6		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zirconium (Zr)	1.0		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
L1832598-6 16-LONGLAKE-SE-6							
Sampled By: TM/EN on 21-SEP-16							
Matrix: SEDIMENT							
Total Metals - CCME							
Miscellaneous Parameters							
Mercury (Hg)	<0.0050		0.0050	mg/kg	26-SEP-16	27-SEP-16	R3558279
Metals in Soil by CRC ICPMS							
Aluminum (Al)	3840		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Antimony (Sb)	0.23		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Arsenic (As)	8.19		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Barium (Ba)	16.8		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Beryllium (Be)	0.12		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Bismuth (Bi)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Boron (B)	<5.0		5.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cadmium (Cd)	0.021		0.020	mg/kg	26-SEP-16	27-SEP-16	R3558194
Calcium (Ca)	1190		50	mg/kg	26-SEP-16	27-SEP-16	R3558194

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832598-6 16-LONGLAKE-SE-6							
Sampled By: TM/EN on 21-SEP-16							
Matrix: SEDIMENT							
Metals in Soil by CRC ICPMS							
Chromium (Cr)	12.8		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cobalt (Co)	2.67		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Copper (Cu)	7.21		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Iron (Fe)	7070		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lead (Pb)	2.12		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lithium (Li)	9.8		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Magnesium (Mg)	2120		20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Manganese (Mn)	73.8		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Molybdenum (Mo)	0.54		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Nickel (Ni)	8.17		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Phosphorus (P)	265		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Potassium (K)	380		100	mg/kg	26-SEP-16	27-SEP-16	R3558194
Selenium (Se)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Silver (Ag)	<0.10		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Sodium (Na)	78		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Strontium (Sr)	3.80		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Thallium (Tl)	<0.050		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Tin (Sn)	<2.0		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Titanium (Ti)	230		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Uranium (U)	0.975		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Vanadium (V)	16.0		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zinc (Zn)	12.6		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zirconium (Zr)	2.0		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
L1832598-7 16-LONGLAKE-SE-7							
Sampled By: TM/EN on 21-SEP-16							
Matrix: SEDIMENT							
Total Metals - CCME							
Miscellaneous Parameters							
Mercury (Hg)	0.0074		0.0050	mg/kg	26-SEP-16	27-SEP-16	R3558279
Metals in Soil by CRC ICPMS							
Aluminum (Al)	6900		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Antimony (Sb)	0.90		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Arsenic (As)	46.9		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Barium (Ba)	38.6		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Beryllium (Be)	0.18		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Bismuth (Bi)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Boron (B)	<5.0		5.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cadmium (Cd)	0.110		0.020	mg/kg	26-SEP-16	27-SEP-16	R3558194
Calcium (Ca)	1550		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Chromium (Cr)	26.9		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cobalt (Co)	6.13		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Copper (Cu)	12.4		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Iron (Fe)	12300		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lead (Pb)	5.82		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lithium (Li)	17.5		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Magnesium (Mg)	5420		20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Manganese (Mn)	165		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Molybdenum (Mo)	0.21		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Nickel (Ni)	23.4		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Phosphorus (P)	282		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Potassium (K)	1020		100	mg/kg	26-SEP-16	27-SEP-16	R3558194

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832598-7 16-LONGLAKE-SE-7							
Sampled By: TM/EN on 21-SEP-16							
Matrix: SEDIMENT							
Metals in Soil by CRC ICPMS							
Selenium (Se)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Silver (Ag)	<0.10		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Sodium (Na)	98		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Strontium (Sr)	5.31		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Thallium (Tl)	0.062		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Tin (Sn)	<2.0		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Titanium (Ti)	369		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Uranium (U)	0.774		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Vanadium (V)	22.7		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zinc (Zn)	35.9		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zirconium (Zr)	1.3		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
L1832598-8 16-LONGLAKE-SE-8							
Sampled By: TM/EN on 21-SEP-16							
Matrix: SEDIMENT							
Total Metals - CCME							
Miscellaneous Parameters							
Mercury (Hg)	<0.0050		0.0050	mg/kg	26-SEP-16	27-SEP-16	R3558279
Metals in Soil by CRC ICPMS							
Aluminum (Al)	3800		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Antimony (Sb)	0.17		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Arsenic (As)	17.0		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Barium (Ba)	19.6		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Beryllium (Be)	0.11		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Bismuth (Bi)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Boron (B)	<5.0		5.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cadmium (Cd)	0.059		0.020	mg/kg	26-SEP-16	27-SEP-16	R3558194
Calcium (Ca)	1470		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Chromium (Cr)	11.9		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cobalt (Co)	2.82		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Copper (Cu)	5.93		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Iron (Fe)	6750		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lead (Pb)	2.96		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lithium (Li)	10.9		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Magnesium (Mg)	2370		20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Manganese (Mn)	108		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Molybdenum (Mo)	0.11		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Nickel (Ni)	7.70		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Phosphorus (P)	207		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Potassium (K)	560		100	mg/kg	26-SEP-16	27-SEP-16	R3558194
Selenium (Se)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Silver (Ag)	<0.10		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Sodium (Na)	76		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Strontium (Sr)	3.83		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Thallium (Tl)	<0.050		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Tin (Sn)	<2.0		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Titanium (Ti)	218		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Uranium (U)	0.544		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Vanadium (V)	11.0		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zinc (Zn)	30.7		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zirconium (Zr)	1.4		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832598-9 16-LONGLAKE-SE-9							
Sampled By: TM/EN on 21-SEP-16							
Matrix: SEDIMENT							
Total Metals - CCME							
Miscellaneous Parameters							
Mercury (Hg)	<0.0050		0.0050	mg/kg	26-SEP-16	27-SEP-16	R3558279
Metals in Soil by CRC ICPMS							
Aluminum (Al)	3340		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Antimony (Sb)	0.18		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Arsenic (As)	12.9		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Barium (Ba)	13.2		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Beryllium (Be)	<0.10		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Bismuth (Bi)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Boron (B)	<5.0		5.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cadmium (Cd)	0.032		0.020	mg/kg	26-SEP-16	27-SEP-16	R3558194
Calcium (Ca)	704		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Chromium (Cr)	11.6		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cobalt (Co)	1.84		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Copper (Cu)	2.69		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Iron (Fe)	5310		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lead (Pb)	1.89		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lithium (Li)	10.5		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Magnesium (Mg)	2110		20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Manganese (Mn)	81.4		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Molybdenum (Mo)	0.15		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Nickel (Ni)	6.08		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Phosphorus (P)	147		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Potassium (K)	340		100	mg/kg	26-SEP-16	27-SEP-16	R3558194
Selenium (Se)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Silver (Ag)	<0.10		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Sodium (Na)	50		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Strontium (Sr)	2.23		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Thallium (Tl)	<0.050		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Tin (Sn)	<2.0		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Titanium (Ti)	125		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Uranium (U)	1.41		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Vanadium (V)	9.26		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zinc (Zn)	13.4		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zirconium (Zr)	1.3		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
L1832598-10 16-LONGLAKE-SE-10							
Sampled By: TM/EN on 21-SEP-16							
Matrix: SEDIMENT							
Total Metals - CCME							
Miscellaneous Parameters							
Mercury (Hg)	<0.0050		0.0050	mg/kg	26-SEP-16	27-SEP-16	R3558279
Metals in Soil by CRC ICPMS							
Aluminum (Al)	3650		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Antimony (Sb)	0.18		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Arsenic (As)	18.6		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Barium (Ba)	15.8		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Beryllium (Be)	0.10		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Bismuth (Bi)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Boron (B)	<5.0		5.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cadmium (Cd)	0.023		0.020	mg/kg	26-SEP-16	27-SEP-16	R3558194
Calcium (Ca)	758		50	mg/kg	26-SEP-16	27-SEP-16	R3558194

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832598-10 16-LONGLAKE-SE-10							
Sampled By: TM/EN on 21-SEP-16							
Matrix: SEDIMENT							
Metals in Soil by CRC ICPMS							
Chromium (Cr)	12.1		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cobalt (Co)	2.18		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Copper (Cu)	3.83		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Iron (Fe)	5740		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lead (Pb)	2.23		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lithium (Li)	11.6		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Magnesium (Mg)	2190		20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Manganese (Mn)	85.6		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Molybdenum (Mo)	0.19		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Nickel (Ni)	6.74		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Phosphorus (P)	159		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Potassium (K)	330		100	mg/kg	26-SEP-16	27-SEP-16	R3558194
Selenium (Se)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Silver (Ag)	<0.10		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Sodium (Na)	59		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Strontium (Sr)	2.43		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Thallium (Tl)	<0.050		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Tin (Sn)	<2.0		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Titanium (Ti)	158		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Uranium (U)	0.817		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Vanadium (V)	9.32		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zinc (Zn)	13.4		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zirconium (Zr)	1.3		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
L1832598-11 16-LONGLAKE-SE-DUP							
Sampled By: TM/EN on 21-SEP-16							
Matrix: SEDIMENT							
Total Metals - CCME							
Miscellaneous Parameters							
Mercury (Hg)	<0.0050		0.0050	mg/kg	26-SEP-16	27-SEP-16	R3558279
Metals in Soil by CRC ICPMS							
Aluminum (Al)	2860		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Antimony (Sb)	0.43		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Arsenic (As)	21.2		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Barium (Ba)	14.3		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Beryllium (Be)	<0.10		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Bismuth (Bi)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Boron (B)	<5.0		5.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cadmium (Cd)	0.020		0.020	mg/kg	26-SEP-16	27-SEP-16	R3558194
Calcium (Ca)	1050		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Chromium (Cr)	8.76		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Cobalt (Co)	1.75		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Copper (Cu)	3.03		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Iron (Fe)	3890		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lead (Pb)	1.75		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Lithium (Li)	7.8		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Magnesium (Mg)	1620		20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Manganese (Mn)	55.1		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Molybdenum (Mo)	0.12		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Nickel (Ni)	5.09		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Phosphorus (P)	214		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Potassium (K)	270		100	mg/kg	26-SEP-16	27-SEP-16	R3558194

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832598-11 16-LONGLAKE-SE-DUP							
Sampled By: TM/EN on 21-SEP-16							
Matrix: SEDIMENT							
Metals in Soil by CRC ICPMS							
Selenium (Se)	<0.20		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Silver (Ag)	<0.10		0.10	mg/kg	26-SEP-16	27-SEP-16	R3558194
Sodium (Na)	81		50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Strontium (Sr)	3.53		0.50	mg/kg	26-SEP-16	27-SEP-16	R3558194
Thallium (Tl)	<0.050		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Tin (Sn)	<2.0		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Titanium (Ti)	137		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Uranium (U)	0.481		0.050	mg/kg	26-SEP-16	27-SEP-16	R3558194
Vanadium (V)	7.14		0.20	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zinc (Zn)	11.1		2.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
Zirconium (Zr)	<1.0		1.0	mg/kg	26-SEP-16	27-SEP-16	R3558194
L1832598-12 16-LONGLAKE0SW-1							
Sampled By: TM/EN on 21-SEP-16							
Matrix: WATER							
Total Metals - CCME							
Hardness (from Total Ca and Mg)							
Hardness (as CaCO3)	127	HTC	0.13	mg/L		11-OCT-16	
Total Mercury in Water by CVAAS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		28-SEP-16	R3568517
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0035		0.0030	mg/L		29-SEP-16	R3560168
Antimony (Sb)-Total	0.00201		0.00010	mg/L		29-SEP-16	R3560168
Arsenic (As)-Total	0.0427		0.00010	mg/L		29-SEP-16	R3560168
Barium (Ba)-Total	0.0355		0.000050	mg/L		29-SEP-16	R3560168
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Boron (B)-Total	0.016		0.010	mg/L		29-SEP-16	R3560168
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L		29-SEP-16	R3560168
Calcium (Ca)-Total	30.6		0.050	mg/L		29-SEP-16	R3560168
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Cobalt (Co)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Copper (Cu)-Total	<0.00050		0.00050	mg/L		29-SEP-16	R3560168
Iron (Fe)-Total	0.019		0.010	mg/L		29-SEP-16	R3560168
Lead (Pb)-Total	<0.000050		0.000050	mg/L		29-SEP-16	R3560168
Lithium (Li)-Total	0.0033		0.0010	mg/L		29-SEP-16	R3560168
Magnesium (Mg)-Total	12.4		0.0050	mg/L		29-SEP-16	R3560168
Manganese (Mn)-Total	0.0156		0.00010	mg/L		29-SEP-16	R3560168
Molybdenum (Mo)-Total	0.000434		0.000050	mg/L		29-SEP-16	R3560168
Nickel (Ni)-Total	0.00054		0.00050	mg/L		29-SEP-16	R3560168
Potassium (K)-Total	3.16		0.050	mg/L		29-SEP-16	R3560168
Selenium (Se)-Total	<0.000050		0.000050	mg/L		29-SEP-16	R3560168
Silver (Ag)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168
Sodium (Na)-Total	28.4		0.050	mg/L		29-SEP-16	R3560168
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168
Tin (Sn)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Titanium (Ti)-Total	<0.00030		0.00030	mg/L		29-SEP-16	R3560168
Uranium (U)-Total	0.000578		0.000010	mg/L		29-SEP-16	R3560168
Vanadium (V)-Total	<0.00050		0.00050	mg/L		29-SEP-16	R3560168
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		29-SEP-16	R3560168

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832598-13 16-LONGLAKE0SW-2							
Sampled By: TM/EN on 21-SEP-16							
Matrix: WATER							
Total Metals - CCME							
Hardness (from Total Ca and Mg)							
Hardness (as CaCO3)	126	HTC	0.13	mg/L		11-OCT-16	
Total Mercury in Water by CVAAS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		28-SEP-16	R3568517
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0031		0.0030	mg/L		29-SEP-16	R3560168
Antimony (Sb)-Total	0.00200		0.00010	mg/L		29-SEP-16	R3560168
Arsenic (As)-Total	0.0423		0.00010	mg/L		29-SEP-16	R3560168
Barium (Ba)-Total	0.0357		0.000050	mg/L		29-SEP-16	R3560168
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Boron (B)-Total	0.017		0.010	mg/L		29-SEP-16	R3560168
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L		29-SEP-16	R3560168
Calcium (Ca)-Total	30.7		0.050	mg/L		29-SEP-16	R3560168
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Cobalt (Co)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Copper (Cu)-Total	<0.00050		0.00050	mg/L		29-SEP-16	R3560168
Iron (Fe)-Total	0.018		0.010	mg/L		29-SEP-16	R3560168
Lead (Pb)-Total	<0.000050		0.000050	mg/L		29-SEP-16	R3560168
Lithium (Li)-Total	0.0034		0.0010	mg/L		29-SEP-16	R3560168
Magnesium (Mg)-Total	12.0		0.0050	mg/L		29-SEP-16	R3560168
Manganese (Mn)-Total	0.0148		0.00010	mg/L		29-SEP-16	R3560168
Molybdenum (Mo)-Total	0.000368		0.000050	mg/L		29-SEP-16	R3560168
Nickel (Ni)-Total	0.00052		0.00050	mg/L		29-SEP-16	R3560168
Potassium (K)-Total	3.27		0.050	mg/L		29-SEP-16	R3560168
Selenium (Se)-Total	<0.000050		0.000050	mg/L		29-SEP-16	R3560168
Silver (Ag)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168
Sodium (Na)-Total	28.8		0.050	mg/L		29-SEP-16	R3560168
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168
Tin (Sn)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Titanium (Ti)-Total	<0.00030		0.00030	mg/L		29-SEP-16	R3560168
Uranium (U)-Total	0.000451		0.000010	mg/L		29-SEP-16	R3560168
Vanadium (V)-Total	<0.00050		0.00050	mg/L		29-SEP-16	R3560168
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		29-SEP-16	R3560168
L1832598-14 16-LONGLAKE0SW-3							
Sampled By: TM/EN on 21-SEP-16							
Matrix: WATER							
Total Metals - CCME							
Hardness (from Total Ca and Mg)							
Hardness (as CaCO3)	127	HTC	0.13	mg/L		11-OCT-16	
Total Mercury in Water by CVAAS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		28-SEP-16	R3568517
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0852		0.0030	mg/L		29-SEP-16	R3560168
Antimony (Sb)-Total	0.00204		0.00010	mg/L		29-SEP-16	R3560168
Arsenic (As)-Total	0.0457		0.00010	mg/L		29-SEP-16	R3560168
Barium (Ba)-Total	0.0374		0.000050	mg/L		29-SEP-16	R3560168
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Boron (B)-Total	0.017		0.010	mg/L		29-SEP-16	R3560168
Cadmium (Cd)-Total	0.0000161		0.0000050	mg/L		29-SEP-16	R3560168
Calcium (Ca)-Total	31.0		0.050	mg/L		29-SEP-16	R3560168

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832598-14 16-LONGLAKE0SW-3							
Sampled By: TM/EN on 21-SEP-16							
Matrix: WATER							
Total Metals in Water by CRC ICPMS							
Chromium (Cr)-Total	0.00025		0.00010	mg/L		29-SEP-16	R3560168
Cobalt (Co)-Total	0.00010		0.00010	mg/L		29-SEP-16	R3560168
Copper (Cu)-Total	0.00063		0.00050	mg/L		29-SEP-16	R3560168
Iron (Fe)-Total	0.206		0.010	mg/L		29-SEP-16	R3560168
Lead (Pb)-Total	0.000145		0.000050	mg/L		29-SEP-16	R3560168
Lithium (Li)-Total	0.0032		0.0010	mg/L		29-SEP-16	R3560168
Magnesium (Mg)-Total	12.0		0.0050	mg/L		29-SEP-16	R3560168
Manganese (Mn)-Total	0.0748		0.00010	mg/L		29-SEP-16	R3560168
Molybdenum (Mo)-Total	0.000875		0.000050	mg/L		29-SEP-16	R3560168
Nickel (Ni)-Total	0.00072		0.00050	mg/L		29-SEP-16	R3560168
Potassium (K)-Total	3.35		0.050	mg/L		29-SEP-16	R3560168
Selenium (Se)-Total	<0.000050		0.000050	mg/L		29-SEP-16	R3560168
Silver (Ag)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168
Sodium (Na)-Total	28.4		0.050	mg/L		29-SEP-16	R3560168
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168
Tin (Sn)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Titanium (Ti)-Total	0.00283		0.00030	mg/L		29-SEP-16	R3560168
Uranium (U)-Total	0.000732		0.000010	mg/L		29-SEP-16	R3560168
Vanadium (V)-Total	<0.00050		0.00050	mg/L		29-SEP-16	R3560168
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		29-SEP-16	R3560168
L1832598-15 16-LONGLAKE0SW-4							
Sampled By: TM/EN on 21-SEP-16							
Matrix: WATER							
Total Metals - CCME							
Hardness (from Total Ca and Mg)							
Hardness (as CaCO3)	131	HTC	0.13	mg/L		11-OCT-16	
Total Mercury in Water by CVAAS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		28-SEP-16	R3568517
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0090		0.0030	mg/L		29-SEP-16	R3560168
Antimony (Sb)-Total	0.00198		0.00010	mg/L		29-SEP-16	R3560168
Arsenic (As)-Total	0.0416		0.00010	mg/L		29-SEP-16	R3560168
Barium (Ba)-Total	0.0369		0.000050	mg/L		29-SEP-16	R3560168
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Boron (B)-Total	0.017		0.010	mg/L		29-SEP-16	R3560168
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L		29-SEP-16	R3560168
Calcium (Ca)-Total	32.2		0.050	mg/L		29-SEP-16	R3560168
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Cobalt (Co)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Copper (Cu)-Total	<0.00050		0.00050	mg/L		29-SEP-16	R3560168
Iron (Fe)-Total	0.024		0.010	mg/L		29-SEP-16	R3560168
Lead (Pb)-Total	<0.000050		0.000050	mg/L		29-SEP-16	R3560168
Lithium (Li)-Total	0.0037		0.0010	mg/L		29-SEP-16	R3560168
Magnesium (Mg)-Total	12.2		0.0050	mg/L		29-SEP-16	R3560168
Manganese (Mn)-Total	0.0160		0.00010	mg/L		29-SEP-16	R3560168
Molybdenum (Mo)-Total	0.000367		0.000050	mg/L		29-SEP-16	R3560168
Nickel (Ni)-Total	0.00057		0.00050	mg/L		29-SEP-16	R3560168
Potassium (K)-Total	3.17		0.050	mg/L		29-SEP-16	R3560168
Selenium (Se)-Total	<0.000050		0.000050	mg/L		29-SEP-16	R3560168
Silver (Ag)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832598-15 16-LONGLAKE0SW-4							
Sampled By: TM/EN on 21-SEP-16							
Matrix: WATER							
Total Metals in Water by CRC ICPMS							
Sodium (Na)-Total	29.2		0.050	mg/L		29-SEP-16	R3560168
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168
Tin (Sn)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Titanium (Ti)-Total	<0.00030		0.00030	mg/L		29-SEP-16	R3560168
Uranium (U)-Total	0.000495		0.000010	mg/L		29-SEP-16	R3560168
Vanadium (V)-Total	<0.00050		0.00050	mg/L		29-SEP-16	R3560168
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		29-SEP-16	R3560168
L1832598-16 16-LONGLAKE0SW-5							
Sampled By: TM/EN on 21-SEP-16							
Matrix: WATER							
Total Metals - CCME							
Hardness (from Total Ca and Mg)							
Hardness (as CaCO3)	142	HTC	0.13	mg/L		11-OCT-16	
Total Mercury in Water by CVAAS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		28-SEP-16	R3568517
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0140		0.0030	mg/L		29-SEP-16	R3560168
Antimony (Sb)-Total	0.00195		0.00010	mg/L		29-SEP-16	R3560168
Arsenic (As)-Total	0.0416		0.00010	mg/L		29-SEP-16	R3560168
Barium (Ba)-Total	0.0370		0.000050	mg/L		29-SEP-16	R3560168
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Boron (B)-Total	0.017		0.010	mg/L		29-SEP-16	R3560168
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L		29-SEP-16	R3560168
Calcium (Ca)-Total	34.5		0.050	mg/L		29-SEP-16	R3560168
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Cobalt (Co)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Copper (Cu)-Total	<0.00050		0.00050	mg/L		29-SEP-16	R3560168
Iron (Fe)-Total	0.025		0.010	mg/L		29-SEP-16	R3560168
Lead (Pb)-Total	<0.000050		0.000050	mg/L		29-SEP-16	R3560168
Lithium (Li)-Total	0.0043		0.0010	mg/L		29-SEP-16	R3560168
Magnesium (Mg)-Total	13.6		0.0050	mg/L		29-SEP-16	R3560168
Manganese (Mn)-Total	0.0244		0.00010	mg/L		29-SEP-16	R3560168
Molybdenum (Mo)-Total	0.000417		0.000050	mg/L		29-SEP-16	R3560168
Nickel (Ni)-Total	0.00050		0.00050	mg/L		29-SEP-16	R3560168
Potassium (K)-Total	3.44		0.050	mg/L		29-SEP-16	R3560168
Selenium (Se)-Total	<0.000050		0.000050	mg/L		29-SEP-16	R3560168
Silver (Ag)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168
Sodium (Na)-Total	29.8		0.050	mg/L		29-SEP-16	R3560168
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168
Tin (Sn)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Titanium (Ti)-Total	<0.00030		0.00030	mg/L		29-SEP-16	R3560168
Uranium (U)-Total	0.00150		0.000010	mg/L		29-SEP-16	R3560168
Vanadium (V)-Total	<0.00050		0.00050	mg/L		29-SEP-16	R3560168
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		29-SEP-16	R3560168
L1832598-17 16-LONGLAKE0SW-6							
Sampled By: TM/EN on 21-SEP-16							
Matrix: WATER							
Total Metals - CCME							
Hardness (from Total Ca and Mg)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832598-17 16-LONGLAKE0SW-6							
Sampled By: TM/EN on 21-SEP-16							
Matrix: WATER							
Hardness (from Total Ca and Mg)							
Hardness (as CaCO3)	127	HTC	0.13	mg/L		11-OCT-16	
Total Mercury in Water by CVAAS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		28-SEP-16	R3568517
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0200		0.0030	mg/L		29-SEP-16	R3560168
Antimony (Sb)-Total	0.00205		0.00010	mg/L		29-SEP-16	R3560168
Arsenic (As)-Total	0.0432		0.00010	mg/L		29-SEP-16	R3560168
Barium (Ba)-Total	0.0352		0.000050	mg/L		29-SEP-16	R3560168
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Boron (B)-Total	0.017		0.010	mg/L		29-SEP-16	R3560168
Cadmium (Cd)-Total	0.0000075		0.0000050	mg/L		29-SEP-16	R3560168
Calcium (Ca)-Total	31.1		0.050	mg/L		29-SEP-16	R3560168
Chromium (Cr)-Total	0.00010		0.00010	mg/L		29-SEP-16	R3560168
Cobalt (Co)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Copper (Cu)-Total	0.00054		0.00050	mg/L		29-SEP-16	R3560168
Iron (Fe)-Total	0.062		0.010	mg/L		29-SEP-16	R3560168
Lead (Pb)-Total	0.000262		0.000050	mg/L		29-SEP-16	R3560168
Lithium (Li)-Total	0.0028		0.0010	mg/L		29-SEP-16	R3560168
Magnesium (Mg)-Total	11.9		0.0050	mg/L		29-SEP-16	R3560168
Manganese (Mn)-Total	0.0239		0.00010	mg/L		29-SEP-16	R3560168
Molybdenum (Mo)-Total	0.000736		0.000050	mg/L		29-SEP-16	R3560168
Nickel (Ni)-Total	0.00064		0.00050	mg/L		29-SEP-16	R3560168
Potassium (K)-Total	3.24		0.050	mg/L		29-SEP-16	R3560168
Selenium (Se)-Total	<0.000050		0.000050	mg/L		29-SEP-16	R3560168
Silver (Ag)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168
Sodium (Na)-Total	27.7		0.050	mg/L		29-SEP-16	R3560168
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168
Tin (Sn)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Titanium (Ti)-Total	0.00056		0.00030	mg/L		29-SEP-16	R3560168
Uranium (U)-Total	0.000704		0.000010	mg/L		29-SEP-16	R3560168
Vanadium (V)-Total	<0.00050		0.00050	mg/L		29-SEP-16	R3560168
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		29-SEP-16	R3560168
L1832598-18 16-LONGLAKE0SW-7							
Sampled By: TM/EN on 21-SEP-16							
Matrix: WATER							
Total Metals - CCME							
Hardness (from Total Ca and Mg)							
Hardness (as CaCO3)	125	HTC	0.13	mg/L		11-OCT-16	
Total Mercury in Water by CVAAS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		28-SEP-16	R3568517
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.547		0.0030	mg/L		29-SEP-16	R3560168
Antimony (Sb)-Total	0.00230		0.00010	mg/L		29-SEP-16	R3560168
Arsenic (As)-Total	0.0579		0.00010	mg/L		29-SEP-16	R3560168
Barium (Ba)-Total	0.0415		0.000050	mg/L		29-SEP-16	R3560168
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Boron (B)-Total	0.017		0.010	mg/L		29-SEP-16	R3560168
Cadmium (Cd)-Total	0.0000351		0.0000050	mg/L		29-SEP-16	R3560168
Calcium (Ca)-Total	29.8		0.050	mg/L		29-SEP-16	R3560168
Chromium (Cr)-Total	0.00190		0.00010	mg/L		29-SEP-16	R3560168

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832598-18 16-LONGLAKE0SW-7							
Sampled By: TM/EN on 21-SEP-16							
Matrix: WATER							
Total Metals in Water by CRC ICPMS							
Cobalt (Co)-Total	0.00062		0.00010	mg/L		29-SEP-16	R3560168
Copper (Cu)-Total	0.00253		0.00050	mg/L		29-SEP-16	R3560168
Iron (Fe)-Total	1.15		0.010	mg/L		29-SEP-16	R3560168
Lead (Pb)-Total	0.00163		0.000050	mg/L		29-SEP-16	R3560168
Lithium (Li)-Total	0.0038		0.0010	mg/L		29-SEP-16	R3560168
Magnesium (Mg)-Total	12.2		0.0050	mg/L		29-SEP-16	R3560168
Manganese (Mn)-Total	0.0864		0.00010	mg/L		29-SEP-16	R3560168
Molybdenum (Mo)-Total	0.000715		0.000050	mg/L		29-SEP-16	R3560168
Nickel (Ni)-Total	0.00219		0.00050	mg/L		29-SEP-16	R3560168
Potassium (K)-Total	3.34		0.050	mg/L		29-SEP-16	R3560168
Selenium (Se)-Total	<0.000050		0.000050	mg/L		29-SEP-16	R3560168
Silver (Ag)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168
Sodium (Na)-Total	27.7		0.050	mg/L		29-SEP-16	R3560168
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168
Tin (Sn)-Total	0.00016		0.00010	mg/L		29-SEP-16	R3560168
Titanium (Ti)-Total	0.0225		0.00030	mg/L		29-SEP-16	R3560168
Uranium (U)-Total	0.000810		0.000010	mg/L		29-SEP-16	R3560168
Vanadium (V)-Total	0.00180		0.00050	mg/L		29-SEP-16	R3560168
Zinc (Zn)-Total	0.0055		0.0030	mg/L		29-SEP-16	R3560168
L1832598-19 16-LONGLAKE0SW-8							
Sampled By: TM/EN on 21-SEP-16							
Matrix: WATER							
Total Metals - CCME							
Hardness (from Total Ca and Mg)							
Hardness (as CaCO3)	129	HTC	0.13	mg/L		11-OCT-16	
Total Mercury in Water by CVAAS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		28-SEP-16	R3568517
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		29-SEP-16	R3560168
Antimony (Sb)-Total	0.00198		0.00010	mg/L		29-SEP-16	R3560168
Arsenic (As)-Total	0.0439		0.00010	mg/L		29-SEP-16	R3560168
Barium (Ba)-Total	0.0363		0.000050	mg/L		29-SEP-16	R3560168
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Boron (B)-Total	0.017		0.010	mg/L		29-SEP-16	R3560168
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L		29-SEP-16	R3560168
Calcium (Ca)-Total	31.6		0.050	mg/L		29-SEP-16	R3560168
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Cobalt (Co)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Copper (Cu)-Total	<0.00050		0.00050	mg/L		29-SEP-16	R3560168
Iron (Fe)-Total	0.027		0.010	mg/L		29-SEP-16	R3560168
Lead (Pb)-Total	<0.000050		0.000050	mg/L		29-SEP-16	R3560168
Lithium (Li)-Total	0.0036		0.0010	mg/L		29-SEP-16	R3560168
Magnesium (Mg)-Total	12.3		0.0050	mg/L		29-SEP-16	R3560168
Manganese (Mn)-Total	0.0144		0.00010	mg/L		29-SEP-16	R3560168
Molybdenum (Mo)-Total	0.000371		0.000050	mg/L		29-SEP-16	R3560168
Nickel (Ni)-Total	0.00051		0.00050	mg/L		29-SEP-16	R3560168
Potassium (K)-Total	3.29		0.050	mg/L		29-SEP-16	R3560168
Selenium (Se)-Total	<0.000050		0.000050	mg/L		29-SEP-16	R3560168
Silver (Ag)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168
Sodium (Na)-Total	29.6		0.050	mg/L		29-SEP-16	R3560168

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832598-19 16-LONGLAKE0SW-8							
Sampled By: TM/EN on 21-SEP-16							
Matrix: WATER							
Total Metals in Water by CRC ICPMS							
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168
Tin (Sn)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Titanium (Ti)-Total	<0.00030		0.00030	mg/L		29-SEP-16	R3560168
Uranium (U)-Total	0.000484		0.000010	mg/L		29-SEP-16	R3560168
Vanadium (V)-Total	<0.00050		0.00050	mg/L		29-SEP-16	R3560168
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		29-SEP-16	R3560168
L1832598-20 16-LONGLAKE0SW-9							
Sampled By: TM/EN on 21-SEP-16							
Matrix: WATER							
Total Metals - CCME							
Hardness (from Total Ca and Mg)							
Hardness (as CaCO3)	136	HTC	0.13	mg/L		11-OCT-16	
Total Mercury in Water by CVAAS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		28-SEP-16	R3568517
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	1.05		0.0030	mg/L		29-SEP-16	R3560168
Antimony (Sb)-Total	0.00230		0.00010	mg/L		29-SEP-16	R3560168
Arsenic (As)-Total	0.0600		0.00010	mg/L		29-SEP-16	R3560168
Barium (Ba)-Total	0.0419		0.000050	mg/L		29-SEP-16	R3560168
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Boron (B)-Total	0.018		0.010	mg/L		29-SEP-16	R3560168
Cadmium (Cd)-Total	0.0000505		0.0000050	mg/L		29-SEP-16	R3560168
Calcium (Ca)-Total	33.1		0.050	mg/L		29-SEP-16	R3560168
Chromium (Cr)-Total	0.00413		0.00010	mg/L		29-SEP-16	R3560168
Cobalt (Co)-Total	0.00080		0.00010	mg/L		29-SEP-16	R3560168
Copper (Cu)-Total	0.00300		0.00050	mg/L		29-SEP-16	R3560168
Iron (Fe)-Total	1.52		0.010	mg/L		29-SEP-16	R3560168
Lead (Pb)-Total	0.00249		0.000050	mg/L		29-SEP-16	R3560168
Lithium (Li)-Total	0.0067		0.0010	mg/L		29-SEP-16	R3560168
Magnesium (Mg)-Total	12.9		0.0050	mg/L		29-SEP-16	R3560168
Manganese (Mn)-Total	0.120		0.00010	mg/L		29-SEP-16	R3560168
Molybdenum (Mo)-Total	0.000886		0.000050	mg/L		29-SEP-16	R3560168
Nickel (Ni)-Total	0.00285		0.00050	mg/L		29-SEP-16	R3560168
Potassium (K)-Total	3.35		0.050	mg/L		29-SEP-16	R3560168
Selenium (Se)-Total	<0.000050		0.000050	mg/L		29-SEP-16	R3560168
Silver (Ag)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168
Sodium (Na)-Total	27.9		0.050	mg/L		29-SEP-16	R3560168
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168
Tin (Sn)-Total	0.00055		0.00010	mg/L		29-SEP-16	R3560168
Titanium (Ti)-Total	0.0463		0.00030	mg/L		29-SEP-16	R3560168
Uranium (U)-Total	0.00250		0.000010	mg/L		29-SEP-16	R3560168
Vanadium (V)-Total	0.00350		0.00050	mg/L		29-SEP-16	R3560168
Zinc (Zn)-Total	0.0077		0.0030	mg/L		29-SEP-16	R3560168
L1832598-21 16-LONGLAKE0SW-10							
Sampled By: TM/EN on 21-SEP-16							
Matrix: WATER							
Total Metals - CCME							
Hardness (from Total Ca and Mg)							
Hardness (as CaCO3)	132	HTC	0.13	mg/L		11-OCT-16	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832598-21 16-LONGLAKE0SW-10							
Sampled By: TM/EN on 21-SEP-16							
Matrix: WATER							
Total Mercury in Water by CVAAS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		28-SEP-16	R3568517
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0509		0.0030	mg/L		29-SEP-16	R3560168
Antimony (Sb)-Total	0.00214		0.00010	mg/L		29-SEP-16	R3560168
Arsenic (As)-Total	0.0446		0.00010	mg/L		29-SEP-16	R3560168
Barium (Ba)-Total	0.0355		0.000050	mg/L		29-SEP-16	R3560168
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Boron (B)-Total	0.017		0.010	mg/L		29-SEP-16	R3560168
Cadmium (Cd)-Total	0.0000065		0.0000050	mg/L		29-SEP-16	R3560168
Calcium (Ca)-Total	32.1		0.050	mg/L		29-SEP-16	R3560168
Chromium (Cr)-Total	0.00020		0.00010	mg/L		29-SEP-16	R3560168
Cobalt (Co)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Copper (Cu)-Total	0.00061		0.00050	mg/L		29-SEP-16	R3560168
Iron (Fe)-Total	0.123		0.010	mg/L		29-SEP-16	R3560168
Lead (Pb)-Total	0.000130		0.000050	mg/L		29-SEP-16	R3560168
Lithium (Li)-Total	0.0036		0.0010	mg/L		29-SEP-16	R3560168
Magnesium (Mg)-Total	12.7		0.0050	mg/L		29-SEP-16	R3560168
Manganese (Mn)-Total	0.0350		0.00010	mg/L		29-SEP-16	R3560168
Molybdenum (Mo)-Total	0.000781		0.000050	mg/L		29-SEP-16	R3560168
Nickel (Ni)-Total	0.00078		0.00050	mg/L		29-SEP-16	R3560168
Potassium (K)-Total	3.36		0.050	mg/L		29-SEP-16	R3560168
Selenium (Se)-Total	<0.000050		0.000050	mg/L		29-SEP-16	R3560168
Silver (Ag)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168
Sodium (Na)-Total	29.0		0.050	mg/L		29-SEP-16	R3560168
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168
Tin (Sn)-Total	0.00056		0.00010	mg/L		29-SEP-16	R3560168
Titanium (Ti)-Total	0.00220		0.00030	mg/L		29-SEP-16	R3560168
Uranium (U)-Total	0.00130		0.000010	mg/L		29-SEP-16	R3560168
Vanadium (V)-Total	<0.00050		0.00050	mg/L		29-SEP-16	R3560168
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		29-SEP-16	R3560168
L1832598-22 16-LONGLAKE0SW-DUP							
Sampled By: TM/EN on 21-SEP-16							
Matrix: WATER							
Total Metals - CCME							
Hardness (from Total Ca and Mg)							
Hardness (as CaCO3)	127	HTC	0.13	mg/L		11-OCT-16	
Total Mercury in Water by CVAAS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		28-SEP-16	R3568517
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0097		0.0030	mg/L		29-SEP-16	R3560168
Antimony (Sb)-Total	0.00202		0.00010	mg/L		29-SEP-16	R3560168
Arsenic (As)-Total	0.0416		0.00010	mg/L		29-SEP-16	R3560168
Barium (Ba)-Total	0.0357		0.000050	mg/L		29-SEP-16	R3560168
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Boron (B)-Total	0.016		0.010	mg/L		29-SEP-16	R3560168
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L		29-SEP-16	R3560168
Calcium (Ca)-Total	30.8		0.050	mg/L		29-SEP-16	R3560168
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Cobalt (Co)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Copper (Cu)-Total	<0.00050		0.00050	mg/L		29-SEP-16	R3560168

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832598-22 16-LONGLAKE0SW-DUP							
Sampled By: TM/EN on 21-SEP-16							
Matrix: WATER							
Total Metals in Water by CRC ICPMS							
Iron (Fe)-Total	0.024		0.010	mg/L		29-SEP-16	R3560168
Lead (Pb)-Total	<0.000050		0.000050	mg/L		29-SEP-16	R3560168
Lithium (Li)-Total	0.0033		0.0010	mg/L		29-SEP-16	R3560168
Magnesium (Mg)-Total	12.2		0.0050	mg/L		29-SEP-16	R3560168
Manganese (Mn)-Total	0.0154		0.00010	mg/L		29-SEP-16	R3560168
Molybdenum (Mo)-Total	0.000350		0.000050	mg/L		29-SEP-16	R3560168
Nickel (Ni)-Total	0.00054		0.00050	mg/L		29-SEP-16	R3560168
Potassium (K)-Total	3.26		0.050	mg/L		29-SEP-16	R3560168
Selenium (Se)-Total	<0.000050		0.000050	mg/L		29-SEP-16	R3560168
Silver (Ag)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168
Sodium (Na)-Total	28.5		0.050	mg/L		29-SEP-16	R3560168
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		29-SEP-16	R3560168
Tin (Sn)-Total	<0.00010		0.00010	mg/L		29-SEP-16	R3560168
Titanium (Ti)-Total	0.00039		0.00030	mg/L		29-SEP-16	R3560168
Uranium (U)-Total	0.000484		0.000010	mg/L		29-SEP-16	R3560168
Vanadium (V)-Total	<0.00050		0.00050	mg/L		29-SEP-16	R3560168
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		29-SEP-16	R3560168

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
WSMT	HG-T - Water sample(s) for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

Sample Parameter Qualifier Key:

Qualifier	Description
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ETL-HARDNESS-TOT-ED	Water	Hardness (from Total Ca and Mg)	APHA 2340 B-Calculation
HG-200.2-CVAA-ED	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (Mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

ALS Test Code	Matrix	Test Description	Method Reference**
HG-T-CVAA-ED	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

ALS Test Code	Matrix	Test Description	Method Reference**
MET-200.2-CCMS-ED	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CRC ICPMS.

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. This method does not dissolve all silicate materials and may result in a partial extraction. depending on the sample matrix, for some metals, including, but not limited to Al, Ba, Be, Cr, Sr, Ti, Tl, and V.

ALS Test Code	Matrix	Test Description	Method Reference**
MET-T-CCMS-ED	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L1832598 Report Date: 12-OCT-16

Client: GOLDER ASSOCIATES LTD
16820 107 Ave NW
EDMONTON AB T5P 4C3
Contact: Steven Fiddler

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-ED	**Water**							
Batch R3568517								
WG2408027-3 DUP		**L1832598-15**						
Mercury (Hg)-Total		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	28-SEP-16
WG2408027-2 LCS								
Mercury (Hg)-Total			94.8		%		80-120	28-SEP-16
WG2408027-1 MB								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	28-SEP-16
WG2408027-4 MS		**L1832598-16**						
Mercury (Hg)-Total			86.3		%		70-130	28-SEP-16
MET-T-CCMS-ED	**Water**							
Batch R3559136								
WG2398486-3 LCS		**HB_WATER**						
Antimony (Sb)-Total			113.8		%		80-120	28-SEP-16
Beryllium (Be)-Total			114.2		%		80-120	28-SEP-16
Boron (B)-Total			114.6		%		80-120	28-SEP-16
Calcium (Ca)-Total			114.3		%		80-120	28-SEP-16
Copper (Cu)-Total			117.5		%		80-120	28-SEP-16
Iron (Fe)-Total			117.9		%		80-120	28-SEP-16
Lead (Pb)-Total			117.6		%		80-120	28-SEP-16
Lithium (Li)-Total			104.2		%		80-120	28-SEP-16
Magnesium (Mg)-Total			118.6		%		80-120	28-SEP-16
Molybdenum (Mo)-Total			120.0		%		80-120	28-SEP-16
Thallium (Tl)-Total			119.0		%		80-120	28-SEP-16
Tin (Sn)-Total			117.0		%		80-120	28-SEP-16
Titanium (Ti)-Total			117.3		%		80-120	28-SEP-16
Uranium (U)-Total			119.6		%		80-120	28-SEP-16
Zinc (Zn)-Total			112.2		%		80-120	28-SEP-16
WG2398486-4 LCS		**HB_WATER**						
Aluminum (Al)-Total			113.6		%		80-120	28-SEP-16
Antimony (Sb)-Total			108.5		%		80-120	28-SEP-16
Arsenic (As)-Total			113.1		%		80-120	28-SEP-16
Barium (Ba)-Total			110.8		%		80-120	28-SEP-16
Beryllium (Be)-Total			108.7		%		80-120	28-SEP-16
Boron (B)-Total			110.0		%		80-120	28-SEP-16
Cadmium (Cd)-Total			109.0		%		80-120	28-SEP-16
Calcium (Ca)-Total			107.3		%		80-120	28-SEP-16
Chromium (Cr)-Total			110.3		%		80-120	28-SEP-16

Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-ED	**Water**							
Batch R3559136								
WG2398486-4 LCS		**HB_WATER**						
Cobalt (Co)-Total			109.1		%		80-120	28-SEP-16
Copper (Cu)-Total			106.0		%		80-120	28-SEP-16
Iron (Fe)-Total			109.4		%		80-120	28-SEP-16
Lead (Pb)-Total			108.1		%		80-120	28-SEP-16
Lithium (Li)-Total			99.3		%		80-120	28-SEP-16
Magnesium (Mg)-Total			109.2		%		80-120	28-SEP-16
Manganese (Mn)-Total			110.3		%		80-120	28-SEP-16
Molybdenum (Mo)-Total			112.8		%		80-120	28-SEP-16
Nickel (Ni)-Total			108.5		%		80-120	28-SEP-16
Potassium (K)-Total			108.6		%		80-120	28-SEP-16
Selenium (Se)-Total			112.3		%		80-120	28-SEP-16
Silver (Ag)-Total			116.6		%		80-120	28-SEP-16
Sodium (Na)-Total			113.4		%		80-120	28-SEP-16
Thallium (Tl)-Total			108.3		%		80-120	28-SEP-16
Tin (Sn)-Total			108.7		%		80-120	28-SEP-16
Titanium (Ti)-Total			105.8		%		80-120	28-SEP-16
Uranium (U)-Total			106.9		%		80-120	28-SEP-16
Vanadium (V)-Total			111.0		%		80-120	28-SEP-16
Zinc (Zn)-Total			101.1		%		80-120	28-SEP-16
WG2398486-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	28-SEP-16
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	28-SEP-16
Arsenic (As)-Total			<0.00010		mg/L		0.0001	28-SEP-16
Barium (Ba)-Total			<0.000050		mg/L		0.00005	28-SEP-16
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	28-SEP-16
Boron (B)-Total			<0.010		mg/L		0.01	28-SEP-16
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	28-SEP-16
Calcium (Ca)-Total			<0.050		mg/L		0.05	28-SEP-16
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	28-SEP-16
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	28-SEP-16
Copper (Cu)-Total			<0.00050		mg/L		0.0005	28-SEP-16
Iron (Fe)-Total			<0.010		mg/L		0.01	28-SEP-16
Lead (Pb)-Total			<0.000050		mg/L		0.00005	28-SEP-16
Lithium (Li)-Total			<0.0010		mg/L		0.001	28-SEP-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-ED	**Water**							
Batch R3559136								
WG2398486-1 MB								
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	28-SEP-16
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	28-SEP-16
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	28-SEP-16
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	28-SEP-16
Potassium (K)-Total			<0.050		mg/L		0.05	28-SEP-16
Selenium (Se)-Total			<0.000050		mg/L		0.00005	28-SEP-16
Silver (Ag)-Total			<0.000010		mg/L		0.00001	28-SEP-16
Sodium (Na)-Total			<0.050		mg/L		0.05	28-SEP-16
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	28-SEP-16
Tin (Sn)-Total			<0.00010		mg/L		0.0001	28-SEP-16
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	28-SEP-16
Uranium (U)-Total			<0.000010		mg/L		0.00001	28-SEP-16
Vanadium (V)-Total			<0.00050		mg/L		0.0005	28-SEP-16
Zinc (Zn)-Total			<0.0030		mg/L		0.003	28-SEP-16
WG2398486-2 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	28-SEP-16
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	28-SEP-16
Arsenic (As)-Total			<0.00010		mg/L		0.0001	28-SEP-16
Barium (Ba)-Total			<0.000050		mg/L		0.00005	28-SEP-16
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	28-SEP-16
Boron (B)-Total			<0.010		mg/L		0.01	28-SEP-16
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	28-SEP-16
Calcium (Ca)-Total			<0.050		mg/L		0.05	28-SEP-16
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	28-SEP-16
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	28-SEP-16
Copper (Cu)-Total			<0.00050		mg/L		0.0005	28-SEP-16
Iron (Fe)-Total			<0.010		mg/L		0.01	28-SEP-16
Lead (Pb)-Total			<0.000050		mg/L		0.00005	28-SEP-16
Lithium (Li)-Total			<0.0010		mg/L		0.001	28-SEP-16
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	28-SEP-16
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	28-SEP-16
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	28-SEP-16
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	28-SEP-16
Potassium (K)-Total			<0.050		mg/L		0.05	28-SEP-16

Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-ED	**Water**							
Batch R3559136								
WG2398486-2 MB								
Selenium (Se)-Total			<0.000050		mg/L		0.00005	28-SEP-16
Silver (Ag)-Total			<0.000010		mg/L		0.00001	28-SEP-16
Sodium (Na)-Total			<0.050		mg/L		0.05	28-SEP-16
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	28-SEP-16
Tin (Sn)-Total			<0.00010		mg/L		0.0001	28-SEP-16
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	28-SEP-16
Uranium (U)-Total			<0.000010		mg/L		0.00001	28-SEP-16
Vanadium (V)-Total			<0.00050		mg/L		0.0005	28-SEP-16
Zinc (Zn)-Total			<0.0030		mg/L		0.003	28-SEP-16
Batch R3560168								
WG2398497-1 DUP		**L1832598-22**						
Aluminum (Al)-Total		0.0097	0.0102		mg/L	4.8	20	29-SEP-16
Antimony (Sb)-Total		0.00202	0.00194		mg/L	4.1	20	29-SEP-16
Arsenic (As)-Total		0.0416	0.0417		mg/L	0.3	20	29-SEP-16
Barium (Ba)-Total		0.0357	0.0362		mg/L	1.4	20	29-SEP-16
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-SEP-16
Boron (B)-Total		0.016	0.016		mg/L	0.3	20	29-SEP-16
Cadmium (Cd)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	29-SEP-16
Calcium (Ca)-Total		30.8	30.4		mg/L	1.2	20	29-SEP-16
Chromium (Cr)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-SEP-16
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-SEP-16
Copper (Cu)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	29-SEP-16
Iron (Fe)-Total		0.024	0.024		mg/L	0.6	20	29-SEP-16
Lead (Pb)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	29-SEP-16
Lithium (Li)-Total		0.0033	0.0033		mg/L	0.5	20	29-SEP-16
Magnesium (Mg)-Total		12.2	12.5		mg/L	2.9	20	29-SEP-16
Manganese (Mn)-Total		0.0154	0.0156		mg/L	1.5	20	29-SEP-16
Molybdenum (Mo)-Total		0.000350	0.000364		mg/L	3.9	20	29-SEP-16
Nickel (Ni)-Total		0.00054	0.00054		mg/L	1.0	20	29-SEP-16
Potassium (K)-Total		3.26	3.30		mg/L	1.3	20	29-SEP-16
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	29-SEP-16
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	29-SEP-16
Sodium (Na)-Total		28.5	29.6		mg/L	4.0	20	29-SEP-16
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	29-SEP-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-ED	**Water**							
Batch R3560168								
WG2398497-1 DUP		**L1832598-22**						
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-SEP-16
Titanium (Ti)-Total		0.00039	0.00042		mg/L	6.0	20	29-SEP-16
Uranium (U)-Total		0.000484	0.000491		mg/L	1.4	20	29-SEP-16
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	29-SEP-16
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	29-SEP-16
WG2398486-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	29-SEP-16
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	29-SEP-16
Arsenic (As)-Total			<0.00010		mg/L		0.0001	29-SEP-16
Barium (Ba)-Total			<0.000050		mg/L		0.00005	29-SEP-16
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	29-SEP-16
Boron (B)-Total			<0.010		mg/L		0.01	29-SEP-16
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	29-SEP-16
Calcium (Ca)-Total			<0.050		mg/L		0.05	29-SEP-16
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	29-SEP-16
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	29-SEP-16
Copper (Cu)-Total			<0.00050		mg/L		0.0005	29-SEP-16
Iron (Fe)-Total			<0.010		mg/L		0.01	29-SEP-16
Lead (Pb)-Total			<0.000050		mg/L		0.00005	29-SEP-16
Lithium (Li)-Total			<0.0010		mg/L		0.001	29-SEP-16
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	29-SEP-16
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	29-SEP-16
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	29-SEP-16
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	29-SEP-16
Potassium (K)-Total			<0.050		mg/L		0.05	29-SEP-16
Selenium (Se)-Total			<0.000050		mg/L		0.00005	29-SEP-16
Silver (Ag)-Total			<0.000010		mg/L		0.00001	29-SEP-16
Sodium (Na)-Total			<0.050		mg/L		0.05	29-SEP-16
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	29-SEP-16
Tin (Sn)-Total			<0.00010		mg/L		0.0001	29-SEP-16
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	29-SEP-16
Uranium (U)-Total			<0.000010		mg/L		0.00001	29-SEP-16
Vanadium (V)-Total			<0.00050		mg/L		0.0005	29-SEP-16
Zinc (Zn)-Total			<0.0030		mg/L		0.003	29-SEP-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-200.2-CVAA-ED	**Soil**							
Batch R3558279								
WG2396899-5 CRM		**TILL-1_SOIL**						
Mercury (Hg)			113.3		%		70-130	27-SEP-16
WG2396899-6 CRM		**TILL-1_SOIL**						
Mercury (Hg)			116.7		%		70-130	27-SEP-16
WG2397077-5 CRM		**TILL-1_SOIL**						
Mercury (Hg)			102.7		%		70-130	27-SEP-16
WG2397077-6 CRM		**TILL-1_SOIL**						
Mercury (Hg)			116.0		%		70-130	27-SEP-16
WG2396899-8 DUP		**L1832598-10**						
Mercury (Hg)		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	40	27-SEP-16
WG2397077-8 DUP		**L1832598-11**						
Mercury (Hg)		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	40	27-SEP-16
WG2396899-3 LCS								
Mercury (Hg)			124.0		%		70-130	27-SEP-16
WG2396899-4 LCS								
Mercury (Hg)			116.0		%		70-130	27-SEP-16
WG2397077-3 LCS								
Mercury (Hg)			123.0		%		70-130	27-SEP-16
WG2397077-4 LCS								
Mercury (Hg)			113.0		%		70-130	27-SEP-16
WG2396899-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	27-SEP-16
WG2396899-2 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	27-SEP-16
WG2397077-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	27-SEP-16
WG2397077-2 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	27-SEP-16
MET-200.2-CCMS-ED	**Soil**							
Batch R3558194								
WG2396899-5 CRM		**TILL-1_SOIL**						
Aluminum (Al)			100.4		%		70-130	27-SEP-16
Antimony (Sb)			92.4		%		70-130	27-SEP-16
Arsenic (As)			106.4		%		70-130	27-SEP-16
Barium (Ba)			94.9		%		70-130	27-SEP-16
Beryllium (Be)			103.0		%		70-130	27-SEP-16
Bismuth (Bi)			99.0		%		70-130	27-SEP-16
Boron (B)			66.9		%		50-150	27-SEP-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3558194								
WG2396899-5 CRM		**TILL-1_SOIL**						
Cadmium (Cd)			91.3		%		70-130	27-SEP-16
Calcium (Ca)			101.9		%		70-130	27-SEP-16
Chromium (Cr)			99.3		%		70-130	27-SEP-16
Cobalt (Co)			98.1		%		70-130	27-SEP-16
Copper (Cu)			94.8		%		70-130	27-SEP-16
Iron (Fe)			89.9		%		70-130	27-SEP-16
Lead (Pb)			93.9		%		70-130	27-SEP-16
Lithium (Li)			107.4		%		70-130	27-SEP-16
Magnesium (Mg)			94.9		%		70-130	27-SEP-16
Manganese (Mn)			98.1		%		70-130	27-SEP-16
Molybdenum (Mo)			93.3		%		70-130	27-SEP-16
Nickel (Ni)			102.9		%		70-130	27-SEP-16
Phosphorus (P)			97.4		%		70-130	27-SEP-16
Potassium (K)			91.2		%		70-130	27-SEP-16
Selenium (Se)			89.3		%		70-130	27-SEP-16
Silver (Ag)			101.8		%		70-130	27-SEP-16
Sodium (Na)			96.8		%		70-130	27-SEP-16
Strontium (Sr)			97.8		%		70-130	27-SEP-16
Thallium (Tl)			93.7		%		70-130	27-SEP-16
Tin (Sn)			89.9		%		70-130	27-SEP-16
Titanium (Ti)			83.4		%		70-130	27-SEP-16
Uranium (U)			109.6		%		70-130	27-SEP-16
Vanadium (V)			99.3		%		70-130	27-SEP-16
Zinc (Zn)			92.9		%		70-130	27-SEP-16
Zirconium (Zr)			67.4		%		50-150	27-SEP-16
WG2396899-6 CRM		**TILL-1_SOIL**						
Aluminum (Al)			96.9		%		70-130	27-SEP-16
Antimony (Sb)			96.6		%		70-130	27-SEP-16
Arsenic (As)			108.6		%		70-130	27-SEP-16
Barium (Ba)			100.4		%		70-130	27-SEP-16
Beryllium (Be)			85.0		%		70-130	27-SEP-16
Bismuth (Bi)			94.9		%		70-130	27-SEP-16
Boron (B)			64.8		%		50-150	27-SEP-16
Cadmium (Cd)			91.4		%		70-130	27-SEP-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3558194								
WG2396899-6 CRM		**TILL-1_SOIL**						
Calcium (Ca)			96.4		%		70-130	27-SEP-16
Chromium (Cr)			98.3		%		70-130	27-SEP-16
Cobalt (Co)			99.0		%		70-130	27-SEP-16
Copper (Cu)			97.6		%		70-130	27-SEP-16
Iron (Fe)			92.4		%		70-130	27-SEP-16
Lead (Pb)			90.2		%		70-130	27-SEP-16
Lithium (Li)			92.0		%		70-130	27-SEP-16
Magnesium (Mg)			95.4		%		70-130	27-SEP-16
Manganese (Mn)			96.0		%		70-130	27-SEP-16
Molybdenum (Mo)			91.7		%		70-130	27-SEP-16
Nickel (Ni)			99.2		%		70-130	27-SEP-16
Phosphorus (P)			108.9		%		70-130	27-SEP-16
Potassium (K)			95.4		%		70-130	27-SEP-16
Selenium (Se)			89.9		%		70-130	27-SEP-16
Silver (Ag)			103.4		%		70-130	27-SEP-16
Sodium (Na)			94.2		%		70-130	27-SEP-16
Strontium (Sr)			94.8		%		70-130	27-SEP-16
Thallium (Tl)			93.0		%		70-130	27-SEP-16
Tin (Sn)			89.7		%		70-130	27-SEP-16
Titanium (Ti)			89.4		%		70-130	27-SEP-16
Uranium (U)			106.7		%		70-130	27-SEP-16
Vanadium (V)			101.3		%		70-130	27-SEP-16
Zinc (Zn)			93.5		%		70-130	27-SEP-16
Zirconium (Zr)			62.4		%		50-150	27-SEP-16
WG2397077-5 CRM		**TILL-1_SOIL**						
Aluminum (Al)			95.6		%		70-130	27-SEP-16
Antimony (Sb)			93.3		%		70-130	27-SEP-16
Arsenic (As)			105.8		%		70-130	27-SEP-16
Barium (Ba)			104.0		%		70-130	27-SEP-16
Beryllium (Be)			87.0		%		70-130	27-SEP-16
Bismuth (Bi)			92.7		%		70-130	27-SEP-16
Boron (B)			67.0		%		50-150	27-SEP-16
Cadmium (Cd)			89.7		%		70-130	27-SEP-16
Calcium (Ca)			108.6		%		70-130	27-SEP-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3558194								
WG2397077-5 CRM		**TILL-1_SOIL**						
Chromium (Cr)			104.8		%		70-130	27-SEP-16
Cobalt (Co)			99.5		%		70-130	27-SEP-16
Copper (Cu)			96.4		%		70-130	27-SEP-16
Iron (Fe)			96.6		%		70-130	27-SEP-16
Lead (Pb)			90.1		%		70-130	27-SEP-16
Lithium (Li)			83.0		%		70-130	27-SEP-16
Magnesium (Mg)			99.8		%		70-130	27-SEP-16
Manganese (Mn)			98.0		%		70-130	27-SEP-16
Molybdenum (Mo)			94.0		%		70-130	27-SEP-16
Nickel (Ni)			100.2		%		70-130	27-SEP-16
Phosphorus (P)			97.1		%		70-130	27-SEP-16
Potassium (K)			108.4		%		70-130	27-SEP-16
Selenium (Se)			82.4		%		70-130	27-SEP-16
Silver (Ag)			102.0		%		70-130	27-SEP-16
Sodium (Na)			106.9		%		70-130	27-SEP-16
Strontium (Sr)			106.5		%		70-130	27-SEP-16
Thallium (Tl)			97.9		%		70-130	27-SEP-16
Tin (Sn)			93.3		%		70-130	27-SEP-16
Titanium (Ti)			95.8		%		70-130	27-SEP-16
Uranium (U)			102.7		%		70-130	27-SEP-16
Vanadium (V)			105.5		%		70-130	27-SEP-16
Zinc (Zn)			96.6		%		70-130	27-SEP-16
Zirconium (Zr)			99.5		%		50-150	27-SEP-16
WG2397077-6 CRM		**TILL-1_SOIL**						
Aluminum (Al)			100.3		%		70-130	27-SEP-16
Antimony (Sb)			95.5		%		70-130	27-SEP-16
Arsenic (As)			106.1		%		70-130	27-SEP-16
Barium (Ba)			101.8		%		70-130	27-SEP-16
Beryllium (Be)			86.6		%		70-130	27-SEP-16
Bismuth (Bi)			93.3		%		70-130	27-SEP-16
Boron (B)			67.3		%		50-150	27-SEP-16
Cadmium (Cd)			93.2		%		70-130	27-SEP-16
Calcium (Ca)			102.3		%		70-130	27-SEP-16
Chromium (Cr)			101.0		%		70-130	27-SEP-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3558194								
WG2397077-6 CRM		**TILL-1_SOIL**						
Cobalt (Co)			100.8		%		70-130	27-SEP-16
Copper (Cu)			97.4		%		70-130	27-SEP-16
Iron (Fe)			95.0		%		70-130	27-SEP-16
Lead (Pb)			89.7		%		70-130	27-SEP-16
Lithium (Li)			93.4		%		70-130	27-SEP-16
Magnesium (Mg)			98.9		%		70-130	27-SEP-16
Manganese (Mn)			99.7		%		70-130	27-SEP-16
Molybdenum (Mo)			90.5		%		70-130	27-SEP-16
Nickel (Ni)			103.1		%		70-130	27-SEP-16
Phosphorus (P)			104.2		%		70-130	27-SEP-16
Potassium (K)			104.6		%		70-130	27-SEP-16
Selenium (Se)			79.9		%		70-130	27-SEP-16
Silver (Ag)			101.1		%		70-130	27-SEP-16
Sodium (Na)			105.0		%		70-130	27-SEP-16
Strontium (Sr)			99.8		%		70-130	27-SEP-16
Thallium (Tl)			97.3		%		70-130	27-SEP-16
Tin (Sn)			92.2		%		70-130	27-SEP-16
Titanium (Ti)			97.5		%		70-130	27-SEP-16
Uranium (U)			105.2		%		70-130	27-SEP-16
Vanadium (V)			104.1		%		70-130	27-SEP-16
Zinc (Zn)			95.7		%		70-130	27-SEP-16
Zirconium (Zr)			84.4		%		50-150	27-SEP-16
WG2396899-8 DUP		**L1832598-10**						
Aluminum (Al)		3650	3250		mg/kg	12	40	27-SEP-16
Antimony (Sb)		0.18	0.16		mg/kg	7.3	30	27-SEP-16
Arsenic (As)		18.6	16.9		mg/kg	9.6	30	27-SEP-16
Barium (Ba)		15.8	14.0		mg/kg	12	40	27-SEP-16
Beryllium (Be)		0.10	<0.10	RPD-NA	mg/kg	N/A	30	27-SEP-16
Bismuth (Bi)		<0.20	<0.20	RPD-NA	mg/kg	N/A	30	27-SEP-16
Boron (B)		<5.0	<5.0	RPD-NA	mg/kg	N/A	30	27-SEP-16
Cadmium (Cd)		0.023	0.025		mg/kg	8.5	30	27-SEP-16
Calcium (Ca)		758	707		mg/kg	7.0	30	27-SEP-16
Chromium (Cr)		12.1	10.8		mg/kg	11	30	27-SEP-16
Cobalt (Co)		2.18	1.98		mg/kg	9.7	30	27-SEP-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3558194								
WG2396899-8 DUP		**L1832598-10**						
Copper (Cu)		3.83	3.71		mg/kg	3.2	30	27-SEP-16
Iron (Fe)		5740	5100		mg/kg	12	30	27-SEP-16
Lead (Pb)		2.23	2.01		mg/kg	11	40	27-SEP-16
Lithium (Li)		11.6	10.1		mg/kg	14	30	27-SEP-16
Magnesium (Mg)		2190	1930		mg/kg	13	30	27-SEP-16
Manganese (Mn)		85.6	78.8		mg/kg	8.3	30	27-SEP-16
Molybdenum (Mo)		0.19	<0.10	RPD-NA	mg/kg	N/A	40	27-SEP-16
Nickel (Ni)		6.74	6.58		mg/kg	2.4	30	27-SEP-16
Phosphorus (P)		159	156		mg/kg	1.8	30	27-SEP-16
Potassium (K)		330	300		mg/kg	9.2	40	27-SEP-16
Selenium (Se)		<0.20	<0.20	RPD-NA	mg/kg	N/A	30	27-SEP-16
Silver (Ag)		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	27-SEP-16
Sodium (Na)		59	55		mg/kg	6.8	40	27-SEP-16
Strontium (Sr)		2.43	2.26		mg/kg	7.1	40	27-SEP-16
Thallium (Tl)		<0.050	<0.050	RPD-NA	mg/kg	N/A	30	27-SEP-16
Tin (Sn)		<2.0	<2.0	RPD-NA	mg/kg	N/A	40	27-SEP-16
Titanium (Ti)		158	133		mg/kg	17	40	27-SEP-16
Uranium (U)		0.817	0.750		mg/kg	8.6	30	27-SEP-16
Vanadium (V)		9.32	8.65		mg/kg	7.4	30	27-SEP-16
Zinc (Zn)		13.4	12.3		mg/kg	8.9	30	27-SEP-16
Zirconium (Zr)		1.3	1.0		mg/kg	25	30	27-SEP-16
WG2397077-8 DUP		**L1832598-11**						
Aluminum (Al)		2860	2860		mg/kg	0.2	40	27-SEP-16
Antimony (Sb)		0.43	0.43		mg/kg	1.2	30	27-SEP-16
Arsenic (As)		21.2	20.9		mg/kg	1.4	30	27-SEP-16
Barium (Ba)		14.3	14.6		mg/kg	2.3	40	27-SEP-16
Beryllium (Be)		<0.10	<0.10	RPD-NA	mg/kg	N/A	30	27-SEP-16
Bismuth (Bi)		<0.20	<0.20	RPD-NA	mg/kg	N/A	30	27-SEP-16
Boron (B)		<5.0	<5.0	RPD-NA	mg/kg	N/A	30	27-SEP-16
Cadmium (Cd)		0.020	0.022		mg/kg	9.8	30	27-SEP-16
Calcium (Ca)		1050	1040		mg/kg	0.4	30	27-SEP-16
Chromium (Cr)		8.76	8.66		mg/kg	1.2	30	27-SEP-16
Cobalt (Co)		1.75	1.72		mg/kg	1.9	30	27-SEP-16
Copper (Cu)		3.03	3.00		mg/kg	1.0	30	27-SEP-16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3558194								
WG2397077-8 DUP		**L1832598-11**						
Iron (Fe)		3890	3870		mg/kg	0.5	30	27-SEP-16
Lead (Pb)		1.75	1.73		mg/kg	1.3	40	27-SEP-16
Lithium (Li)		7.8	8.2		mg/kg	4.5	30	27-SEP-16
Magnesium (Mg)		1620	1620		mg/kg	0.2	30	27-SEP-16
Manganese (Mn)		55.1	54.2		mg/kg	1.5	30	27-SEP-16
Molybdenum (Mo)		0.12	0.12		mg/kg	0.7	40	27-SEP-16
Nickel (Ni)		5.09	5.06		mg/kg	0.6	30	27-SEP-16
Phosphorus (P)		214	226		mg/kg	5.4	30	27-SEP-16
Potassium (K)		270	260		mg/kg	2.0	40	27-SEP-16
Selenium (Se)		<0.20	<0.20	RPD-NA	mg/kg	N/A	30	27-SEP-16
Silver (Ag)		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	27-SEP-16
Sodium (Na)		81	81		mg/kg	0.6	40	27-SEP-16
Strontium (Sr)		3.53	3.55		mg/kg	0.6	40	27-SEP-16
Thallium (Tl)		<0.050	<0.050	RPD-NA	mg/kg	N/A	30	27-SEP-16
Tin (Sn)		<2.0	<2.0	RPD-NA	mg/kg	N/A	40	27-SEP-16
Titanium (Ti)		137	134		mg/kg	1.9	40	27-SEP-16
Uranium (U)		0.481	0.478		mg/kg	0.7	30	27-SEP-16
Vanadium (V)		7.14	7.07		mg/kg	0.9	30	27-SEP-16
Zinc (Zn)		11.1	10.8		mg/kg	3.6	30	27-SEP-16
Zirconium (Zr)		<1.0	<1.0	RPD-NA	mg/kg	N/A	30	27-SEP-16
WG2396899-3 LCS								
Aluminum (Al)			104.8		%		80-120	27-SEP-16
Antimony (Sb)			100.5		%		80-120	27-SEP-16
Arsenic (As)			105.0		%		80-120	27-SEP-16
Barium (Ba)			105.5		%		80-120	27-SEP-16
Beryllium (Be)			110.7		%		80-120	27-SEP-16
Bismuth (Bi)			98.6		%		80-120	27-SEP-16
Boron (B)			113.2		%		80-120	27-SEP-16
Cadmium (Cd)			101.2		%		80-120	27-SEP-16
Calcium (Ca)			109.1		%		80-120	27-SEP-16
Chromium (Cr)			100.2		%		80-120	27-SEP-16
Cobalt (Co)			99.9		%		80-120	27-SEP-16
Copper (Cu)			96.2		%		80-120	27-SEP-16
Iron (Fe)			109.2		%		80-120	27-SEP-16

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3558194								
WG2396899-3 LCS								
Lead (Pb)			102.6		%		80-120	27-SEP-16
Lithium (Li)			117.8		%		80-120	27-SEP-16
Magnesium (Mg)			100.0		%		80-120	27-SEP-16
Manganese (Mn)			103.5		%		80-120	27-SEP-16
Molybdenum (Mo)			110.6		%		80-120	27-SEP-16
Nickel (Ni)			100.3		%		80-120	27-SEP-16
Phosphorus (P)			100.6		%		80-120	27-SEP-16
Potassium (K)			107.5		%		80-120	27-SEP-16
Selenium (Se)			98.4		%		80-120	27-SEP-16
Silver (Ag)			100.8		%		80-120	27-SEP-16
Sodium (Na)			98.4		%		80-120	27-SEP-16
Strontium (Sr)			104.7		%		80-120	27-SEP-16
Thallium (Tl)			97.2		%		80-120	27-SEP-16
Tin (Sn)			101.5		%		80-120	27-SEP-16
Titanium (Ti)			94.5		%		80-120	27-SEP-16
Uranium (U)			103.5		%		80-120	27-SEP-16
Vanadium (V)			101.2		%		80-120	27-SEP-16
Zinc (Zn)			96.3		%		80-120	27-SEP-16
Zirconium (Zr)			105.9		%		80-120	27-SEP-16
WG2396899-4 LCS								
Aluminum (Al)			101.9		%		80-120	27-SEP-16
Antimony (Sb)			97.8		%		80-120	27-SEP-16
Arsenic (As)			102.7		%		80-120	27-SEP-16
Barium (Ba)			101.6		%		80-120	27-SEP-16
Beryllium (Be)			91.0		%		80-120	27-SEP-16
Bismuth (Bi)			98.4		%		80-120	27-SEP-16
Boron (B)			99.9		%		80-120	27-SEP-16
Cadmium (Cd)			101.1		%		80-120	27-SEP-16
Calcium (Ca)			99.9		%		80-120	27-SEP-16
Chromium (Cr)			96.2		%		80-120	27-SEP-16
Cobalt (Co)			98.2		%		80-120	27-SEP-16
Copper (Cu)			96.7		%		80-120	27-SEP-16
Iron (Fe)			96.3		%		80-120	27-SEP-16
Lead (Pb)			97.6		%		80-120	27-SEP-16

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3558194								
WG2396899-4 LCS								
Lithium (Li)			93.5		%		80-120	27-SEP-16
Magnesium (Mg)			99.4		%		80-120	27-SEP-16
Manganese (Mn)			100.6		%		80-120	27-SEP-16
Molybdenum (Mo)			103.0		%		80-120	27-SEP-16
Nickel (Ni)			98.5		%		80-120	27-SEP-16
Phosphorus (P)			108.5		%		80-120	27-SEP-16
Potassium (K)			105.0		%		80-120	27-SEP-16
Selenium (Se)			95.8		%		80-120	27-SEP-16
Silver (Ag)			96.8		%		80-120	27-SEP-16
Sodium (Na)			100.5		%		80-120	27-SEP-16
Strontium (Sr)			101.3		%		80-120	27-SEP-16
Thallium (Tl)			100.2		%		80-120	27-SEP-16
Tin (Sn)			99.3		%		80-120	27-SEP-16
Titanium (Ti)			97.9		%		80-120	27-SEP-16
Uranium (U)			102.4		%		80-120	27-SEP-16
Vanadium (V)			101.7		%		80-120	27-SEP-16
Zinc (Zn)			93.8		%		80-120	27-SEP-16
Zirconium (Zr)			99.0		%		80-120	27-SEP-16
WG2397077-3 LCS								
Aluminum (Al)			103.1		%		80-120	27-SEP-16
Antimony (Sb)			95.5		%		80-120	27-SEP-16
Arsenic (As)			103.6		%		80-120	27-SEP-16
Barium (Ba)			107.2		%		80-120	27-SEP-16
Beryllium (Be)			91.6		%		80-120	27-SEP-16
Bismuth (Bi)			96.7		%		80-120	27-SEP-16
Boron (B)			100.1		%		80-120	27-SEP-16
Cadmium (Cd)			99.8		%		80-120	27-SEP-16
Calcium (Ca)			104.7		%		80-120	27-SEP-16
Chromium (Cr)			97.3		%		80-120	27-SEP-16
Cobalt (Co)			98.2		%		80-120	27-SEP-16
Copper (Cu)			96.9		%		80-120	27-SEP-16
Iron (Fe)			114.3		%		80-120	27-SEP-16
Lead (Pb)			100.6		%		80-120	27-SEP-16
Lithium (Li)			85.9		%		80-120	27-SEP-16

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3558194								
WG2397077-3 LCS								
Magnesium (Mg)			98.0		%		80-120	27-SEP-16
Manganese (Mn)			99.9		%		80-120	27-SEP-16
Molybdenum (Mo)			107.7		%		80-120	27-SEP-16
Nickel (Ni)			96.9		%		80-120	27-SEP-16
Phosphorus (P)			96.4		%		80-120	27-SEP-16
Potassium (K)			99.5		%		80-120	27-SEP-16
Selenium (Se)			99.8		%		80-120	27-SEP-16
Silver (Ag)			97.0		%		80-120	27-SEP-16
Sodium (Na)			98.7		%		80-120	27-SEP-16
Strontium (Sr)			105.6		%		80-120	27-SEP-16
Thallium (Tl)			99.7		%		80-120	27-SEP-16
Tin (Sn)			99.1		%		80-120	27-SEP-16
Titanium (Ti)			96.1		%		80-120	27-SEP-16
Uranium (U)			102.3		%		80-120	27-SEP-16
Vanadium (V)			100.5		%		80-120	27-SEP-16
Zinc (Zn)			96.5		%		80-120	27-SEP-16
Zirconium (Zr)			104.3		%		80-120	27-SEP-16
WG2397077-4 LCS								
Aluminum (Al)			101.6		%		80-120	27-SEP-16
Antimony (Sb)			99.5		%		80-120	27-SEP-16
Arsenic (As)			104.4		%		80-120	27-SEP-16
Barium (Ba)			107.8		%		80-120	27-SEP-16
Beryllium (Be)			94.3		%		80-120	27-SEP-16
Bismuth (Bi)			99.98		%		80-120	27-SEP-16
Boron (B)			100.5		%		80-120	27-SEP-16
Cadmium (Cd)			104.0		%		80-120	27-SEP-16
Calcium (Ca)			100.7		%		80-120	27-SEP-16
Chromium (Cr)			96.2		%		80-120	27-SEP-16
Cobalt (Co)			100.7		%		80-120	27-SEP-16
Copper (Cu)			98.8		%		80-120	27-SEP-16
Iron (Fe)			99.7		%		80-120	27-SEP-16
Lead (Pb)			100.6		%		80-120	27-SEP-16
Lithium (Li)			95.7		%		80-120	27-SEP-16
Magnesium (Mg)			99.2		%		80-120	27-SEP-16

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3558194								
WG2397077-4 LCS								
Manganese (Mn)			101.6		%		80-120	27-SEP-16
Molybdenum (Mo)			102.1		%		80-120	27-SEP-16
Nickel (Ni)			100.3		%		80-120	27-SEP-16
Phosphorus (P)			112.3		%		80-120	27-SEP-16
Potassium (K)			108.2		%		80-120	27-SEP-16
Selenium (Se)			96.4		%		80-120	27-SEP-16
Silver (Ag)			98.3		%		80-120	27-SEP-16
Sodium (Na)			102.7		%		80-120	27-SEP-16
Strontium (Sr)			100.7		%		80-120	27-SEP-16
Thallium (Tl)			102.0		%		80-120	27-SEP-16
Tin (Sn)			101.3		%		80-120	27-SEP-16
Titanium (Ti)			98.9		%		80-120	27-SEP-16
Uranium (U)			106.0		%		80-120	27-SEP-16
Vanadium (V)			102.3		%		80-120	27-SEP-16
Zinc (Zn)			95.5		%		80-120	27-SEP-16
Zirconium (Zr)			99.5		%		80-120	27-SEP-16
WG2396899-1 MB								
Aluminum (Al)			<50		mg/kg		50	27-SEP-16
Antimony (Sb)			<0.10		mg/kg		0.1	27-SEP-16
Arsenic (As)			<0.10		mg/kg		0.1	27-SEP-16
Barium (Ba)			<0.50		mg/kg		0.5	27-SEP-16
Beryllium (Be)			<0.10		mg/kg		0.1	27-SEP-16
Bismuth (Bi)			<0.20		mg/kg		0.2	27-SEP-16
Boron (B)			<5.0		mg/kg		5	27-SEP-16
Cadmium (Cd)			<0.020		mg/kg		0.02	27-SEP-16
Calcium (Ca)			<50		mg/kg		50	27-SEP-16
Chromium (Cr)			<0.50		mg/kg		0.5	27-SEP-16
Cobalt (Co)			<0.10		mg/kg		0.1	27-SEP-16
Copper (Cu)			<0.50		mg/kg		0.5	27-SEP-16
Iron (Fe)			<50		mg/kg		50	27-SEP-16
Lead (Pb)			<0.50		mg/kg		0.5	27-SEP-16
Lithium (Li)			<2.0		mg/kg		2	27-SEP-16
Magnesium (Mg)			<20		mg/kg		20	27-SEP-16
Manganese (Mn)			<1.0		mg/kg		1	27-SEP-16

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3558194								
WG2396899-1 MB								
Molybdenum (Mo)			<0.10		mg/kg		0.1	27-SEP-16
Nickel (Ni)			<0.50		mg/kg		0.5	27-SEP-16
Phosphorus (P)			<50		mg/kg		50	27-SEP-16
Potassium (K)			<100		mg/kg		100	27-SEP-16
Selenium (Se)			<0.20		mg/kg		0.2	27-SEP-16
Silver (Ag)			<0.10		mg/kg		0.1	27-SEP-16
Sodium (Na)			<50		mg/kg		50	27-SEP-16
Strontium (Sr)			<0.50		mg/kg		0.5	27-SEP-16
Thallium (Tl)			<0.050		mg/kg		0.05	27-SEP-16
Tin (Sn)			<2.0		mg/kg		2	27-SEP-16
Titanium (Ti)			<1.0		mg/kg		1	27-SEP-16
Uranium (U)			<0.050		mg/kg		0.05	27-SEP-16
Vanadium (V)			<0.20		mg/kg		0.2	27-SEP-16
Zinc (Zn)			<2.0		mg/kg		2	27-SEP-16
Zirconium (Zr)			<1.0		mg/kg		1	27-SEP-16
WG2396899-2 MB								
Aluminum (Al)			<50		mg/kg		50	27-SEP-16
Antimony (Sb)			<0.10		mg/kg		0.1	27-SEP-16
Arsenic (As)			<0.10		mg/kg		0.1	27-SEP-16
Barium (Ba)			<0.50		mg/kg		0.5	27-SEP-16
Beryllium (Be)			<0.10		mg/kg		0.1	27-SEP-16
Bismuth (Bi)			<0.20		mg/kg		0.2	27-SEP-16
Boron (B)			<5.0		mg/kg		5	27-SEP-16
Cadmium (Cd)			<0.020		mg/kg		0.02	27-SEP-16
Calcium (Ca)			<50		mg/kg		50	27-SEP-16
Chromium (Cr)			<0.50		mg/kg		0.5	27-SEP-16
Cobalt (Co)			<0.10		mg/kg		0.1	27-SEP-16
Copper (Cu)			<0.50		mg/kg		0.5	27-SEP-16
Iron (Fe)			<50		mg/kg		50	27-SEP-16
Lead (Pb)			<0.50		mg/kg		0.5	27-SEP-16
Lithium (Li)			<2.0		mg/kg		2	27-SEP-16
Magnesium (Mg)			<20		mg/kg		20	27-SEP-16
Manganese (Mn)			<1.0		mg/kg		1	27-SEP-16
Molybdenum (Mo)			<0.10		mg/kg		0.1	27-SEP-16

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3558194								
WG2396899-2 MB								
Nickel (Ni)			<0.50		mg/kg		0.5	27-SEP-16
Phosphorus (P)			<50		mg/kg		50	27-SEP-16
Potassium (K)			<100		mg/kg		100	27-SEP-16
Selenium (Se)			<0.20		mg/kg		0.2	27-SEP-16
Silver (Ag)			<0.10		mg/kg		0.1	27-SEP-16
Sodium (Na)			<50		mg/kg		50	27-SEP-16
Strontium (Sr)			<0.50		mg/kg		0.5	27-SEP-16
Thallium (Tl)			<0.050		mg/kg		0.05	27-SEP-16
Tin (Sn)			<2.0		mg/kg		2	27-SEP-16
Titanium (Ti)			<1.0		mg/kg		1	27-SEP-16
Uranium (U)			<0.050		mg/kg		0.05	27-SEP-16
Vanadium (V)			<0.20		mg/kg		0.2	27-SEP-16
Zinc (Zn)			<2.0		mg/kg		2	27-SEP-16
Zirconium (Zr)			<1.0		mg/kg		1	27-SEP-16
WG2397077-1 MB								
Aluminum (Al)			<50		mg/kg		50	27-SEP-16
Antimony (Sb)			<0.10		mg/kg		0.1	27-SEP-16
Arsenic (As)			<0.10		mg/kg		0.1	27-SEP-16
Barium (Ba)			<0.50		mg/kg		0.5	27-SEP-16
Beryllium (Be)			<0.10		mg/kg		0.1	27-SEP-16
Bismuth (Bi)			<0.20		mg/kg		0.2	27-SEP-16
Boron (B)			<5.0		mg/kg		5	27-SEP-16
Cadmium (Cd)			<0.020		mg/kg		0.02	27-SEP-16
Calcium (Ca)			<50		mg/kg		50	27-SEP-16
Chromium (Cr)			<0.50		mg/kg		0.5	27-SEP-16
Cobalt (Co)			<0.10		mg/kg		0.1	27-SEP-16
Copper (Cu)			<0.50		mg/kg		0.5	27-SEP-16
Iron (Fe)			<50		mg/kg		50	27-SEP-16
Lead (Pb)			<0.50		mg/kg		0.5	27-SEP-16
Lithium (Li)			<2.0		mg/kg		2	27-SEP-16
Magnesium (Mg)			<20		mg/kg		20	27-SEP-16
Manganese (Mn)			<1.0		mg/kg		1	27-SEP-16
Molybdenum (Mo)			<0.10		mg/kg		0.1	27-SEP-16
Nickel (Ni)			<0.50		mg/kg		0.5	27-SEP-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3558194								
WG2397077-1 MB								
Phosphorus (P)			<50		mg/kg		50	27-SEP-16
Potassium (K)			<100		mg/kg		100	27-SEP-16
Selenium (Se)			<0.20		mg/kg		0.2	27-SEP-16
Silver (Ag)			<0.10		mg/kg		0.1	27-SEP-16
Sodium (Na)			<50		mg/kg		50	27-SEP-16
Strontium (Sr)			<0.50		mg/kg		0.5	27-SEP-16
Thallium (Tl)			<0.050		mg/kg		0.05	27-SEP-16
Tin (Sn)			<2.0		mg/kg		2	27-SEP-16
Titanium (Ti)			<1.0		mg/kg		1	27-SEP-16
Uranium (U)			<0.050		mg/kg		0.05	27-SEP-16
Vanadium (V)			<0.20		mg/kg		0.2	27-SEP-16
Zinc (Zn)			<2.0		mg/kg		2	27-SEP-16
Zirconium (Zr)			<1.0		mg/kg		1	27-SEP-16
WG2397077-2 MB								
Aluminum (Al)			<50		mg/kg		50	27-SEP-16
Antimony (Sb)			<0.10		mg/kg		0.1	27-SEP-16
Arsenic (As)			<0.10		mg/kg		0.1	27-SEP-16
Barium (Ba)			<0.50		mg/kg		0.5	27-SEP-16
Beryllium (Be)			<0.10		mg/kg		0.1	27-SEP-16
Bismuth (Bi)			<0.20		mg/kg		0.2	27-SEP-16
Boron (B)			<5.0		mg/kg		5	27-SEP-16
Cadmium (Cd)			<0.020		mg/kg		0.02	27-SEP-16
Calcium (Ca)			<50		mg/kg		50	27-SEP-16
Chromium (Cr)			<0.50		mg/kg		0.5	27-SEP-16
Cobalt (Co)			<0.10		mg/kg		0.1	27-SEP-16
Copper (Cu)			<0.50		mg/kg		0.5	27-SEP-16
Iron (Fe)			<50		mg/kg		50	27-SEP-16
Lead (Pb)			<0.50		mg/kg		0.5	27-SEP-16
Magnesium (Mg)			<20		mg/kg		20	27-SEP-16
Manganese (Mn)			<1.0		mg/kg		1	27-SEP-16
Molybdenum (Mo)			<0.10		mg/kg		0.1	27-SEP-16
Nickel (Ni)			<0.50		mg/kg		0.5	27-SEP-16
Phosphorus (P)			<50		mg/kg		50	27-SEP-16
Potassium (K)			<100		mg/kg		100	27-SEP-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3558194								
WG2397077-2 MB								
Selenium (Se)			<0.20		mg/kg		0.2	27-SEP-16
Silver (Ag)			<0.10		mg/kg		0.1	27-SEP-16
Strontium (Sr)			<0.50		mg/kg		0.5	27-SEP-16
Thallium (Tl)			<0.050		mg/kg		0.05	27-SEP-16
Tin (Sn)			<2.0		mg/kg		2	27-SEP-16
Titanium (Ti)			<1.0		mg/kg		1	27-SEP-16
Uranium (U)			<0.050		mg/kg		0.05	27-SEP-16
Vanadium (V)			<0.20		mg/kg		0.2	27-SEP-16
Zinc (Zn)			<2.0		mg/kg		2	27-SEP-16
Zirconium (Zr)			<1.0		mg/kg		1	27-SEP-16
Batch R3559136								
WG2397077-2 MB								
Lithium (Li)			<2.0		mg/kg		2	28-SEP-16
Sodium (Na)			<50		mg/kg		50	28-SEP-16

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES
Environmental Division

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

CANADA TOLL FREE 1-800-668-9878 WWW.ALSENVIRO.COM

	DATE: September 21, 2016	LAB WORK ORDER #	
REPORT TO:	REPORT DISTRIBUTION: ALL FINAL RESULTS WILL BE EMAILED	SERVICE REQUESTED	
COMPANY: Golder Associates Ltd.	EMAIL X FAX ___	X	REGULAR SERVICE (DEFAULT)
CONTACT: Steven Fiddler	EMAIL 1: sfiddler@golder.com		RUSH SERVICE
ADDRESS: 16820 107 Avenue, Edmonton, Alberta	EMAIL 2: CSMdataquality@golder.com		EMERGENCY SERVICE
T5P 4C3	SELECT: pdf X digital X MDD/EDD X	ANALYSIS REQUEST	
PHONE: (780) 483-3499 FAX: (780)-984-6600	INDICATE BOTTLES: FILTERED/PRESERVED (F /P)		
INVOICE TO: SAME Y / N	JOB # 13-1377-0044-23000-23002		
COMPANY: Golder Associates Ltd.			
CONTACT: Steven Fiddler			
ADDRESS: 16820 107 Avenue, Edmonton, Alberta			
T5P 4C3	QUOTE # Q57921 and Q58104		
PHONE: (780) 483-3499 FAX: (780) 984-6600			

Golder SAMPLE ID number L1832598	SAMPLED BY / DATE / TIME	SAMPLE TYPE	SAMPLE VOLUME (mL)	Total Metals - CCME	HAZARDOUS ? (Y/N)	NUMBER OF CONTAINERS	HIGHLY CONTAMINATED ? (Y/N)	LAB SAMPLE #
16-LongLake-SE-1 - preservative	TMEN 21Sep16	sediment	50	x	N	1	N	
16-LongLake-SE-2 - ~~no preservative~~	Lab Preserved	sediment	50	x	N	1	N	
16-LongLake-SE-3		sediment	50	x	N	1	N	
16-LongLake-SE-4		sediment	50	x	N	1	N	
16-LongLake-SE-5		sediment	50	x	N	1	N	
16-LongLake-SE-6		sediment	50	x	N	1	N	
16-LongLake-SE-7		sediment	50	x	N	1	N	
16-LongLake-SE-8		sediment	50	x	N	1	N	
16-LongLake-SE-9		sediment	50	x	N	1	N	
16-LongLake-SE-10		sediment	50	x	N	1	N	
16-LongLake-SE- DUP		sediment	50	x	N	1	N	
~~16-LongLake-S-1~~		~~soil~~	~~50~~	~~x~~	N	1	N	
~~16-LongLake-S-2~~		~~soil~~	~~50~~	~~x~~	N	1	N	
~~16-LongLake-S-3~~		~~soil~~	~~50~~	~~x~~	N	1	N	
~~16-LongLake-S-4~~		~~soil~~	~~50~~	~~x~~	N	1	N	
~~16-LongLake-S-5~~		~~soil~~	~~50~~	~~x~~	N	1	N	
~~16-LongLake-S-6~~		~~soil~~	~~50~~	~~x~~	N	1	N	
~~16-LongLake-S-7~~		~~soil~~	~~50~~	~~x~~	N	1	N	
~~16-LongLake-S-8~~		~~soil~~	~~50~~	~~x~~	N	1	N	
~~16-LongLake-S-9~~		~~soil~~	~~50~~	~~x~~	N	1	N	

L1832598-COFC

~~16-LongLake-S-10~~		soil	50	x											N	1	N	
~~16-LongLake-S-11~~		soil	50	x											N	1	N	
16-LongLake-SW-1	TM/EN 21sep/16	e water - grab s	50	x											N	1	N	
16-LongLake-SW-2		e water - grab s	50	x											N	1	N	
16-LongLake-SW-3		e water - grab s	50	x											N	1	N	
16-LongLake-SW-4		e water - grab s	50	x											N	1	N	
16-LongLake-SW-5		e water - grab s	50	x											N	1	N	
16-LongLake-SW-6		e water - grab s	50	x											N	1	N	
16-LongLake-SW-7		e water - grab s	50	x											N	1	N	
16-LongLake-SW-8		e water - grab s	50	x											N	1	N	
16-LongLake-SW-9		e water - grab s	50	x											N	1	N	
16-LongLake-SW-10		e water - grab s	50	x											N	1	N	
16-LongLake-SW-~~11~~ dup		e water - grab s	50	x											N	1	N	

NOTES & CONDITIONS:

1. Quote number must be provided to ensure proper pricing.

2. Turnaround times will vary dependent on complexity of analysis & Lab workload at time of submission. Please contact the Lab to confirm turnaround time.

3. All hazardous samples submitted must be labeled to comply with WHMIS and TDG regulations. This must include the nature of the hazard, as well as a contact name & phone number that the Lab can contact for further information.

4. Failure to properly complete all portions of this form may delay analysis.

GUIDELINES/REGULATIONS	SPECIAL INSTRUCTIONS / NATURE OF HAZARDOUS MATERIAL	SAMPLE CONDITION		
	Stored on Ice. Please contact Steven Fiddler upon sample receipt to confirm analysis.		FROZEN	MEAN TEMPERATURE 8.0
		X	COLD	
			AMBIENT	

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	SAMPLE CONDITION ACCEPTABLE UPON RECEIPT ? (Y/N)
TM [signature]	21 Sept 13:00	AT	21/Sep/16 1:00pm	Y
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	

REFER TO BACK FOR SAMPLING & PACKAGE INFORMATION

WHITE - FINAL REPORT COPY, YELLOW - LAB COPY, PINK - GOLDER COPY

REVISED July 2013

GOLDER ASSOCIATES LTD
ATTN: Steven Fiddler
16820 107 Ave NW
EDMONTON AB T5P 4C3

Date Received: 21-SEP-16
Report Date: 01-OCT-16 11:33 (MT)
Version: FINAL

Client Phone: 780-483-3499

Certificate of Analysis

Lab Work Order #: L1832653
Project P.O. #: NOT SUBMITTED
Job Reference: 13-1377-0044-23000-23002
C of C Numbers:
Legal Site Desc:

Jessica Spira, Env. Tech. DIPL
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832653-1 16-LONGLAKE-S-1							
Sampled By: TM/EN on 21-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0615		0.0050	mg/kg	28-SEP-16	28-SEP-16	R3559251
Metals in Soil by CRC ICPMS							
Aluminum (Al)	507		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Antimony (Sb)	3.34		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Arsenic (As)	48.3		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Barium (Ba)	5.05		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Beryllium (Be)	<0.10		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Bismuth (Bi)	<0.20		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Boron (B)	<5.0		5.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Cadmium (Cd)	0.087		0.020	mg/kg	28-SEP-16	29-SEP-16	R3560168
Calcium (Ca)	4110		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Chromium (Cr)	0.60		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Cobalt (Co)	0.65		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Copper (Cu)	1.20		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Iron (Fe)	324		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Lead (Pb)	<0.50		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Lithium (Li)	<2.0		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Magnesium (Mg)	1470		20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Manganese (Mn)	28.5		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Molybdenum (Mo)	0.15		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Nickel (Ni)	1.16		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Phosphorus (P)	200		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Potassium (K)	170		100	mg/kg	28-SEP-16	29-SEP-16	R3560168
Selenium (Se)	<0.20		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Silver (Ag)	<0.10		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Sodium (Na)	407		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Strontium (Sr)	11.0		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Thallium (Tl)	<0.050		0.050	mg/kg	28-SEP-16	29-SEP-16	R3560168
Tin (Sn)	<2.0		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Titanium (Ti)	8.5		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Uranium (U)	<0.050		0.050	mg/kg	28-SEP-16	29-SEP-16	R3560168
Vanadium (V)	0.64		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Zinc (Zn)	13.8		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Zirconium (Zr)	<1.0		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
L1832653-2 16-LONGLAKE-S-2							
Sampled By: TM/EN on 21-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0373		0.0050	mg/kg	28-SEP-16	28-SEP-16	R3559251
Metals in Soil by CRC ICPMS							
Aluminum (Al)	17800		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Antimony (Sb)	3.33		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Arsenic (As)	115		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Barium (Ba)	73.5		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Beryllium (Be)	0.49		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Bismuth (Bi)	0.21		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Boron (B)	<5.0		5.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Cadmium (Cd)	0.091		0.020	mg/kg	28-SEP-16	29-SEP-16	R3560168
Calcium (Ca)	469		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Chromium (Cr)	27.1		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Cobalt (Co)	5.37		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832653-2 16-LONGLAKE-S-2							
Sampled By: TM/EN on 21-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Copper (Cu)	42.8		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Iron (Fe)	17900		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Lead (Pb)	20.1		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Lithium (Li)	12.2		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Magnesium (Mg)	2950		20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Manganese (Mn)	92.4		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Molybdenum (Mo)	0.52		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Nickel (Ni)	12.0		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Phosphorus (P)	446		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Potassium (K)	290		100	mg/kg	28-SEP-16	29-SEP-16	R3560168
Selenium (Se)	<0.20		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Silver (Ag)	<0.10		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Sodium (Na)	139		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Strontium (Sr)	4.28		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Thallium (Tl)	0.112		0.050	mg/kg	28-SEP-16	29-SEP-16	R3560168
Tin (Sn)	<2.0		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Titanium (Ti)	170		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Uranium (U)	1.13		0.050	mg/kg	28-SEP-16	29-SEP-16	R3560168
Vanadium (V)	38.3		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Zinc (Zn)	50.9		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Zirconium (Zr)	1.4		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
L1832653-3 16-LONGLAKE-S-3							
Sampled By: TM/EN on 21-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0571		0.0050	mg/kg	28-SEP-16	28-SEP-16	R3559251
Metals in Soil by CRC ICPMS							
Aluminum (Al)	6310		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Antimony (Sb)	5.03		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Arsenic (As)	129		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Barium (Ba)	46.6		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Beryllium (Be)	0.11		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Bismuth (Bi)	<0.20		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Boron (B)	<5.0		5.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Cadmium (Cd)	0.182		0.020	mg/kg	28-SEP-16	29-SEP-16	R3560168
Calcium (Ca)	2480		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Chromium (Cr)	20.4		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Cobalt (Co)	4.86		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Copper (Cu)	11.2		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Iron (Fe)	8890		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Lead (Pb)	8.17		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Lithium (Li)	8.0		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Magnesium (Mg)	2650		20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Manganese (Mn)	110		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Molybdenum (Mo)	0.35		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Nickel (Ni)	13.1		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Phosphorus (P)	310		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Potassium (K)	370		100	mg/kg	28-SEP-16	29-SEP-16	R3560168
Selenium (Se)	<0.20		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Silver (Ag)	<0.10		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Sodium (Na)	70		50	mg/kg	28-SEP-16	29-SEP-16	R3560168

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832653-3 16-LONGLAKE-S-3							
Sampled By: TM/EN on 21-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Strontium (Sr)	9.02		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Thallium (Tl)	<0.050		0.050	mg/kg	28-SEP-16	29-SEP-16	R3560168
Tin (Sn)	<2.0		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Titanium (Ti)	216		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Uranium (U)	0.585		0.050	mg/kg	28-SEP-16	29-SEP-16	R3560168
Vanadium (V)	21.5		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Zinc (Zn)	40.9		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Zirconium (Zr)	<1.0		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
L1832653-4 16-LONGLAKE-S-4							
Sampled By: TM/EN on 21-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0236		0.0050	mg/kg	28-SEP-16	28-SEP-16	R3559251
Metals in Soil by CRC ICPMS							
Aluminum (Al)	4650		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Antimony (Sb)	0.52		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Arsenic (As)	10.8		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Barium (Ba)	35.4		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Beryllium (Be)	0.12		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Bismuth (Bi)	<0.20		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Boron (B)	<5.0		5.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Cadmium (Cd)	0.132		0.020	mg/kg	28-SEP-16	29-SEP-16	R3560168
Calcium (Ca)	6660		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Chromium (Cr)	18.5		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Cobalt (Co)	6.53		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Copper (Cu)	17.7		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Iron (Fe)	7040		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Lead (Pb)	2.72		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Lithium (Li)	8.1		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Magnesium (Mg)	3250		20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Manganese (Mn)	202		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Molybdenum (Mo)	0.80		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Nickel (Ni)	15.7		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Phosphorus (P)	477		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Potassium (K)	1280		100	mg/kg	28-SEP-16	29-SEP-16	R3560168
Selenium (Se)	<0.20		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Silver (Ag)	<0.10		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Sodium (Na)	225		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Strontium (Sr)	12.1		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Thallium (Tl)	<0.050		0.050	mg/kg	28-SEP-16	29-SEP-16	R3560168
Tin (Sn)	<2.0		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Titanium (Ti)	206		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Uranium (U)	0.557		0.050	mg/kg	28-SEP-16	29-SEP-16	R3560168
Vanadium (V)	16.1		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Zinc (Zn)	28.6		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Zirconium (Zr)	1.1		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
L1832653-5 16-LONGLAKE-S-5							
Sampled By: TM/EN on 21-SEP-16							
Matrix: soil							
Miscellaneous Parameters							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832653-5 16-LONGLAKE-S-5							
Sampled By: TM/EN on 21-SEP-16							
Matrix: soil							
Mercury (Hg)	0.0266		0.0050	mg/kg	28-SEP-16	28-SEP-16	R3559251
Metals in Soil by CRC ICPMS							
Aluminum (Al)	8490		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Antimony (Sb)	0.46		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Arsenic (As)	16.2		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Barium (Ba)	48.5		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Beryllium (Be)	<0.10		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Bismuth (Bi)	<0.20		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Boron (B)	6.1		5.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Cadmium (Cd)	0.291		0.020	mg/kg	28-SEP-16	29-SEP-16	R3560168
Calcium (Ca)	13700		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Chromium (Cr)	28.5		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Cobalt (Co)	12.4		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Copper (Cu)	86.0		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Iron (Fe)	14600		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Lead (Pb)	6.23		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Lithium (Li)	11.1		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Magnesium (Mg)	5530		20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Manganese (Mn)	385		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Molybdenum (Mo)	0.60		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Nickel (Ni)	31.2		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Phosphorus (P)	2400		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Potassium (K)	1410		100	mg/kg	28-SEP-16	29-SEP-16	R3560168
Selenium (Se)	0.23		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Silver (Ag)	<0.10		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Sodium (Na)	344		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Strontium (Sr)	19.5		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Thallium (Tl)	<0.050		0.050	mg/kg	28-SEP-16	29-SEP-16	R3560168
Tin (Sn)	<2.0		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Titanium (Ti)	236		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Uranium (U)	0.530		0.050	mg/kg	28-SEP-16	29-SEP-16	R3560168
Vanadium (V)	26.9		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Zinc (Zn)	137		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Zirconium (Zr)	<1.0		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
L1832653-6 16-LONGLAKE-S-6							
Sampled By: TM/EN on 21-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.116		0.0050	mg/kg	28-SEP-16	28-SEP-16	R3559251
Metals in Soil by CRC ICPMS							
Aluminum (Al)	5470		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Antimony (Sb)	17.6		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Arsenic (As)	28.7		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Barium (Ba)	56.1		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Beryllium (Be)	0.14		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Bismuth (Bi)	0.48		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Boron (B)	8.0		5.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Cadmium (Cd)	11.2		0.020	mg/kg	28-SEP-16	29-SEP-16	R3560168
Calcium (Ca)	9060		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Chromium (Cr)	104		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Cobalt (Co)	11.1		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Copper (Cu)	71.8		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832653-6 16-LONGLAKE-S-6							
Sampled By: TM/EN on 21-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Iron (Fe)	11000		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Lead (Pb)	500		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Lithium (Li)	8.9		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Magnesium (Mg)	3910		20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Manganese (Mn)	663		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Molybdenum (Mo)	2.27		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Nickel (Ni)	45.0		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Phosphorus (P)	672		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Potassium (K)	1380		100	mg/kg	28-SEP-16	29-SEP-16	R3560168
Selenium (Se)	<0.20		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Silver (Ag)	0.25		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Sodium (Na)	213		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Strontium (Sr)	22.4		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Thallium (Tl)	0.061		0.050	mg/kg	28-SEP-16	29-SEP-16	R3560168
Tin (Sn)	19.4		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Titanium (Ti)	212		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Uranium (U)	1.27		0.050	mg/kg	28-SEP-16	29-SEP-16	R3560168
Vanadium (V)	17.4		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Zinc (Zn)	83.8		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Zirconium (Zr)	1.2		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
L1832653-7 16-LONGLAKE-S-7							
Sampled By: TM/EN on 21-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0282		0.0050	mg/kg	28-SEP-16	28-SEP-16	R3559251
Metals in Soil by CRC ICPMS							
Aluminum (Al)	6530		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Antimony (Sb)	2.73		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Arsenic (As)	56.4		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Barium (Ba)	36.4		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Beryllium (Be)	0.15		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Bismuth (Bi)	<0.20		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Boron (B)	<5.0		5.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Cadmium (Cd)	0.353		0.020	mg/kg	28-SEP-16	29-SEP-16	R3560168
Calcium (Ca)	1510		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Chromium (Cr)	21.9		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Cobalt (Co)	4.02		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Copper (Cu)	10.2		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Iron (Fe)	9080		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Lead (Pb)	12.4		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Lithium (Li)	13.0		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Magnesium (Mg)	3350		20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Manganese (Mn)	168		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Molybdenum (Mo)	0.23		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Nickel (Ni)	12.2		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Phosphorus (P)	275		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Potassium (K)	530		100	mg/kg	28-SEP-16	29-SEP-16	R3560168
Selenium (Se)	<0.20		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Silver (Ag)	0.23		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Sodium (Na)	79		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Strontium (Sr)	4.16		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832653-7 16-LONGLAKE-S-7							
Sampled By: TM/EN on 21-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Thallium (Tl)	<0.050		0.050	mg/kg	28-SEP-16	29-SEP-16	R3560168
Tin (Sn)	<2.0		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Titanium (Ti)	219		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Uranium (U)	0.603		0.050	mg/kg	28-SEP-16	29-SEP-16	R3560168
Vanadium (V)	16.9		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Zinc (Zn)	41.3		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Zirconium (Zr)	<1.0		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
L1832653-8 16-LONGLAKE-S-8							
Sampled By: TM/EN on 21-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0766		0.0050	mg/kg	28-SEP-16	28-SEP-16	R3559251
Metals in Soil by CRC ICPMS							
Aluminum (Al)	4490		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Antimony (Sb)	11.8		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Arsenic (As)	102		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Barium (Ba)	24.9		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Beryllium (Be)	<0.10		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Bismuth (Bi)	<0.20		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Boron (B)	<5.0		5.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Cadmium (Cd)	0.177		0.020	mg/kg	28-SEP-16	29-SEP-16	R3560168
Calcium (Ca)	3170		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Chromium (Cr)	15.0		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Cobalt (Co)	3.04		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Copper (Cu)	15.8		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Iron (Fe)	6290		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Lead (Pb)	26.3		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Lithium (Li)	5.2		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Magnesium (Mg)	2300		20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Manganese (Mn)	96.5		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Molybdenum (Mo)	0.50		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Nickel (Ni)	8.62		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Phosphorus (P)	645		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Potassium (K)	510		100	mg/kg	28-SEP-16	29-SEP-16	R3560168
Selenium (Se)	<0.20		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Silver (Ag)	<0.10		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Sodium (Na)	244		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Strontium (Sr)	7.59		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Thallium (Tl)	<0.050		0.050	mg/kg	28-SEP-16	29-SEP-16	R3560168
Tin (Sn)	<2.0		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Titanium (Ti)	117		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Uranium (U)	0.468		0.050	mg/kg	28-SEP-16	29-SEP-16	R3560168
Vanadium (V)	11.6		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Zinc (Zn)	51.7		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Zirconium (Zr)	<1.0		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
L1832653-9 16-LONGLAKE-S-9							
Sampled By: TM/EN on 21-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0378		0.0050	mg/kg	28-SEP-16	28-SEP-16	R3559251
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832653-9 16-LONGLAKE-S-9							
Sampled By: TM/EN on 21-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	8370		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Antimony (Sb)	4.35		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Arsenic (As)	38.0		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Barium (Ba)	160		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Beryllium (Be)	0.26		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Bismuth (Bi)	<0.20		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Boron (B)	13.9		5.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Cadmium (Cd)	0.338		0.020	mg/kg	28-SEP-16	29-SEP-16	R3560168
Calcium (Ca)	16900		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Chromium (Cr)	24.0		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Cobalt (Co)	6.31		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Copper (Cu)	52.1		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Iron (Fe)	15900		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Lead (Pb)	35.4		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Lithium (Li)	11.0		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Magnesium (Mg)	4920		20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Manganese (Mn)	501		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Molybdenum (Mo)	1.25		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Nickel (Ni)	17.1		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Phosphorus (P)	703		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Potassium (K)	1040		100	mg/kg	28-SEP-16	29-SEP-16	R3560168
Selenium (Se)	0.25		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Silver (Ag)	0.22		0.10	mg/kg	28-SEP-16	29-SEP-16	R3560168
Sodium (Na)	470		50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Strontium (Sr)	62.2		0.50	mg/kg	28-SEP-16	29-SEP-16	R3560168
Thallium (Tl)	<0.050		0.050	mg/kg	28-SEP-16	29-SEP-16	R3560168
Tin (Sn)	2.6		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Titanium (Ti)	258		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Uranium (U)	2.94		0.050	mg/kg	28-SEP-16	29-SEP-16	R3560168
Vanadium (V)	19.4		0.20	mg/kg	28-SEP-16	29-SEP-16	R3560168
Zinc (Zn)	216		2.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
Zirconium (Zr)	1.7		1.0	mg/kg	28-SEP-16	29-SEP-16	R3560168
L1832653-10 16-LONGLAKE-S-10							
Sampled By: TM/EN on 21-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0364		0.0050	mg/kg	30-SEP-16	30-SEP-16	R3560682
Metals in Soil by CRC ICPMS							
Aluminum (Al)	4570		50	mg/kg	30-SEP-16	01-OCT-16	R3561020
Antimony (Sb)	2.88		0.10	mg/kg	30-SEP-16	01-OCT-16	R3561020
Arsenic (As)	41.3		0.10	mg/kg	30-SEP-16	01-OCT-16	R3561020
Barium (Ba)	40.0		0.50	mg/kg	30-SEP-16	01-OCT-16	R3561020
Beryllium (Be)	0.16		0.10	mg/kg	30-SEP-16	01-OCT-16	R3561020
Bismuth (Bi)	<0.20		0.20	mg/kg	30-SEP-16	01-OCT-16	R3561020
Boron (B)	<5.0		5.0	mg/kg	30-SEP-16	01-OCT-16	R3561020
Cadmium (Cd)	0.134		0.020	mg/kg	30-SEP-16	01-OCT-16	R3561020
Calcium (Ca)	8610		50	mg/kg	30-SEP-16	01-OCT-16	R3561020
Chromium (Cr)	15.0		0.50	mg/kg	30-SEP-16	01-OCT-16	R3561020
Cobalt (Co)	4.00		0.10	mg/kg	30-SEP-16	01-OCT-16	R3561020
Copper (Cu)	20.3		0.50	mg/kg	30-SEP-16	01-OCT-16	R3561020
Iron (Fe)	6990		50	mg/kg	30-SEP-16	01-OCT-16	R3561020

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832653-10 16-LONGLAKE-S-10							
Sampled By: TM/EN on 21-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Lead (Pb)	5.40		0.50	mg/kg	30-SEP-16	01-OCT-16	R3561020
Lithium (Li)	4.9		2.0	mg/kg	30-SEP-16	01-OCT-16	R3561020
Magnesium (Mg)	2880		20	mg/kg	30-SEP-16	01-OCT-16	R3561020
Manganese (Mn)	163		1.0	mg/kg	30-SEP-16	01-OCT-16	R3561020
Molybdenum (Mo)	0.39		0.10	mg/kg	30-SEP-16	01-OCT-16	R3561020
Nickel (Ni)	11.4		0.50	mg/kg	30-SEP-16	01-OCT-16	R3561020
Phosphorus (P)	406		50	mg/kg	30-SEP-16	01-OCT-16	R3561020
Potassium (K)	530		100	mg/kg	30-SEP-16	01-OCT-16	R3561020
Selenium (Se)	<0.20		0.20	mg/kg	30-SEP-16	01-OCT-16	R3561020
Silver (Ag)	<0.10		0.10	mg/kg	30-SEP-16	01-OCT-16	R3561020
Sodium (Na)	131		50	mg/kg	30-SEP-16	01-OCT-16	R3561020
Strontium (Sr)	24.1		0.50	mg/kg	30-SEP-16	01-OCT-16	R3561020
Thallium (Tl)	<0.050		0.050	mg/kg	30-SEP-16	01-OCT-16	R3561020
Tin (Sn)	<2.0		2.0	mg/kg	30-SEP-16	01-OCT-16	R3561020
Titanium (Ti)	202		1.0	mg/kg	30-SEP-16	01-OCT-16	R3561020
Uranium (U)	1.01		0.050	mg/kg	30-SEP-16	01-OCT-16	R3561020
Vanadium (V)	14.2		0.20	mg/kg	30-SEP-16	01-OCT-16	R3561020
Zinc (Zn)	32.1		2.0	mg/kg	30-SEP-16	01-OCT-16	R3561020
Zirconium (Zr)	2.3		1.0	mg/kg	30-SEP-16	01-OCT-16	R3561020
L1832653-11 16-LONGLAKE-S-DUP							
Sampled By: TM/EN on 21-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.130		0.0050	mg/kg	30-SEP-16	30-SEP-16	R3560682
Metals in Soil by CRC ICPMS							
Aluminum (Al)	6400		50	mg/kg	30-SEP-16	01-OCT-16	R3561020
Antimony (Sb)	5.14		0.10	mg/kg	30-SEP-16	01-OCT-16	R3561020
Arsenic (As)	35.6		0.10	mg/kg	30-SEP-16	01-OCT-16	R3561020
Barium (Ba)	56.4		0.50	mg/kg	30-SEP-16	01-OCT-16	R3561020
Beryllium (Be)	0.13		0.10	mg/kg	30-SEP-16	01-OCT-16	R3561020
Bismuth (Bi)	0.25		0.20	mg/kg	30-SEP-16	01-OCT-16	R3561020
Boron (B)	5.6		5.0	mg/kg	30-SEP-16	01-OCT-16	R3561020
Cadmium (Cd)	4.43		0.020	mg/kg	30-SEP-16	01-OCT-16	R3561020
Calcium (Ca)	7080		50	mg/kg	30-SEP-16	01-OCT-16	R3561020
Chromium (Cr)	70.2		0.50	mg/kg	30-SEP-16	01-OCT-16	R3561020
Cobalt (Co)	9.45		0.10	mg/kg	30-SEP-16	01-OCT-16	R3561020
Copper (Cu)	50.8		0.50	mg/kg	30-SEP-16	01-OCT-16	R3561020
Iron (Fe)	12300		50	mg/kg	30-SEP-16	01-OCT-16	R3561020
Lead (Pb)	163		0.50	mg/kg	30-SEP-16	01-OCT-16	R3561020
Lithium (Li)	9.1		2.0	mg/kg	30-SEP-16	01-OCT-16	R3561020
Magnesium (Mg)	4650		20	mg/kg	30-SEP-16	01-OCT-16	R3561020
Manganese (Mn)	317		1.0	mg/kg	30-SEP-16	01-OCT-16	R3561020
Molybdenum (Mo)	1.31		0.10	mg/kg	30-SEP-16	01-OCT-16	R3561020
Nickel (Ni)	36.2		0.50	mg/kg	30-SEP-16	01-OCT-16	R3561020
Phosphorus (P)	694		50	mg/kg	30-SEP-16	01-OCT-16	R3561020
Potassium (K)	1520		100	mg/kg	30-SEP-16	01-OCT-16	R3561020
Selenium (Se)	<0.20		0.20	mg/kg	30-SEP-16	01-OCT-16	R3561020
Silver (Ag)	0.15		0.10	mg/kg	30-SEP-16	01-OCT-16	R3561020
Sodium (Na)	202		50	mg/kg	30-SEP-16	01-OCT-16	R3561020
Strontium (Sr)	20.7		0.50	mg/kg	30-SEP-16	01-OCT-16	R3561020
Thallium (Tl)	0.070		0.050	mg/kg	30-SEP-16	01-OCT-16	R3561020

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1832653-11 16-LONGLAKE-S-DUP							
Sampled By: TM/EN on 21-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Tin (Sn)	32.5		2.0	mg/kg	30-SEP-16	01-OCT-16	R3561020
Titanium (Ti)	236		1.0	mg/kg	30-SEP-16	01-OCT-16	R3561020
Uranium (U)	1.06		0.050	mg/kg	30-SEP-16	01-OCT-16	R3561020
Vanadium (V)	20.5		0.20	mg/kg	30-SEP-16	01-OCT-16	R3561020
Zinc (Zn)	70.5		2.0	mg/kg	30-SEP-16	01-OCT-16	R3561020
Zirconium (Zr)	<1.0		1.0	mg/kg	30-SEP-16	01-OCT-16	R3561020

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-200.2-CVAA-ED	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (Mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

ALS Test Code	Matrix	Test Description	Method Reference**
MET-200.2-CCMS-ED	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CRC ICPMS.

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. This method does not dissolve all silicate materials and may result in a partial extraction. depending on the sample matrix, for some metals, including, but not limited to Al, Ba, Be, Cr, Sr, Ti, Tl, and V.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L1832653 Report Date: 01-OCT-16

Client: GOLDER ASSOCIATES LTD
16820 107 Ave NW
EDMONTON AB T5P 4C3
Contact: Steven Fiddler

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-200.2-CVAA-ED	**Soil**							
Batch R3559251								
WG2398491-3 CRM		**TILL-1_SOIL**						
Mercury (Hg)			126.3		%		70-130	28-SEP-16
WG2398491-4 DUP		**L1832653-2**						
Mercury (Hg)		0.0373	0.0386		mg/kg	3.5	40	28-SEP-16
WG2398491-2 LCS								
Mercury (Hg)			100.0		%		70-130	28-SEP-16
WG2398491-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	28-SEP-16
Batch R3560682								
WG2400540-5 CRM		**TILL-1_SOIL**						
Mercury (Hg)			116.1		%		70-130	30-SEP-16
WG2400540-6 CRM		**TILL-1_SOIL**						
Mercury (Hg)			111.4		%		70-130	30-SEP-16
WG2400540-7 DUP		**L1832653-11**						
Mercury (Hg)		0.130	0.0901		mg/kg	36	40	30-SEP-16
WG2400540-8 DUP		**L1832653-10**						
Mercury (Hg)		0.0364	0.0357		mg/kg	2.0	40	30-SEP-16
WG2400540-3 LCS								
Mercury (Hg)			95.5		%		70-130	30-SEP-16
WG2400540-4 LCS								
Mercury (Hg)			120.0		%		70-130	30-SEP-16
WG2400540-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	30-SEP-16
WG2400540-2 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	30-SEP-16
MET-200.2-CCMS-ED	**Soil**							
Batch R3560168								
WG2398491-3 CRM		**TILL-1_SOIL**						
Aluminum (Al)			100.2		%		70-130	29-SEP-16
Antimony (Sb)			99.7		%		70-130	29-SEP-16
Arsenic (As)			110.7		%		70-130	29-SEP-16
Barium (Ba)			102.5		%		70-130	29-SEP-16
Beryllium (Be)			93.9		%		70-130	29-SEP-16
Bismuth (Bi)			98.7		%		70-130	29-SEP-16
Boron (B)			67.2		%		50-150	29-SEP-16
Cadmium (Cd)			92.6		%		70-130	29-SEP-16
Calcium (Ca)			96.3		%		70-130	29-SEP-16

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3560168								
WG2398491-3 CRM		**TILL-1_SOIL**						
Chromium (Cr)			101.6		%		70-130	29-SEP-16
Cobalt (Co)			100.4		%		70-130	29-SEP-16
Copper (Cu)			99.3		%		70-130	29-SEP-16
Iron (Fe)			91.6		%		70-130	29-SEP-16
Lead (Pb)			95.5		%		70-130	29-SEP-16
Lithium (Li)			89.6		%		70-130	29-SEP-16
Magnesium (Mg)			95.6		%		70-130	29-SEP-16
Manganese (Mn)			100.0		%		70-130	29-SEP-16
Molybdenum (Mo)			91.8		%		70-130	29-SEP-16
Nickel (Ni)			100.1		%		70-130	29-SEP-16
Phosphorus (P)			103.3		%		70-130	29-SEP-16
Potassium (K)			97.3		%		70-130	29-SEP-16
Selenium (Se)			90.0		%		70-130	29-SEP-16
Silver (Ag)			104.6		%		70-130	29-SEP-16
Sodium (Na)			115.3		%		70-130	29-SEP-16
Strontium (Sr)			94.0		%		70-130	29-SEP-16
Thallium (Tl)			92.6		%		70-130	29-SEP-16
Tin (Sn)			88.5		%		70-130	29-SEP-16
Titanium (Ti)			86.2		%		70-130	29-SEP-16
Uranium (U)			109.5		%		70-130	29-SEP-16
Vanadium (V)			103.7		%		70-130	29-SEP-16
Zinc (Zn)			99.4		%		70-130	29-SEP-16
Zirconium (Zr)			67.0		%		50-150	29-SEP-16
WG2398491-4 DUP		**L1832653-2**						
Aluminum (Al)		17800	18900		mg/kg	5.8	40	29-SEP-16
Antimony (Sb)		3.33	3.39		mg/kg	1.8	30	29-SEP-16
Arsenic (As)		115	118		mg/kg	2.7	30	29-SEP-16
Barium (Ba)		73.5	73.3		mg/kg	0.3	40	29-SEP-16
Beryllium (Be)		0.49	0.52		mg/kg	6.7	30	29-SEP-16
Bismuth (Bi)		0.21	<0.20	RPD-NA	mg/kg	N/A	30	29-SEP-16
Boron (B)		<5.0	<5.0	RPD-NA	mg/kg	N/A	30	29-SEP-16
Cadmium (Cd)		0.091	0.098		mg/kg	7.3	30	29-SEP-16
Calcium (Ca)		469	520		mg/kg	10	30	29-SEP-16
Chromium (Cr)		27.1	28.4		mg/kg	4.8	30	29-SEP-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3560168								
WG2398491-4 DUP		**L1832653-2**						
Cobalt (Co)		5.37	5.49		mg/kg	2.1	30	29-SEP-16
Copper (Cu)		42.8	43.8		mg/kg	2.2	30	29-SEP-16
Iron (Fe)		17900	18000		mg/kg	0.7	30	29-SEP-16
Lead (Pb)		20.1	19.0		mg/kg	5.5	40	29-SEP-16
Lithium (Li)		12.2	13.7		mg/kg	12	30	29-SEP-16
Magnesium (Mg)		2950	3160		mg/kg	6.8	30	29-SEP-16
Manganese (Mn)		92.4	97.0		mg/kg	4.9	30	29-SEP-16
Molybdenum (Mo)		0.52	0.51		mg/kg	1.8	40	29-SEP-16
Nickel (Ni)		12.0	12.6		mg/kg	4.4	30	29-SEP-16
Phosphorus (P)		446	432		mg/kg	3.3	30	29-SEP-16
Potassium (K)		290	300		mg/kg	2.1	40	29-SEP-16
Selenium (Se)		<0.20	0.21	RPD-NA	mg/kg	N/A	30	29-SEP-16
Silver (Ag)		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	29-SEP-16
Sodium (Na)		139	151		mg/kg	8.2	40	29-SEP-16
Strontium (Sr)		4.28	4.69		mg/kg	9.1	40	29-SEP-16
Thallium (Tl)		0.112	0.111		mg/kg	0.7	30	29-SEP-16
Tin (Sn)		<2.0	<2.0	RPD-NA	mg/kg	N/A	40	29-SEP-16
Titanium (Ti)		170	210		mg/kg	21	40	29-SEP-16
Uranium (U)		1.13	1.11		mg/kg	1.9	30	29-SEP-16
Vanadium (V)		38.3	39.0		mg/kg	2.0	30	29-SEP-16
Zinc (Zn)		50.9	53.1		mg/kg	4.3	30	29-SEP-16
Zirconium (Zr)		1.4	1.4		mg/kg	3.9	30	29-SEP-16
WG2398491-2 LCS								
Aluminum (Al)			110.9		%		80-120	29-SEP-16
Antimony (Sb)			98.8		%		80-120	29-SEP-16
Arsenic (As)			107.9		%		80-120	29-SEP-16
Barium (Ba)			111.5		%		80-120	29-SEP-16
Beryllium (Be)			100.1		%		80-120	29-SEP-16
Bismuth (Bi)			109.1		%		80-120	29-SEP-16
Boron (B)			94.6		%		80-120	29-SEP-16
Cadmium (Cd)			104.4		%		80-120	29-SEP-16
Calcium (Ca)			101.3		%		80-120	29-SEP-16
Chromium (Cr)			104.5		%		80-120	29-SEP-16
Cobalt (Co)			103.6		%		80-120	29-SEP-16

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3560168								
WG2398491-2 LCS								
Copper (Cu)			102.7		%		80-120	29-SEP-16
Iron (Fe)			112.1		%		80-120	29-SEP-16
Lead (Pb)			107.8		%		80-120	29-SEP-16
Lithium (Li)			89.1		%		80-120	29-SEP-16
Magnesium (Mg)			100.0		%		80-120	29-SEP-16
Manganese (Mn)			108.7		%		80-120	29-SEP-16
Molybdenum (Mo)			104.4		%		80-120	29-SEP-16
Nickel (Ni)			103.0		%		80-120	29-SEP-16
Phosphorus (P)			103.8		%		80-120	29-SEP-16
Potassium (K)			109.7		%		80-120	29-SEP-16
Selenium (Se)			98.8		%		80-120	29-SEP-16
Silver (Ag)			101.6		%		80-120	29-SEP-16
Sodium (Na)			106.2		%		80-120	29-SEP-16
Strontium (Sr)			103.0		%		80-120	29-SEP-16
Thallium (Tl)			105.2		%		80-120	29-SEP-16
Tin (Sn)			101.0		%		80-120	29-SEP-16
Titanium (Ti)			98.8		%		80-120	29-SEP-16
Uranium (U)			113.1		%		80-120	29-SEP-16
Vanadium (V)			106.8		%		80-120	29-SEP-16
Zinc (Zn)			101.0		%		80-120	29-SEP-16
Zirconium (Zr)			101.9		%		80-120	29-SEP-16
WG2398491-1 MB								
Aluminum (Al)			<50		mg/kg		50	29-SEP-16
Antimony (Sb)			<0.10		mg/kg		0.1	29-SEP-16
Arsenic (As)			<0.10		mg/kg		0.1	29-SEP-16
Barium (Ba)			<0.50		mg/kg		0.5	29-SEP-16
Beryllium (Be)			<0.10		mg/kg		0.1	29-SEP-16
Bismuth (Bi)			<0.20		mg/kg		0.2	29-SEP-16
Boron (B)			<5.0		mg/kg		5	29-SEP-16
Cadmium (Cd)			<0.020		mg/kg		0.02	29-SEP-16
Calcium (Ca)			<50		mg/kg		50	29-SEP-16
Chromium (Cr)			<0.50		mg/kg		0.5	29-SEP-16
Cobalt (Co)			<0.10		mg/kg		0.1	29-SEP-16
Copper (Cu)			<0.50		mg/kg		0.5	29-SEP-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3560168								
WG2398491-1 MB								
Iron (Fe)			<50		mg/kg		50	29-SEP-16
Lead (Pb)			<0.50		mg/kg		0.5	29-SEP-16
Lithium (Li)			<2.0		mg/kg		2	29-SEP-16
Magnesium (Mg)			<20		mg/kg		20	29-SEP-16
Manganese (Mn)			<1.0		mg/kg		1	29-SEP-16
Molybdenum (Mo)			<0.10		mg/kg		0.1	29-SEP-16
Nickel (Ni)			<0.50		mg/kg		0.5	29-SEP-16
Phosphorus (P)			<50		mg/kg		50	29-SEP-16
Potassium (K)			<100		mg/kg		100	29-SEP-16
Selenium (Se)			<0.20		mg/kg		0.2	29-SEP-16
Silver (Ag)			<0.10		mg/kg		0.1	29-SEP-16
Sodium (Na)			<50		mg/kg		50	29-SEP-16
Strontium (Sr)			<0.50		mg/kg		0.5	29-SEP-16
Thallium (Tl)			<0.050		mg/kg		0.05	29-SEP-16
Tin (Sn)			<2.0		mg/kg		2	29-SEP-16
Titanium (Ti)			<1.0		mg/kg		1	29-SEP-16
Uranium (U)			<0.050		mg/kg		0.05	29-SEP-16
Vanadium (V)			<0.20		mg/kg		0.2	29-SEP-16
Zinc (Zn)			<2.0		mg/kg		2	29-SEP-16
Zirconium (Zr)			<1.0		mg/kg		1	29-SEP-16
Batch R3561020								
WG2400540-5 CRM		**TILL-1_SOIL**						
Aluminum (Al)			93.8		%		70-130	30-SEP-16
Antimony (Sb)			103.8		%		70-130	30-SEP-16
Arsenic (As)			108.2		%		70-130	30-SEP-16
Barium (Ba)			98.9		%		70-130	30-SEP-16
Beryllium (Be)			93.6		%		70-130	30-SEP-16
Bismuth (Bi)			102.2		%		70-130	30-SEP-16
Boron (B)			126.8		%		50-150	30-SEP-16
Cadmium (Cd)			91.1		%		70-130	30-SEP-16
Calcium (Ca)			91.8		%		70-130	30-SEP-16
Chromium (Cr)			95.6		%		70-130	30-SEP-16
Cobalt (Co)			96.5		%		70-130	30-SEP-16
Copper (Cu)			95.1		%		70-130	30-SEP-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3561020								
WG2400540-5 CRM		**TILL-1_SOIL**						
Iron (Fe)			92.3		%		70-130	30-SEP-16
Lead (Pb)			90.2		%		70-130	30-SEP-16
Lithium (Li)			98.1		%		70-130	30-SEP-16
Magnesium (Mg)			97.9		%		70-130	30-SEP-16
Manganese (Mn)			99.6		%		70-130	30-SEP-16
Molybdenum (Mo)			97.2		%		70-130	30-SEP-16
Nickel (Ni)			97.1		%		70-130	30-SEP-16
Phosphorus (P)			104.9		%		70-130	30-SEP-16
Potassium (K)			93.3		%		70-130	30-SEP-16
Selenium (Se)			98.9		%		70-130	30-SEP-16
Silver (Ag)			106.4		%		70-130	30-SEP-16
Sodium (Na)			96.9		%		70-130	30-SEP-16
Strontium (Sr)			99.3		%		70-130	30-SEP-16
Tin (Sn)			94.3		%		70-130	30-SEP-16
Titanium (Ti)			84.0		%		70-130	30-SEP-16
Uranium (U)			100.4		%		70-130	30-SEP-16
Vanadium (V)			98.0		%		70-130	30-SEP-16
Zinc (Zn)			96.9		%		70-130	30-SEP-16
Zirconium (Zr)			80.3		%		50-150	30-SEP-16
WG2400540-7 DUP		**L1832653-11**						
Aluminum (Al)		6400	7230		mg/kg	12	40	01-OCT-16
Antimony (Sb)		5.14	4.30		mg/kg	18	30	01-OCT-16
Arsenic (As)		35.6	35.0		mg/kg	1.7	30	01-OCT-16
Barium (Ba)		56.4	55.5		mg/kg	1.6	40	01-OCT-16
Beryllium (Be)		0.13	0.13		mg/kg	2.8	30	01-OCT-16
Bismuth (Bi)		0.25	0.23		mg/kg	6.6	30	01-OCT-16
Boron (B)		5.6	<5.0	RPD-NA	mg/kg	N/A	30	01-OCT-16
Cadmium (Cd)		4.43	3.63		mg/kg	20	30	01-OCT-16
Calcium (Ca)		7080	5660		mg/kg	22	30	01-OCT-16
Chromium (Cr)		70.2	37.3	DUP-H	mg/kg	61	30	01-OCT-16
Cobalt (Co)		9.45	8.44		mg/kg	11	30	01-OCT-16
Copper (Cu)		50.8	42.4		mg/kg	18	30	01-OCT-16
Iron (Fe)		12300	13100		mg/kg	6.3	30	01-OCT-16
Lead (Pb)		163	182		mg/kg	11	40	01-OCT-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3561020								
WG2400540-7 DUP		**L1832653-11**						
Lithium (Li)		9.1	9.3		mg/kg	2.6	30	01-OCT-16
Magnesium (Mg)		4650	4680		mg/kg	0.6	30	01-OCT-16
Manganese (Mn)		317	263		mg/kg	19	30	01-OCT-16
Molybdenum (Mo)		1.31	0.77	DUP-H	mg/kg	52	40	01-OCT-16
Nickel (Ni)		36.2	30.9		mg/kg	16	30	01-OCT-16
Phosphorus (P)		694	626		mg/kg	10	30	01-OCT-16
Potassium (K)		1520	1460		mg/kg	4.0	40	01-OCT-16
Selenium (Se)		<0.20	<0.20	RPD-NA	mg/kg	N/A	30	01-OCT-16
Silver (Ag)		0.15	0.12		mg/kg	22	40	01-OCT-16
Sodium (Na)		202	188		mg/kg	7.2	40	01-OCT-16
Strontium (Sr)		20.7	17.0		mg/kg	20	40	01-OCT-16
Thallium (Tl)		0.070	0.069		mg/kg	1.1	30	01-OCT-16
Tin (Sn)		32.5	40.2		mg/kg	21	40	01-OCT-16
Titanium (Ti)		236	264		mg/kg	11	40	01-OCT-16
Uranium (U)		1.06	0.947		mg/kg	12	30	01-OCT-16
Vanadium (V)		20.5	22.0		mg/kg	7.0	30	01-OCT-16
Zinc (Zn)		70.5	66.3		mg/kg	6.1	30	01-OCT-16
Zirconium (Zr)		<1.0	1.1	RPD-NA	mg/kg	N/A	30	01-OCT-16
WG2400540-8 DUP		**L1832653-10**						
Aluminum (Al)		4570	4710		mg/kg	3.1	40	01-OCT-16
Antimony (Sb)		2.88	2.85		mg/kg	1.1	30	01-OCT-16
Arsenic (As)		41.3	42.1		mg/kg	2.0	30	01-OCT-16
Barium (Ba)		40.0	42.6		mg/kg	6.2	40	01-OCT-16
Beryllium (Be)		0.16	0.17		mg/kg	10	30	01-OCT-16
Bismuth (Bi)		<0.20	<0.20	RPD-NA	mg/kg	N/A	30	01-OCT-16
Boron (B)		<5.0	<5.0	RPD-NA	mg/kg	N/A	30	01-OCT-16
Cadmium (Cd)		0.134	0.128		mg/kg	4.6	30	01-OCT-16
Calcium (Ca)		8610	9000		mg/kg	4.4	30	01-OCT-16
Chromium (Cr)		15.0	14.8		mg/kg	1.2	30	01-OCT-16
Cobalt (Co)		4.00	4.12		mg/kg	3.0	30	01-OCT-16
Copper (Cu)		20.3	21.3		mg/kg	4.9	30	01-OCT-16
Iron (Fe)		6990	7130		mg/kg	2.0	30	01-OCT-16
Lead (Pb)		5.40	5.49		mg/kg	1.7	40	01-OCT-16
Lithium (Li)		4.9	5.3		mg/kg	7.9	30	01-OCT-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3561020								
WG2400540-8 DUP		**L1832653-10**						
Magnesium (Mg)		2880	2990		mg/kg	3.5	30	01-OCT-16
Manganese (Mn)		163	173		mg/kg	6.2	30	01-OCT-16
Molybdenum (Mo)		0.39	0.38		mg/kg	3.5	40	01-OCT-16
Nickel (Ni)		11.4	11.7		mg/kg	2.8	30	01-OCT-16
Phosphorus (P)		406	443		mg/kg	8.9	30	01-OCT-16
Potassium (K)		530	540		mg/kg	1.5	40	01-OCT-16
Selenium (Se)		<0.20	<0.20	RPD-NA	mg/kg	N/A	30	01-OCT-16
Silver (Ag)		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	01-OCT-16
Sodium (Na)		131	133		mg/kg	1.7	40	01-OCT-16
Strontium (Sr)		24.1	25.4		mg/kg	5.3	40	01-OCT-16
Thallium (Tl)		<0.050	<0.050	RPD-NA	mg/kg	N/A	30	01-OCT-16
Tin (Sn)		<2.0	<2.0	RPD-NA	mg/kg	N/A	40	01-OCT-16
Titanium (Ti)		202	207		mg/kg	2.6	40	01-OCT-16
Uranium (U)		1.01	1.00		mg/kg	0.4	30	01-OCT-16
Vanadium (V)		14.2	14.6		mg/kg	2.7	30	01-OCT-16
Zinc (Zn)		32.1	32.7		mg/kg	1.9	30	01-OCT-16
Zirconium (Zr)		2.3	2.0		mg/kg	11	30	01-OCT-16
WG2400540-3 LCS								
Aluminum (Al)			109.1		%		80-120	30-SEP-16
Antimony (Sb)			102.2		%		80-120	30-SEP-16
Arsenic (As)			105.9		%		80-120	30-SEP-16
Barium (Ba)			105.2		%		80-120	30-SEP-16
Beryllium (Be)			102.1		%		80-120	30-SEP-16
Bismuth (Bi)			104.0		%		80-120	30-SEP-16
Boron (B)			103.8		%		80-120	30-SEP-16
Cadmium (Cd)			102.1		%		80-120	30-SEP-16
Calcium (Ca)			100.9		%		80-120	30-SEP-16
Chromium (Cr)			103.2		%		80-120	30-SEP-16
Cobalt (Co)			101.9		%		80-120	30-SEP-16
Copper (Cu)			100.1		%		80-120	30-SEP-16
Iron (Fe)			100.2		%		80-120	30-SEP-16
Lead (Pb)			96.9		%		80-120	30-SEP-16
Lithium (Li)			91.7		%		80-120	30-SEP-16
Magnesium (Mg)			107.5		%		80-120	30-SEP-16

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3561020								
WG2400540-3 LCS								
Manganese (Mn)			108.1		%		80-120	30-SEP-16
Molybdenum (Mo)			105.9		%		80-120	30-SEP-16
Nickel (Ni)			102.9		%		80-120	30-SEP-16
Phosphorus (P)			118.0		%		80-120	30-SEP-16
Potassium (K)			110.5		%		80-120	30-SEP-16
Selenium (Se)			98.0		%		80-120	30-SEP-16
Silver (Ag)			100.6		%		80-120	30-SEP-16
Sodium (Na)			103.6		%		80-120	30-SEP-16
Strontium (Sr)			109.1		%		80-120	30-SEP-16
Thallium (Tl)			92.8		%		80-120	30-SEP-16
Tin (Sn)			102.9		%		80-120	30-SEP-16
Titanium (Ti)			100.2		%		80-120	30-SEP-16
Uranium (U)			98.2		%		80-120	30-SEP-16
Vanadium (V)			104.9		%		80-120	30-SEP-16
Zinc (Zn)			99.3		%		80-120	30-SEP-16
Zirconium (Zr)			100.7		%		80-120	30-SEP-16
WG2400540-4 LCS								
Aluminum (Al)			105.9		%		80-120	30-SEP-16
Antimony (Sb)			99.3		%		80-120	30-SEP-16
Arsenic (As)			104.4		%		80-120	30-SEP-16
Barium (Ba)			103.8		%		80-120	30-SEP-16
Beryllium (Be)			107.4		%		80-120	30-SEP-16
Bismuth (Bi)			102.7		%		80-120	30-SEP-16
Boron (B)			108.7		%		80-120	30-SEP-16
Cadmium (Cd)			98.3		%		80-120	30-SEP-16
Calcium (Ca)			101.0		%		80-120	30-SEP-16
Chromium (Cr)			98.9		%		80-120	30-SEP-16
Cobalt (Co)			99.2		%		80-120	30-SEP-16
Copper (Cu)			97.3		%		80-120	30-SEP-16
Iron (Fe)			96.1		%		80-120	30-SEP-16
Lead (Pb)			97.1		%		80-120	30-SEP-16
Lithium (Li)			107.2		%		80-120	30-SEP-16
Magnesium (Mg)			106.0		%		80-120	30-SEP-16
Manganese (Mn)			105.3		%		80-120	30-SEP-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3561020								
WG2400540-4 LCS								
Molybdenum (Mo)			109.0		%		80-120	30-SEP-16
Nickel (Ni)			100.1		%		80-120	30-SEP-16
Phosphorus (P)			101.4		%		80-120	30-SEP-16
Potassium (K)			106.1		%		80-120	30-SEP-16
Selenium (Se)			96.7		%		80-120	30-SEP-16
Silver (Ag)			96.7		%		80-120	30-SEP-16
Sodium (Na)			105.9		%		80-120	30-SEP-16
Strontium (Sr)			109.9		%		80-120	30-SEP-16
Thallium (Tl)			91.8		%		80-120	30-SEP-16
Tin (Sn)			101.4		%		80-120	30-SEP-16
Titanium (Ti)			97.6		%		80-120	30-SEP-16
Uranium (U)			97.2		%		80-120	30-SEP-16
Vanadium (V)			100.7		%		80-120	30-SEP-16
Zinc (Zn)			96.8		%		80-120	30-SEP-16
Zirconium (Zr)			104.1		%		80-120	30-SEP-16
WG2400540-1 MB								
Aluminum (Al)			<50		mg/kg		50	30-SEP-16
Antimony (Sb)			<0.10		mg/kg		0.1	30-SEP-16
Arsenic (As)			<0.10		mg/kg		0.1	30-SEP-16
Barium (Ba)			<0.50		mg/kg		0.5	30-SEP-16
Beryllium (Be)			<0.10		mg/kg		0.1	30-SEP-16
Bismuth (Bi)			<0.20		mg/kg		0.2	30-SEP-16
Boron (B)			<5.0		mg/kg		5	30-SEP-16
Cadmium (Cd)			<0.020		mg/kg		0.02	30-SEP-16
Calcium (Ca)			<50		mg/kg		50	30-SEP-16
Chromium (Cr)			<0.50		mg/kg		0.5	30-SEP-16
Cobalt (Co)			<0.10		mg/kg		0.1	30-SEP-16
Copper (Cu)			<0.50		mg/kg		0.5	30-SEP-16
Iron (Fe)			<50		mg/kg		50	30-SEP-16
Lead (Pb)			<0.50		mg/kg		0.5	30-SEP-16
Lithium (Li)			<2.0		mg/kg		2	30-SEP-16
Magnesium (Mg)			<20		mg/kg		20	30-SEP-16
Manganese (Mn)			<1.0		mg/kg		1	30-SEP-16
Molybdenum (Mo)			<0.10		mg/kg		0.1	30-SEP-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3561020								
WG2400540-1 MB								
Nickel (Ni)			<0.50		mg/kg		0.5	30-SEP-16
Phosphorus (P)			<50		mg/kg		50	30-SEP-16
Potassium (K)			<100		mg/kg		100	30-SEP-16
Selenium (Se)			<0.20		mg/kg		0.2	30-SEP-16
Silver (Ag)			<0.10		mg/kg		0.1	30-SEP-16
Sodium (Na)			<50		mg/kg		50	30-SEP-16
Strontium (Sr)			<0.50		mg/kg		0.5	30-SEP-16
Thallium (Tl)			<0.050		mg/kg		0.05	30-SEP-16
Tin (Sn)			<2.0		mg/kg		2	30-SEP-16
Titanium (Ti)			<1.0		mg/kg		1	30-SEP-16
Uranium (U)			<0.050		mg/kg		0.05	30-SEP-16
Vanadium (V)			<0.20		mg/kg		0.2	30-SEP-16
Zirconium (Zr)			<1.0		mg/kg		1	30-SEP-16
WG2400540-2 MB								
Aluminum (Al)			<50		mg/kg		50	30-SEP-16
Antimony (Sb)			<0.10		mg/kg		0.1	30-SEP-16
Arsenic (As)			<0.10		mg/kg		0.1	30-SEP-16
Barium (Ba)			<0.50		mg/kg		0.5	30-SEP-16
Beryllium (Be)			<0.10		mg/kg		0.1	30-SEP-16
Bismuth (Bi)			<0.20		mg/kg		0.2	30-SEP-16
Boron (B)			<5.0		mg/kg		5	30-SEP-16
Cadmium (Cd)			<0.020		mg/kg		0.02	30-SEP-16
Calcium (Ca)			<50		mg/kg		50	30-SEP-16
Chromium (Cr)			<0.50		mg/kg		0.5	30-SEP-16
Cobalt (Co)			<0.10		mg/kg		0.1	30-SEP-16
Copper (Cu)			<0.50		mg/kg		0.5	30-SEP-16
Iron (Fe)			<50		mg/kg		50	30-SEP-16
Lead (Pb)			<0.50		mg/kg		0.5	30-SEP-16
Lithium (Li)			<2.0		mg/kg		2	30-SEP-16
Magnesium (Mg)			<20		mg/kg		20	30-SEP-16
Manganese (Mn)			<1.0		mg/kg		1	30-SEP-16
Molybdenum (Mo)			<0.10		mg/kg		0.1	30-SEP-16
Nickel (Ni)			<0.50		mg/kg		0.5	30-SEP-16
Phosphorus (P)			<50		mg/kg		50	30-SEP-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-ED	**Soil**							
Batch R3561020								
WG2400540-2 MB								
Potassium (K)			<100		mg/kg		100	30-SEP-16
Selenium (Se)			<0.20		mg/kg		0.2	30-SEP-16
Silver (Ag)			<0.10		mg/kg		0.1	30-SEP-16
Sodium (Na)			<50		mg/kg		50	30-SEP-16
Strontium (Sr)			<0.50		mg/kg		0.5	30-SEP-16
Thallium (Tl)			<0.050		mg/kg		0.05	30-SEP-16
Tin (Sn)			<2.0		mg/kg		2	30-SEP-16
Titanium (Ti)			<1.0		mg/kg		1	30-SEP-16
Uranium (U)			<0.050		mg/kg		0.05	30-SEP-16
Vanadium (V)			<0.20		mg/kg		0.2	30-SEP-16
Zinc (Zn)			<2.0		mg/kg		2	30-SEP-16
Zirconium (Zr)			<1.0		mg/kg		1	30-SEP-16

Quality Control Report

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES
Environmental Division

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM
CANADA TOLL FREE 1-800-668-9878 WWW.ALSENVIRO.COM

DATE: September 21, 2016		**LAB WORK ORDER #**
REPORT TO:	**REPORT DISTRIBUTION:** ALL FINAL RESULTS WILL BE EMAILED	**SERVICE REQUESTED**
COMPANY: Golder Associates Ltd.	EMAIL X FAX___	X REGULAR SERVICE (DEFAULT)
CONTACT: Steven Fiddler	EMAIL 1: sfiddler@golder.com	RUSH SERVICE
ADDRESS: 16820 107 Avenue, Edmonton, Alberta	EMAIL 2: CSMdataquality@golder.com	EMERGENCY SERVICE
T5P 4C3	SELECT: pdf X digital X MDD/EDD X	**ANALYSIS REQUEST**
PHONE: (780) 483-3499 FAX: (780)-984-6600	**INDICATE BOTTLES: FILTERED/PRESERVED (F /P)**	
INVOICE TO: SAME Y / N	JOB # **13-1377-0044-23000-23002**	
COMPANY: Golder Associates Ltd.		
CONTACT: Steven Fiddler		
ADDRESS: 16820 107 Avenue, Edmonton, Alberta		
T5P 4C3	QUOTE # **Q57921 and Q58104**	
PHONE: (780) 483-3499 FAX: (780) 984-6600		

L1832653

Golder SAMPLE ID number	SAMPLED BY / DATE / TIME	SAMPLE TYPE	SAMPLE VOLUME (mL)	Total Metals - CCME										HAZARDOUS ? (Y/N)	NUMBER OF CONTAINERS	HIGHLY CONTAMINATED ? (Y/N)	LAB SAMPLE #
16-LongLake-SE-1		sediment	50	x										N	1	N	
16-LongLake-SE-2		sediment	50	x										N	1	N	
16-LongLake-SE-3		sediment	50	x										N	1	N	
16-LongLake-SE-4		sediment	50	x										N	1	N	
16-LongLake-SE-5		sediment	50	x										N	1	N	
16-LongLake-SE-6		sediment	50	x										N	1	N	
16-LongLake-SE-7		sediment	50	x										N	1	N	
16-LongLake-SE-8		sediment	50	x										N	1	N	
16-LongLake-SE-9		sediment	50	x										N	1	N	
16-LongLake-SE-10		sediment	50	x										N	1	N	
16-LongLake-SE-11		sediment	50	x										N	1	N	
16-LongLake-S-1	TM/EN/Sep 21/16/	soil	50	x										N	1	N	
16-LongLake-S-2		soil	50	x										N	1	N	
16-LongLake-S-3		soil	50	x										N	1	N	
16-LongLake-S-4		soil	50	x										N	1	N	
16-LongLake-S-5		soil	50	x										N	1	N	
16-LongLake-S-6		soil	50	x										N	1	N	
16-LongLake-S-7		soil	50	x										N	1	N	
16-LongLake-S-8		soil	50	x										N	1	N	
16-LongLake-S-9		soil	50	x										N	1	N	

16-LongLake-S-10			soil	50	x													N	1	N			
16-LongLake-~~S-11~~ dup			soil	50	x													N	1	N			
16-LongLake-SW-1			e water - grab s	50	x													N	1	N			
16-LongLake-SW-2			e water - grab s	50	x													N	1	N			
16-LongLake-SW-3			e water - grab s	50	x													N	1	N			
16-LongLake-SW-4			e water - grab s	50	x													N	1	N			
16-LongLake-SW-5			e water - grab s	50	x													N	1	N			
16-LongLake-SW-6			e water - grab s	50	x													N	1	N			
16-LongLake-SW-7			e water - grab s	50	x													N	1	N			
16-LongLake-SW-8			e water - grab s	50	x													N	1	N			
16-LongLake-SW-9			e water - grab s	50	x													N	1	N			
16-LongLake-SW-10			e water - grab s	50	x													N	1	N			
16-LongLake-SW-11			e water - grab s	50	x													N	1	N			

NOTES & CONDITIONS:

1. Quote number must be provided to ensure proper pricing.

2. Turnaround times will vary dependent on complexity of analysis & Lab workload at time of submission. Please contact the Lab to confirm turnaround time.

3. All hazardous samples submitted must be labeled to comply with WHMIS and TDG regulations. This must include the nature of the hazard, as well as a contact name & phone number that the Lab can contact for further information.

4. Failure to properly complete all portions of this form may delay analysis.

GUIDELINES/REGULATIONS	SPECIAL INSTRUCTIONS / NATURE OF HAZARDOUS MATERIAL	SAMPLE CONDITION		
	Stored on Ice. Please contact Steven Fiddler upon sample receipt to confirm analysis.		FROZEN	MEAN TEMPERATURE
		X	COLD	
			AMBIENT	

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	SAMPLE CONDITION ACCEPTABLE UPON RECEIPT ? (Y/N)
TM [signature]	Sept 21/16 16:45	AT	21/Sep/16 4:45pm	Y
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	

REFER TO BACK FOR SAMPLING & PACKAGE INFORMATION

WHITE - FINAL REPORT COPY, YELLOW - LAB COPY, PINK - GOLDER COPY

REVISED July 2013

L1832653-COFC

GOLDER ASSOCIATES LTD
ATTN: Steven Fiddler
16820 107 Ave NW
EDMONTON AB T5P 4C3

Date Received: 18-OCT-16
Report Date: 15-DEC-16 09:21 (MT)
Version: FINAL REV. 2

Client Phone: 780-483-3499

Certificate of Analysis

Lab Work Order #: L1842753

Project P.O. #: NOT SUBMITTED
Job Reference: 13-1377-0044-23000-23003
C of C Numbers:
Legal Site Desc:

Comments:
15-DEC-2016 REVISED REPORT: L1842753-18 SAMPLE ID EDIT AND COC SCAN CORRECTED

Jessica Spira, Env. Tech. DIPL
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-1 16-GIANT-CB-01							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	51.1		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0125		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0061		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	0.0011		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	261		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.151		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	1.23		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	59.1		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	7.1		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0064		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	5610		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0301		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.621		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.252		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	2.60		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	304		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.249		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1770		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	217		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.059		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	1.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	838		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	3450		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	3.95		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	10.6		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.0030		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0326		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.59		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	11.5		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	128		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.0739		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	0.600		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	28.9		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	0.0025		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	3.48		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0031		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	2740		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0147		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.304		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-1 16-GIANT-CB-01							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.123		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	1.27		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	148		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.122		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	0.22		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	864		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	106		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0291		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.587		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	410		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1690		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	1.93		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	0.013		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	4.6		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	5.15		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00149		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0159		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.290		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	5.60		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	0.040		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-2 16-GIANT-CB-02							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	51.5		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0163		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0079		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Silver (Ag)-Total	0.0017		0.0010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	119		2.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Antimony (Sb)-Total	0.391		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	3.16		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Barium (Ba)-Total	32.1		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Boron (B)-Total	13.1		1.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Cadmium (Cd)-Total	0.0245		0.0050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Calcium (Ca)-Total	7020		20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Cesium (Cs)-Total	0.0198		0.0050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Chromium (Cr)-Total	0.350		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Cobalt (Co)-Total	0.147		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Copper (Cu)-Total	2.24		0.10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Iron (Fe)-Total	199		3.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	0.318		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	29-NOV-16	R3607306
Magnesium (Mg)-Total	1760		2.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Manganese (Mn)-Total	464		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Molybdenum (Mo)-Total	0.026		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-2 16-GIANT-CB-02							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.37		0.20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Phosphorus (P)-Total	660		10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Potassium (K)-Total	3110		20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Rubidium (Rb)-Total	1.76		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Strontium (Sr)-Total	17.4		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Uranium (U)-Total	0.0153		0.0020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Vanadium (V)-Total	0.35		0.10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Zinc (Zn)-Total	14.8		0.50	mg/kg	23-NOV-16	29-NOV-16	R3607306
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	57.7		0.40	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Antimony (Sb)-Total	0.190		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	1.54		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Barium (Ba)-Total	15.6		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Boron (B)-Total	6.38		0.20	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Cadmium (Cd)-Total	0.0119		0.0010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Calcium (Ca)-Total	3410		4.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Cesium (Cs)-Total	0.0096		0.0010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Chromium (Cr)-Total	0.170		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Cobalt (Co)-Total	0.0715		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Copper (Cu)-Total	1.09		0.020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Iron (Fe)-Total	96.4		0.60	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	0.154		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Lithium (Li)-Total	0.18		0.10	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Magnesium (Mg)-Total	856		0.40	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Manganese (Mn)-Total	225		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Molybdenum (Mo)-Total	0.0127		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Nickel (Ni)-Total	0.177		0.040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Phosphorus (P)-Total	321		2.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Potassium (K)-Total	1510		4.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Rubidium (Rb)-Total	0.854		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Strontium (Sr)-Total	8.44		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Thallium (Tl)-Total	0.00089		0.00040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Uranium (U)-Total	0.00745		0.00040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Vanadium (V)-Total	0.171		0.020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Zinc (Zn)-Total	7.18		0.10	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
L1842753-3 16-GIANT-CB-03							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-3 16-GIANT-CB-03							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	51.2		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0161		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0079		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	0.0013		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	121		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.323		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	1.95		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	35.0		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	10.8		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	6460		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0174		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.291		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.116		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	2.34		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	199		3.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	0.276		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	2200		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	112		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.050		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.42		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	682		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	2750		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	0.566		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	14.3		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0219		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.35		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	7.47		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	59.1		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.158		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	0.950		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	17.1		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	5.26		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0021		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	3150		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0085		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.142		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-3 16-GIANT-CB-03							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0567		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	1.14		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	97.0		0.60	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	0.135		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	0.14		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1080		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	54.5		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0246		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.203		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	333		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1340		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	0.276		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	6.97		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00097		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0107		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.169		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	3.64		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	0.040		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-4 16-GIANT-CB-04							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	60.7		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0150		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0059		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	0.0011		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	114		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.331		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	1.89		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	33.5		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	10.7		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	6270		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0168		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.290		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.114		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	2.31		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	179		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.256		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	2120		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	109		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.049		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-4 16-GIANT-CB-04							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.41		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	664		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	2640		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	0.576		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	14.1		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.0021		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0198		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.32		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	7.24		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	44.8		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.130		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	0.742		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	13.2		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	4.21		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0016		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	2460		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0066		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.114		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.0448		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	0.906		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	70.5		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.100		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	0.11		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	833		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	42.6		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0193		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.163		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	261		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1040		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	0.226		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	7.1		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	5.52		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00081		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.00777		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.126		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	2.85		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	0.043		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-5 16-GIANT-CB-05							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-5 16-GIANT-CB-05							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	51.0		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0160		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0078		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	0.0020		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	246		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.612		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	5.56		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	52.9		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	12.7		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0098		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	6570		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0168		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.428		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.392		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	2.44		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	288		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.461		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	0.70		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1380		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	1440		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.030		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	1.26		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	745		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	3270		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	1.08		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	8.72		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.0026		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0412		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.48		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	9.90		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	121		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.300		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	2.72		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	25.9		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	0.0049		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	6.22		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0048		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	3220		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0083		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.210		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-5 16-GIANT-CB-05							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.192		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	1.20		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	141		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.226		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	0.34		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	679		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	707		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0145		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.617		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	366		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1600		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	0.529		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	0.020		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	4.28		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00126		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0202		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.238		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	4.86		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-6 16-GIANT-CR-06							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	50.6		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0191		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0094		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	0.0056		0.0050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Silver (Ag)-Total	0.0028		0.0010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	217		2.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Antimony (Sb)-Total	0.643		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	4.30		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Barium (Ba)-Total	54.7		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Boron (B)-Total	15.3		1.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Cadmium (Cd)-Total	0.0097		0.0050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Calcium (Ca)-Total	6910		20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Cesium (Cs)-Total	0.0092		0.0050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Chromium (Cr)-Total	0.282		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Cobalt (Co)-Total	0.427		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Copper (Cu)-Total	2.51		0.10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Iron (Fe)-Total	212		3.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	0.663		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Lithium (Li)-Total	0.90		0.50	mg/kg	23-NOV-16	29-NOV-16	R3607306
Magnesium (Mg)-Total	1360		2.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Manganese (Mn)-Total	1420		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Molybdenum (Mo)-Total	0.028		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-6 16-GIANT-CR-06							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	1.60		0.20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Phosphorus (P)-Total	838		10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Potassium (K)-Total	3210		20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Rubidium (Rb)-Total	0.897		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Strontium (Sr)-Total	10.8		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Uranium (U)-Total	0.0182		0.0020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Vanadium (V)-Total	0.33		0.10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Zinc (Zn)-Total	11.8		0.50	mg/kg	23-NOV-16	29-NOV-16	R3607306
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	107		0.40	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Antimony (Sb)-Total	0.318		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	2.13		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Barium (Ba)-Total	27.1		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Beryllium (Be)-Total	0.0035		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Boron (B)-Total	7.55		0.20	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Cadmium (Cd)-Total	0.0048		0.0010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Calcium (Ca)-Total	3420		4.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Cesium (Cs)-Total	0.0046		0.0010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Chromium (Cr)-Total	0.139		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Cobalt (Co)-Total	0.211		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Copper (Cu)-Total	1.24		0.020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Iron (Fe)-Total	105		0.60	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	0.328		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Lithium (Li)-Total	0.45		0.10	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Magnesium (Mg)-Total	672		0.40	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Manganese (Mn)-Total	702		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Molybdenum (Mo)-Total	0.0137		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Nickel (Ni)-Total	0.788		0.040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Phosphorus (P)-Total	414		2.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Potassium (K)-Total	1580		4.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Rubidium (Rb)-Total	0.443		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Selenium (Se)-Total	0.025		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Strontium (Sr)-Total	5.33		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Thallium (Tl)-Total	0.00070		0.00040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Uranium (U)-Total	0.00900		0.00040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Vanadium (V)-Total	0.162		0.020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Zinc (Zn)-Total	5.83		0.10	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
L1842753-7 16-GIANT-CR-07							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-7 16-GIANT-CR-07							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	56.9		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0154		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0067		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Silver (Ag)-Total	0.0013		0.0010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	167		2.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Antimony (Sb)-Total	0.356		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	3.89		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Barium (Ba)-Total	41.2		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Boron (B)-Total	23.8		1.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Cadmium (Cd)-Total	0.0196		0.0050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Calcium (Ca)-Total	5200		20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Cesium (Cs)-Total	0.0107		0.0050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Chromium (Cr)-Total	0.251		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Cobalt (Co)-Total	0.257		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Copper (Cu)-Total	3.07		0.10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Iron (Fe)-Total	188		3.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	0.246		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Lithium (Li)-Total	0.61		0.50	mg/kg	23-NOV-16	29-NOV-16	R3607306
Magnesium (Mg)-Total	1640		2.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Manganese (Mn)-Total	925		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Molybdenum (Mo)-Total	0.028		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Nickel (Ni)-Total	1.28		0.20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Phosphorus (P)-Total	1130		10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Potassium (K)-Total	4560		20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Rubidium (Rb)-Total	0.842		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Strontium (Sr)-Total	8.13		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Uranium (U)-Total	0.0136		0.0020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Vanadium (V)-Total	0.30		0.10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Zinc (Zn)-Total	10.7		0.50	mg/kg	23-NOV-16	29-NOV-16	R3607306
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	71.9		0.40	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Antimony (Sb)-Total	0.154		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	1.68		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Barium (Ba)-Total	17.7		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Boron (B)-Total	10.3		0.20	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Cadmium (Cd)-Total	0.0084		0.0010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Calcium (Ca)-Total	2240		4.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Cesium (Cs)-Total	0.0046		0.0010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Chromium (Cr)-Total	0.108		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-7 16-GIANT-CR-07							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.111		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Copper (Cu)-Total	1.33		0.020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Iron (Fe)-Total	80.9		0.60	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	0.106		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Lithium (Li)-Total	0.26		0.10	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Magnesium (Mg)-Total	705		0.40	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Manganese (Mn)-Total	399		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Molybdenum (Mo)-Total	0.0119		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Nickel (Ni)-Total	0.552		0.040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Phosphorus (P)-Total	486		2.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Potassium (K)-Total	1960		4.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Rubidium (Rb)-Total	0.363		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Selenium (Se)-Total	0.014		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Strontium (Sr)-Total	3.51		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Thallium (Tl)-Total	0.00071		0.00040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Uranium (U)-Total	0.00584		0.00040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Vanadium (V)-Total	0.131		0.020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Zinc (Zn)-Total	4.63		0.10	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
L1842753-8 16-GIANT-CR-08							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	57.7		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0083		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0035		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	0.0015		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	128		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.229		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	2.53		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	76.8		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	15.6		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0129		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	4150		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0240		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.290		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.238		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	2.71		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	151		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.197		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1050		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	1930		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.027		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-8 16-GIANT-CR-08							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	1.39		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	659		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	2980		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	5.30		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	8.19		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0258		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.26		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	8.42		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	54.0		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.0970		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	1.07		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	32.5		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	0.0033		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	6.61		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0054		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	1750		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0102		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.123		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.101		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	1.15		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	63.8		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.0835		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	443		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	818		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0115		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.589		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	279		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1260		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	2.24		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	0.014		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	3.47		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00071		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0109		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.112		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	3.56		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-9 16-GIANT-CR-09							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-9 16-GIANT-CR-09							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	57.3		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0126		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0054		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	128		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.140		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	1.80		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	68.1		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	0.011		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	18.3		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0080		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	5670		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0226		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.463		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.103		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	3.06		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	108		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.142		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1570		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	2230		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.041		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	1.97		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	613		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	3000		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	4.63		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	0.142		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	13.1		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.0140		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.101		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.19		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	4.39		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	54.7		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.0599		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	0.768		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	29.1		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	0.0046		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	7.82		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0034		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	2420		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0097		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.198		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-9 16-GIANT-CR-09							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0439		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	1.31		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	46.2		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.0608		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	673		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	953		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0174		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.842		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	262		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1280		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	1.98		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	0.061		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	5.61		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00597		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0430		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.083		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	1.88		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	0.062		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-10 16-GIANT-CB-15							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	66.4		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0073		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0024		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	79.9		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.087		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	1.13		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	54.0		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	7.3		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0064		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	4840		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0122		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.112		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.087		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	2.29		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	48.6		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.079		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	864		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	404		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.026		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-10 16-GIANT-CB-15							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	1.22		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	772		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	3100		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	5.61		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	12.6		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0035		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	5.24		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	26.9		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.0293		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	0.381		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	18.2		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	2.47		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0022		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	1630		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0041		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.038		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.0294		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	0.771		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	16.3		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.0265		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	290		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	136		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0088		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.411		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	260		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1040		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	1.89		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	4.25		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.00116		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.025		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	1.76		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-11 16-GIANT-CB-10							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-11 16-GIANT-CB-10							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	59.1		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0216		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0088		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	0.0223		0.0050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Silver (Ag)-Total	0.0091		0.0010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	349		2.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Antimony (Sb)-Total	1.87		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	12.4		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Barium (Ba)-Total	47.7		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Boron (B)-Total	26.0		1.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Cadmium (Cd)-Total	0.0904		0.0050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Calcium (Ca)-Total	8870		20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Cesium (Cs)-Total	0.0261		0.0050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Chromium (Cr)-Total	0.724		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Cobalt (Co)-Total	1.32		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Copper (Cu)-Total	6.17		0.10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Iron (Fe)-Total	529		3.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	1.35		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	29-NOV-16	R3607306
Magnesium (Mg)-Total	1420		2.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Manganese (Mn)-Total	349		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Molybdenum (Mo)-Total	0.026		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Nickel (Ni)-Total	3.09		0.20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Phosphorus (P)-Total	920		10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Potassium (K)-Total	4390		20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Rubidium (Rb)-Total	4.23		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Selenium (Se)-Total	0.102		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Strontium (Sr)-Total	11.4		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Thallium (Tl)-Total	0.0053		0.0020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Uranium (U)-Total	0.0173		0.0020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Vanadium (V)-Total	0.80		0.10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Zinc (Zn)-Total	17.9		0.50	mg/kg	23-NOV-16	29-NOV-16	R3607306
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	143		0.40	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Antimony (Sb)-Total	0.765		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	5.06		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Barium (Ba)-Total	19.5		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Boron (B)-Total	10.7		0.20	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Cadmium (Cd)-Total	0.0370		0.0010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Calcium (Ca)-Total	3630		4.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Cesium (Cs)-Total	0.0107		0.0010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Chromium (Cr)-Total	0.296		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-11 16-GIANT-CB-10							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.542		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Copper (Cu)-Total	2.52		0.020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Iron (Fe)-Total	216		0.60	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	0.552		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Lithium (Li)-Total	0.16		0.10	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Magnesium (Mg)-Total	579		0.40	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Manganese (Mn)-Total	143		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Molybdenum (Mo)-Total	0.0106		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Nickel (Ni)-Total	1.26		0.040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Phosphorus (P)-Total	376		2.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Potassium (K)-Total	1800		4.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Rubidium (Rb)-Total	1.73		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Selenium (Se)-Total	0.042		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Strontium (Sr)-Total	4.66		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Thallium (Tl)-Total	0.00217		0.00040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Uranium (U)-Total	0.00708		0.00040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Vanadium (V)-Total	0.326		0.020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Zinc (Zn)-Total	7.32		0.10	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Zirconium (Zr)-Total	0.068		0.040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
L1842753-12 16-GIANT-CB-11							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	67.9		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0127		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0041		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Silver (Ag)-Total	0.0010		0.0010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	181		2.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Antimony (Sb)-Total	0.549		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	4.30		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Barium (Ba)-Total	64.5		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Boron (B)-Total	14.7		1.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Cadmium (Cd)-Total	0.0077		0.0050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Calcium (Ca)-Total	5150		20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Cesium (Cs)-Total	0.0118		0.0050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Chromium (Cr)-Total	0.369		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Cobalt (Co)-Total	0.326		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Copper (Cu)-Total	1.79		0.10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Iron (Fe)-Total	207		3.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	0.395		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	29-NOV-16	R3607306
Magnesium (Mg)-Total	946		2.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Manganese (Mn)-Total	973		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Molybdenum (Mo)-Total	0.026		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-12 16-GIANT-CB-11							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.97		0.20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Phosphorus (P)-Total	782		10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Potassium (K)-Total	3490		20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Rubidium (Rb)-Total	2.18		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Strontium (Sr)-Total	4.83		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Uranium (U)-Total	0.0124		0.0020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Vanadium (V)-Total	0.33		0.10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Zinc (Zn)-Total	13.4		0.50	mg/kg	23-NOV-16	29-NOV-16	R3607306
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	58.3		0.40	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Antimony (Sb)-Total	0.176		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	1.38		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Barium (Ba)-Total	20.7		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Boron (B)-Total	4.73		0.20	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Cadmium (Cd)-Total	0.0025		0.0010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Calcium (Ca)-Total	1650		4.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Cesium (Cs)-Total	0.0038		0.0010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Chromium (Cr)-Total	0.119		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Cobalt (Co)-Total	0.105		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Copper (Cu)-Total	0.577		0.020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Iron (Fe)-Total	66.6		0.60	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	0.127		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Magnesium (Mg)-Total	304		0.40	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Manganese (Mn)-Total	313		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Molybdenum (Mo)-Total	0.0084		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Nickel (Ni)-Total	0.313		0.040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Phosphorus (P)-Total	251		2.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Potassium (K)-Total	1120		4.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Rubidium (Rb)-Total	0.700		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Selenium (Se)-Total	0.011		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Strontium (Sr)-Total	1.55		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Thallium (Tl)-Total	0.00051		0.00040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Uranium (U)-Total	0.00397		0.00040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Vanadium (V)-Total	0.106		0.020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Zinc (Zn)-Total	4.31		0.10	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
L1842753-13 16-GIANT-CB-12							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-13 16-GIANT-CB-12							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	54.6		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0151		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0069		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	0.0060		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	0.0027		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	150		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.344		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	3.12		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	47.2		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	8.5		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0161		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	5950		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0316		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.296		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.579		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	2.91		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	204		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.431		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1350		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	319		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.021		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	1.80		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	671		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	2800		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	1.84		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	0.051		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	7.18		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.0077		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0125		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.34		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	8.81		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	68.1		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.156		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	1.42		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	21.5		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	0.0024		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	3.86		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0073		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	2700		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0144		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.134		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-13 16-GIANT-CB-12							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.263		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	1.32		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	92.7		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.196		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	0.11		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	613		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	145		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0094		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.819		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	305		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1270		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	0.834		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	0.023		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	4.7		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	3.26		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00349		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.00570		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.154		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	4.00		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	0.044		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-15 16-GIANT-CB-13							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	55.0		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0193		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0087		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	0.0056		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	0.0025		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	224		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.292		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	3.14		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	67.0		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	7.7		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0091		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	5770		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0153		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.386		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.510		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	2.55		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	237		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.444		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	1.14		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1350		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	1220		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.031		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-15 16-GIANT-CB-13							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	1.73		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	815		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	3390		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	2.21		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	6.35		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0197		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.46		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	6.53		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	101		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.132		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	1.41		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	30.2		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	0.0039		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	3.48		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0041		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	2600		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0069		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.174		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.230		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	1.15		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	107		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.200		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	0.51		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	607		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	551		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0140		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.778		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	367		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1530		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	0.997		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	0.013		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	5.4		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	2.86		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00090		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.00884		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.207		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	2.94		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-16 16-GIANT-CB-14							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-16 16-GIANT-CB-14							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	51.3		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0127		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0062		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	0.0024		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	192		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.515		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	4.79		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	92.4		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	8.5		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0062		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	7320		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0309		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.514		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.366		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	3.26		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	294		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.499		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	0.79		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1540		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	101		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.021		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	1.19		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	514		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	2670		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	2.21		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	10.8		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.0081		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0166		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.54		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	6.89		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	93.6		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.251		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	2.33		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	45.0		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	0.0032		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	4.15		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0030		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	3560		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0150		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.250		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-16 16-GIANT-CB-14							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.178		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	1.59		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	143		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.243		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	0.39		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	751		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	49.4		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0105		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.578		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	250		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1300		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	1.08		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	6.5		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	5.26		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00393		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.00811		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.262		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	3.36		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	0.067		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-17 16-GIANT-CR-40							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	53.0		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0110		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0051		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	0.0010		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	129		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.055		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	0.891		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	77.3		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	17.7		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0077		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	5710		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0233		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.347		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.277		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	2.67		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	181		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.115		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1400		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	388		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.022		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-17 16-GIANT-CR-40							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.92		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	904		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	4030		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	8.01		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	9.94		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0085		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.36		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	18.1		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	60.7		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.0257		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	0.418		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	36.3		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	8.29		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0036		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	2680		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0110		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.163		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.130		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	1.25		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	84.8		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.0538		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	659		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	182		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0101		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.430		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	425		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1890		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	3.76		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	6.2		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	4.67		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00087		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.00400		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.171		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	8.51		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-18 16-GIANT-CR-41							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-18 16-GIANT-CR-41							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	52.8		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0102		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0048		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	116		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.042		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	0.756		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	44.2		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	10.3		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	4490		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0304		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.272		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.446		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	2.45		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	136		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.082		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1380		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	443		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	1.24		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	841		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	3760		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	6.01		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	8.44		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0043		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.28		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	7.38		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	54.7		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.0200		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	0.357		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	20.9		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	4.87		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0023		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	2120		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0143		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.128		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-18 16-GIANT-CR-41							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.211		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	1.16		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	64.1		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.0389		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	0.22		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	652		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	209		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0063		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.584		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	397		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1780		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	2.84		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	4.3		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	3.99		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.00204		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.131		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	3.49		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-19 16-GIANT-CR-45							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	56.0		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0097		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0043		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	89.5		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.036		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	1.00		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	20.1		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	18.1		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0342		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	6750		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0158		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.316		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.164		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	3.36		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	179		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.097		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1370		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	148		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.023		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-19 16-GIANT-CR-45							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.45		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	1180		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	6250		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	5.00		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	7.23		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0062		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.36		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	19.5		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	39.4		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.0158		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	0.441		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	8.82		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	7.97		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0150		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	2970		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0070		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.139		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.0719		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	1.48		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	78.9		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.0428		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	0.13		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	604		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	64.9		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0102		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.200		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	519		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	2750		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	2.20		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	7.7		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	3.18		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00046		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.00271		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.158		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	8.56		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-20 16-GIANT-CR-51							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-20 16-GIANT-CR-51							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	55.7		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0130		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0058		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	0.0069		0.0050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Silver (Ag)-Total	0.0030		0.0010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	180		2.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Antimony (Sb)-Total	1.10		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	10.9		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Barium (Ba)-Total	32.8		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Boron (B)-Total	11.0		1.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Cadmium (Cd)-Total	0.0078		0.0050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Calcium (Ca)-Total	14500		20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Cesium (Cs)-Total	0.0082		0.0050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Chromium (Cr)-Total	0.495		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Cobalt (Co)-Total	0.410		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Copper (Cu)-Total	2.24		0.10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Iron (Fe)-Total	394		3.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	0.808		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	29-NOV-16	R3607306
Magnesium (Mg)-Total	3160		2.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Manganese (Mn)-Total	160		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Molybdenum (Mo)-Total	0.033		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Nickel (Ni)-Total	1.18		0.20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Phosphorus (P)-Total	687		10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Potassium (K)-Total	1940		20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Rubidium (Rb)-Total	0.357		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Selenium (Se)-Total	0.234		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Strontium (Sr)-Total	18.3		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Uranium (U)-Total	0.0063		0.0020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Vanadium (V)-Total	0.63		0.10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Zinc (Zn)-Total	8.60		0.50	mg/kg	23-NOV-16	29-NOV-16	R3607306
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	79.6		0.40	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Antimony (Sb)-Total	0.486		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	4.85		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Barium (Ba)-Total	14.5		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Beryllium (Be)-Total	0.0021		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Boron (B)-Total	4.86		0.20	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Cadmium (Cd)-Total	0.0035		0.0010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Calcium (Ca)-Total	6440		4.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Cesium (Cs)-Total	0.0036		0.0010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Chromium (Cr)-Total	0.220		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-20 16-GIANT-CR-51							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.182		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Copper (Cu)-Total	0.993		0.020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Iron (Fe)-Total	175		0.60	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	0.359		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Lithium (Li)-Total	0.20		0.10	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Magnesium (Mg)-Total	1400		0.40	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Manganese (Mn)-Total	70.7		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Molybdenum (Mo)-Total	0.0145		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Nickel (Ni)-Total	0.522		0.040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Phosphorus (P)-Total	305		2.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Potassium (K)-Total	860		4.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Rubidium (Rb)-Total	0.158		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Selenium (Se)-Total	0.104		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	5.1		4.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Strontium (Sr)-Total	8.13		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Thallium (Tl)-Total	0.00064		0.00040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Uranium (U)-Total	0.00280		0.00040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Vanadium (V)-Total	0.281		0.020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Zinc (Zn)-Total	3.81		0.10	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
L1842753-21 16-GIANT-CR-52							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	59.9		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0192		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0077		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	0.0165		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	0.0066		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	475		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	3.16		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	31.0		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	51.0		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	3.7		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0211		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	7120		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0235		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	1.12		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.948		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	4.82		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	1080		3.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	2.52		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	0.67		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1680		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	110		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.028		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-21 16-GIANT-CR-52							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	2.68		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	747		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	3170		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	2.30		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	0.058		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	12.0		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.0037		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0122		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	1.48		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	10.2		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	190		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	1.26		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	12.4		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	20.4		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	0.0035		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	0.0032		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	1.46		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0084		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	2850		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0094		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.451		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.380		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	1.93		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	433		0.60	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	1.01		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	0.27		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	673		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	44.2		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0113		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	1.07		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	299		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1270		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	0.920		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	0.023		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	7.4		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	4.82		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00150		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.00487		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.594		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	4.10		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	0.074		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-22 16-GIANT-CR-53							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-22 16-GIANT-CR-53							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	59.0		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0129		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0053		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	0.0062		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	0.0025		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	164		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	1.06		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	8.80		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	26.7		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	12.0		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0193		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	6910		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0120		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.453		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.324		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	2.24		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	380		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.745		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	2040		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	129		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.030		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	1.15		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	594		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	2730		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	1.24		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	0.060		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	11.6		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.0020		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0075		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.57		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	10.7		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	67.2		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.433		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	3.61		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	10.9		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	4.92		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0079		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	2830		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0049		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.185		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-22 16-GIANT-CR-53							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.133		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	0.919		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	156		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.305		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	0.20		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	837		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	52.7		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0124		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.470		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	243		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1120		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	0.509		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	0.025		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	4.0		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	4.76		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00082		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.00307		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.235		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	4.39		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	0.049		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-23 16-GIANT-CR-55							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	53.3		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0115		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0054		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	0.0068		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	0.0032		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	148		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.956		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	8.32		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	23.5		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	13.6		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0114		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	9080		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0077		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.460		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.252		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	2.00		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	393		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.642		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1260		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	34.5		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.042		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-23 16-GIANT-CR-55							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.59		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	682		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	2750		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	0.399		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	14.3		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0049		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.63		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	6.91		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	69.2		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.447		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	3.89		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	11.0		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	6.33		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0053		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	4240		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0036		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.215		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.118		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	0.933		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	184		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.300		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	588		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	16.1		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0196		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.276		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	319		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1290		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	0.187		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	0.013		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	6.1		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	6.68		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00063		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.00229		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.293		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	3.23		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-24 16-GIANT-CR-56							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-24 16-GIANT-CR-56							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	56.7		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0193		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0083		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	0.0091		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	0.0040		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	282		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	1.75		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	15.4		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	24.9		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	15.1		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0354		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	7240		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0142		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.793		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.457		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	2.98		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	694		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	1.25		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	2060		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	79.1		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.045		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	1.06		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	741		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	3410		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	0.859		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	10.2		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.0022		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0093		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	1.07		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	12.3		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	122		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.758		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	6.65		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	10.8		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	6.54		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0153		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	3130		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0061		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.343		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-24 16-GIANT-CR-56							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.198		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	1.29		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	301		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.541		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	0.19		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	892		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	34.2		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0195		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.460		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	321		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1480		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	0.372		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	0.016		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	7.9		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	4.40		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00094		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.00401		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.464		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	5.30		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	0.069		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-25 16-GIANT-CR-57							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	54.5		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0089		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0041		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	110		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.113		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	1.62		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	63.2		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	5.7		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0088		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	4840		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0282		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.218		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.121		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	1.61		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	105		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.120		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1030		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	320		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.040		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-25 16-GIANT-CR-57							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.40		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	659		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	2630		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	4.33		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	5.53		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0090		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.18		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	8.17		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	49.9		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.0512		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	0.736		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	28.8		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	2.61		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0040		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	2200		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0128		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.099		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.0551		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	0.735		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	47.8		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.0546		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	469		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	145		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0181		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.181		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	300		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1200		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	1.97		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	2.52		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00079		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.00412		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.084		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	3.72		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-26 16-GIANT-CR-58							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-26 16-GIANT-CR-58							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	52.8		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0138		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0065		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	0.0144		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	0.0068		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	293		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	2.57		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	18.9		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	54.2		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	7.1		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0299		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	6260		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0223		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.662		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.664		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	5.62		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	587		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	1.83		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1580		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	100		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.023		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	1.97		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	689		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	3690		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	1.74		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	5.43		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.0029		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0116		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.77		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	9.80		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	138		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	1.21		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	8.95		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	25.6		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	0.0023		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	3.36		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0141		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	2960		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0106		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.313		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-26 16-GIANT-CR-58							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.314		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	2.65		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	277		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.865		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	0.11		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	747		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	47.3		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0108		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.931		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	325		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1740		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	0.823		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	0.011		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	7.3		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	2.56		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00138		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.00548		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.363		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	4.63		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	0.087		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-27 16-GIANT-CR-59							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	56.6		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0203		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0088		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	0.0154		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	0.0067		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	232		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	4.07		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	25.6		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	23.6		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	8.6		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0163		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	10400		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0150		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.644		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.577		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	2.71		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	648		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	3.03		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1780		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	396		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.045		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-27 16-GIANT-CR-59							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	1.09		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	606		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	3020		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	0.880		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	10.2		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.0022		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0093		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.66		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	11.6		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	100		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	1.77		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	11.1		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	10.2		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	0.0024		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	3.74		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0071		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	4520		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0065		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.280		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.250		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	1.18		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	281		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	1.31		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	771		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	172		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0193		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.474		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	263		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1310		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	0.382		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	4.6		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	4.44		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00096		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.00404		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.288		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	5.03		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	0.065		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-28 16-GIANT-CR-60							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-28 16-GIANT-CR-60							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	52.4		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0165		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0079		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	0.0090		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	0.0043		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	159		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	2.32		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	14.6		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	34.1		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	3.7		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0232		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	6950		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0231		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.377		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.400		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	2.70		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	376		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	1.62		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1290		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	563		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	1.24		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	564		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	2280		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	2.28		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	5.49		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0046		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.44		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	6.06		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	75.9		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	1.10		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	6.97		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	16.3		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	1.78		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0111		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	3310		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0110		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.179		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-28 16-GIANT-CR-60							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.191		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	1.29		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	179		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.771		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	615		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	268		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0076		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.590		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	269		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1090		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	1.09		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	0.011		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	2.61		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00064		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.00218		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.212		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	2.89		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-29 16-GIANT-CR-61							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	54.0		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0180		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0083		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	0.0017		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	145		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.944		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	6.09		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	39.2		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	16.2		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0058		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	8050		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0124		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.250		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.284		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	3.05		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	216		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.746		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1080		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	199		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-29 16-GIANT-CR-61							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.71		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	567		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	2540		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	2.41		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	6.41		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0035		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.28		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	10.2		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	66.7		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.435		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	2.80		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	18.0		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	7.44		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0026		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	3710		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0057		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.115		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.131		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	1.40		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	99.4		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.343		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	499		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	91.6		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0045		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.327		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	261		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1170		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	1.11		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	0.017		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	2.95		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00044		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.00160		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.127		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	4.70		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-30 16-GIANT-CR-70							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-30 16-GIANT-CR-70							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	52.6		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0165		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0078		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	0.0221		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	0.0105		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	293		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	3.76		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	39.3		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	13.5		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	9.3		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0295		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	8780		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0115		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.788		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.678		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	3.54		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	923		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	3.11		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	2180		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	68.2		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.042		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	1.34		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	625		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	2520		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	1.72		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	6.41		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.0023		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0049		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	1.01		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	13.4		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	139		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	1.78		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	18.6		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	6.40		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	0.0034		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	4.42		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0140		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	4160		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0055		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.374		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-30 16-GIANT-CR-70							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.322		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	1.68		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	437		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	1.48		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1030		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	32.3		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0197		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.633		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	296		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1200		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	0.814		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	3.04		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00111		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.00231		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.477		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	6.37		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	0.050		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-31 16-GIANT-CR-71							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	52.8		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0208		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0098		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	0.0110		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	0.0052		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	183		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	2.16		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	19.4		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	28.9		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	12.5		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0141		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	8810		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0130		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.503		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.311		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	1.92		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	491		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	1.76		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1480		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	97.1		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.037		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-31 16-GIANT-CR-71							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.66		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	656		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	2740		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	1.81		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	15.6		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0118		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.65		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	16.5		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	86.2		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	1.02		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	9.15		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	13.6		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	5.91		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0067		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	4160		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0061		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.237		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.147		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	0.907		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	232		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.832		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	696		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	45.8		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0175		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.311		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	309		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1290		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	0.851		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	7.34		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00087		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.00558		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.304		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	7.80		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	0.043		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-32 16-GIANT-CR-73							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-32 16-GIANT-CR-73							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	52.3		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0164		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0078		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	0.0088		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	0.0042		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	124		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	1.39		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	11.7		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	46.5		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	10.1		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0094		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	6790		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0088		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.300		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.195		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	2.05		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	293		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	1.08		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1760		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	50.5		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.043		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.54		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	664		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	2680		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	2.34		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	6.03		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.0021		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.38		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	9.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	58.9		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.664		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	5.58		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	22.2		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	4.80		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0045		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	3240		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0042		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.143		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-32 16-GIANT-CR-73							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0931		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	0.977		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	140		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.515		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	841		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	24.1		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0205		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.255		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	316		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1280		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	1.11		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	2.88		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00065		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.00099		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.180		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	4.53		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-33 16-GIANT-CR-74							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	51.8		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0082		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0039		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Silver (Ag)-Total	0.0023		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	46.8		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.381		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	3.93		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	29.5		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	7.5		1.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0127		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	5550		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0314		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.101		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.079		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	2.80		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	105		3.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.255		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	1690		2.0	mg/kg	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	86.2		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.038		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-33 16-GIANT-CR-74							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.49		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	927		10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	3510		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	4.58		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	4.35		0.050	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.14		0.10	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	12.6		0.50	mg/kg	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	25-NOV-16	R3606134
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	22.5		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Antimony (Sb)-Total	0.184		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Arsenic (As)-Total	1.89		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Barium (Ba)-Total	14.2		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Boron (B)-Total	3.59		0.20	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cadmium (Cd)-Total	0.0061		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Calcium (Ca)-Total	2680		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cesium (Cs)-Total	0.0151		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Chromium (Cr)-Total	0.049		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Cobalt (Co)-Total	0.0381		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Copper (Cu)-Total	1.35		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Iron (Fe)-Total	50.8		0.60	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lead (Pb)-Total	0.123		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Magnesium (Mg)-Total	815		0.40	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Manganese (Mn)-Total	41.6		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Molybdenum (Mo)-Total	0.0181		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Nickel (Ni)-Total	0.236		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Phosphorus (P)-Total	447		2.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Potassium (K)-Total	1690		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Rubidium (Rb)-Total	2.21		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Strontium (Sr)-Total	2.10		0.010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Thallium (Tl)-Total	0.00046		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Uranium (U)-Total	0.00063		0.00040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Vanadium (V)-Total	0.069		0.020	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zinc (Zn)-Total	6.07		0.10	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	23-NOV-16	25-NOV-16	R3606134
L1842753-34 16-GIANT-CR-75							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-34 16-GIANT-CR-75							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	50.8		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0117		0.0050	mg/kg	23-NOV-16	25-NOV-16	R3606242
Mercury (Hg)-Total	0.0057		0.0010	mg/kg wwt	23-NOV-16	25-NOV-16	R3606238
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Silver (Ag)-Total	0.0014		0.0010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	53.2		2.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Antimony (Sb)-Total	0.452		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	3.87		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Barium (Ba)-Total	33.9		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Beryllium (Be)-Total	<0.010		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	23-NOV-16	29-NOV-16	R3607306
Boron (B)-Total	11.8		1.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Cadmium (Cd)-Total	0.0073		0.0050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Calcium (Ca)-Total	7170		20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Cesium (Cs)-Total	0.0228		0.0050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Chromium (Cr)-Total	0.117		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Cobalt (Co)-Total	0.176		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Copper (Cu)-Total	1.86		0.10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Iron (Fe)-Total	115		3.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	0.308		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Lithium (Li)-Total	<0.50		0.50	mg/kg	23-NOV-16	29-NOV-16	R3607306
Magnesium (Mg)-Total	1630		2.0	mg/kg	23-NOV-16	29-NOV-16	R3607306
Manganese (Mn)-Total	163		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Molybdenum (Mo)-Total	<0.020		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Nickel (Ni)-Total	0.39		0.20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Phosphorus (P)-Total	721		10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Potassium (K)-Total	2770		20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Rubidium (Rb)-Total	4.81		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Selenium (Se)-Total	<0.050		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<20		20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Strontium (Sr)-Total	6.28		0.050	mg/kg	23-NOV-16	29-NOV-16	R3607306
Tellurium (Te)-Total	<0.020		0.020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Tin (Sn)-Total	<0.10		0.10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Uranium (U)-Total	<0.0020		0.0020	mg/kg	23-NOV-16	29-NOV-16	R3607306
Vanadium (V)-Total	0.11		0.10	mg/kg	23-NOV-16	29-NOV-16	R3607306
Zinc (Zn)-Total	7.90		0.50	mg/kg	23-NOV-16	29-NOV-16	R3607306
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	23-NOV-16	29-NOV-16	R3607306
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	26.2		0.40	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Antimony (Sb)-Total	0.223		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	1.91		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Barium (Ba)-Total	16.7		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Boron (B)-Total	5.79		0.20	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Cadmium (Cd)-Total	0.0036		0.0010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Calcium (Ca)-Total	3530		4.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Cesium (Cs)-Total	0.0112		0.0010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Chromium (Cr)-Total	0.058		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-34 16-GIANT-CR-75							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0867		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Copper (Cu)-Total	0.914		0.020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Iron (Fe)-Total	56.8		0.60	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	0.152		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Magnesium (Mg)-Total	804		0.40	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Manganese (Mn)-Total	80.3		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Molybdenum (Mo)-Total	0.0057		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Nickel (Ni)-Total	0.190		0.040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Phosphorus (P)-Total	355		2.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Potassium (K)-Total	1360		4.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Rubidium (Rb)-Total	2.37		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Strontium (Sr)-Total	3.09		0.010	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Thallium (Tl)-Total	0.00043		0.00040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Uranium (U)-Total	0.00082		0.00040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Vanadium (V)-Total	0.056		0.020	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Zinc (Zn)-Total	3.89		0.10	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	23-NOV-16	29-NOV-16	R3607306
L1842753-35 16-GIANT-CR-76							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	54.9		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0134		0.0050	mg/kg	25-NOV-16	28-NOV-16	R3606149
Mercury (Hg)-Total	0.0060		0.0010	mg/kg wwt	25-NOV-16	28-NOV-16	R3606146
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	33.6		2.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Antimony (Sb)-Total	0.139		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Arsenic (As)-Total	1.24		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Barium (Ba)-Total	33.2		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Beryllium (Be)-Total	<0.010		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Boron (B)-Total	17.1		1.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cadmium (Cd)-Total	0.0086		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Calcium (Ca)-Total	4230		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cesium (Cs)-Total	<0.0050		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Chromium (Cr)-Total	0.073		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cobalt (Co)-Total	0.044		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Copper (Cu)-Total	2.27		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Iron (Fe)-Total	62.0		3.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Lead (Pb)-Total	0.094		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Lithium (Li)-Total	<0.50		0.50	mg/kg	25-NOV-16	27-NOV-16	R3606078
Magnesium (Mg)-Total	1780		2.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Manganese (Mn)-Total	257		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Molybdenum (Mo)-Total	0.210		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-35 16-GIANT-CR-76							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.20		0.20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Phosphorus (P)-Total	881		10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Potassium (K)-Total	4190		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Rubidium (Rb)-Total	1.72		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Selenium (Se)-Total	<0.050		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Sodium (Na)-Total	<20		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Strontium (Sr)-Total	6.43		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Tellurium (Te)-Total	<0.020		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Tin (Sn)-Total	<0.10		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Uranium (U)-Total	0.0024		0.0020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Vanadium (V)-Total	<0.10		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Zinc (Zn)-Total	13.8		0.50	mg/kg	25-NOV-16	27-NOV-16	R3606078
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	15.2		0.40	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Antimony (Sb)-Total	0.0628		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Arsenic (As)-Total	0.559		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Barium (Ba)-Total	15.0		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Boron (B)-Total	7.71		0.20	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Cadmium (Cd)-Total	0.0039		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Calcium (Ca)-Total	1910		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Cesium (Cs)-Total	0.0017		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Chromium (Cr)-Total	0.033		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Cobalt (Co)-Total	0.0198		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Copper (Cu)-Total	1.03		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Iron (Fe)-Total	28.0		0.60	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Lead (Pb)-Total	0.0422		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Magnesium (Mg)-Total	803		0.40	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Manganese (Mn)-Total	116		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Molybdenum (Mo)-Total	0.0950		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Nickel (Ni)-Total	0.091		0.040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Phosphorus (P)-Total	398		2.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Potassium (K)-Total	1890		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Rubidium (Rb)-Total	0.778		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Strontium (Sr)-Total	2.90		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Thallium (Tl)-Total	0.00043		0.00040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Uranium (U)-Total	0.00107		0.00040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Vanadium (V)-Total	0.037		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Zinc (Zn)-Total	6.23		0.10	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
L1842753-36 16-GIANT-CR-77							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-36 16-GIANT-CR-77							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	54.4		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0124		0.0050	mg/kg	25-NOV-16	28-NOV-16	R3606149
Mercury (Hg)-Total	0.0057		0.0010	mg/kg wwt	25-NOV-16	28-NOV-16	R3606146
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Silver (Ag)-Total	0.0013		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	108		2.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Antimony (Sb)-Total	0.254		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Arsenic (As)-Total	2.28		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Barium (Ba)-Total	77.4		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Beryllium (Be)-Total	<0.010		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Boron (B)-Total	7.1		1.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cadmium (Cd)-Total	0.0125		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Calcium (Ca)-Total	5530		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cesium (Cs)-Total	0.0257		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Chromium (Cr)-Total	0.129		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cobalt (Co)-Total	0.246		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Copper (Cu)-Total	4.15		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Iron (Fe)-Total	90.9		3.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Lead (Pb)-Total	0.213		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Lithium (Li)-Total	<0.50		0.50	mg/kg	25-NOV-16	27-NOV-16	R3606078
Magnesium (Mg)-Total	1300		2.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Manganese (Mn)-Total	557		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Molybdenum (Mo)-Total	<0.020		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Nickel (Ni)-Total	1.75		0.20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Phosphorus (P)-Total	814		10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Potassium (K)-Total	3330		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Rubidium (Rb)-Total	3.97		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Selenium (Se)-Total	<0.050		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Sodium (Na)-Total	<20		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Strontium (Sr)-Total	7.28		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Tellurium (Te)-Total	<0.020		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Tin (Sn)-Total	<0.10		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Uranium (U)-Total	<0.0020		0.0020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Vanadium (V)-Total	0.13		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Zinc (Zn)-Total	8.11		0.50	mg/kg	25-NOV-16	27-NOV-16	R3606078
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	49.4		0.40	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Antimony (Sb)-Total	0.116		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Arsenic (As)-Total	1.04		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Barium (Ba)-Total	35.3		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Boron (B)-Total	3.22		0.20	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Cadmium (Cd)-Total	0.0057		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Calcium (Ca)-Total	2520		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Cesium (Cs)-Total	0.0117		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Chromium (Cr)-Total	0.059		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-36 16-GIANT-CR-77							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.112		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Copper (Cu)-Total	1.89		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Iron (Fe)-Total	41.5		0.60	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Lead (Pb)-Total	0.0970		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Magnesium (Mg)-Total	592		0.40	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Manganese (Mn)-Total	254		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Molybdenum (Mo)-Total	0.0089		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Nickel (Ni)-Total	0.797		0.040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Phosphorus (P)-Total	371		2.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Potassium (K)-Total	1520		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Rubidium (Rb)-Total	1.81		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Strontium (Sr)-Total	3.32		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Uranium (U)-Total	0.00080		0.00040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Vanadium (V)-Total	0.057		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Zinc (Zn)-Total	3.70		0.10	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
L1842753-37 16-GIANT-CR-78							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	48.5		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0168		0.0050	mg/kg	25-NOV-16	28-NOV-16	R3606149
Mercury (Hg)-Total	0.0087		0.0010	mg/kg wwt	25-NOV-16	28-NOV-16	R3606146
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	25-NOV-16	29-NOV-16	R3607306
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	91.7		2.0	mg/kg	25-NOV-16	29-NOV-16	R3607306
Antimony (Sb)-Total	0.175		0.010	mg/kg	25-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	1.56		0.020	mg/kg	25-NOV-16	29-NOV-16	R3607306
Barium (Ba)-Total	74.6		0.050	mg/kg	25-NOV-16	29-NOV-16	R3607306
Beryllium (Be)-Total	<0.010		0.010	mg/kg	25-NOV-16	29-NOV-16	R3607306
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	25-NOV-16	29-NOV-16	R3607306
Boron (B)-Total	7.6		1.0	mg/kg	25-NOV-16	29-NOV-16	R3607306
Cadmium (Cd)-Total	0.0099		0.0050	mg/kg	25-NOV-16	29-NOV-16	R3607306
Calcium (Ca)-Total	6600		20	mg/kg	25-NOV-16	29-NOV-16	R3607306
Cesium (Cs)-Total	0.0275		0.0050	mg/kg	25-NOV-16	29-NOV-16	R3607306
Chromium (Cr)-Total	0.101		0.050	mg/kg	25-NOV-16	29-NOV-16	R3607306
Cobalt (Co)-Total	0.267		0.020	mg/kg	25-NOV-16	29-NOV-16	R3607306
Copper (Cu)-Total	3.81		0.10	mg/kg	25-NOV-16	29-NOV-16	R3607306
Iron (Fe)-Total	69.2		3.0	mg/kg	25-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	0.123		0.020	mg/kg	25-NOV-16	29-NOV-16	R3607306
Lithium (Li)-Total	<0.50		0.50	mg/kg	25-NOV-16	29-NOV-16	R3607306
Magnesium (Mg)-Total	1120		2.0	mg/kg	25-NOV-16	29-NOV-16	R3607306
Manganese (Mn)-Total	649		0.050	mg/kg	25-NOV-16	29-NOV-16	R3607306
Molybdenum (Mo)-Total	<0.020		0.020	mg/kg	25-NOV-16	29-NOV-16	R3607306

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-37 16-GIANT-CR-78							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	1.14		0.20	mg/kg	25-NOV-16	29-NOV-16	R3607306
Phosphorus (P)-Total	575		10	mg/kg	25-NOV-16	29-NOV-16	R3607306
Potassium (K)-Total	2370		20	mg/kg	25-NOV-16	29-NOV-16	R3607306
Rubidium (Rb)-Total	1.63		0.050	mg/kg	25-NOV-16	29-NOV-16	R3607306
Selenium (Se)-Total	<0.050		0.050	mg/kg	25-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<20		20	mg/kg	25-NOV-16	29-NOV-16	R3607306
Strontium (Sr)-Total	5.73		0.050	mg/kg	25-NOV-16	29-NOV-16	R3607306
Tellurium (Te)-Total	<0.020		0.020	mg/kg	25-NOV-16	29-NOV-16	R3607306
Thallium (Tl)-Total	0.0034		0.0020	mg/kg	25-NOV-16	29-NOV-16	R3607306
Tin (Sn)-Total	<0.10		0.10	mg/kg	25-NOV-16	29-NOV-16	R3607306
Uranium (U)-Total	<0.0020		0.0020	mg/kg	25-NOV-16	29-NOV-16	R3607306
Vanadium (V)-Total	<0.10		0.10	mg/kg	25-NOV-16	29-NOV-16	R3607306
Zinc (Zn)-Total	6.82		0.50	mg/kg	25-NOV-16	29-NOV-16	R3607306
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	25-NOV-16	29-NOV-16	R3607306
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	47.3		0.40	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Antimony (Sb)-Total	0.0899		0.0020	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	0.804		0.0040	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Barium (Ba)-Total	38.4		0.010	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Boron (B)-Total	3.91		0.20	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Cadmium (Cd)-Total	0.0051		0.0010	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Calcium (Ca)-Total	3400		4.0	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Cesium (Cs)-Total	0.0142		0.0010	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Chromium (Cr)-Total	0.052		0.010	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Cobalt (Co)-Total	0.137		0.0040	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Copper (Cu)-Total	1.96		0.020	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Iron (Fe)-Total	35.6		0.60	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	0.0631		0.0040	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Magnesium (Mg)-Total	576		0.40	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Manganese (Mn)-Total	335		0.010	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Molybdenum (Mo)-Total	0.0073		0.0040	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Nickel (Ni)-Total	0.586		0.040	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Phosphorus (P)-Total	296		2.0	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Potassium (K)-Total	1220		4.0	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Rubidium (Rb)-Total	0.839		0.010	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Strontium (Sr)-Total	2.95		0.010	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Thallium (Tl)-Total	0.00174		0.00040	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Uranium (U)-Total	0.00088		0.00040	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Vanadium (V)-Total	0.050		0.020	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Zinc (Zn)-Total	3.52		0.10	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
L1842753-38 16-GIANT-CR-79							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-38 16-GIANT-CR-79							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	52.3		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0100		0.0050	mg/kg	25-NOV-16	28-NOV-16	R3606149
Mercury (Hg)-Total	0.0048		0.0010	mg/kg wwt	25-NOV-16	28-NOV-16	R3606146
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	45.4		2.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Antimony (Sb)-Total	0.162		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Arsenic (As)-Total	1.15		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Barium (Ba)-Total	47.7		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Beryllium (Be)-Total	<0.010		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Boron (B)-Total	15.0		1.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cadmium (Cd)-Total	0.0268		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Calcium (Ca)-Total	5200		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cesium (Cs)-Total	<0.0050		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Chromium (Cr)-Total	0.086		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cobalt (Co)-Total	0.074		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Copper (Cu)-Total	2.07		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Iron (Fe)-Total	61.8		3.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Lead (Pb)-Total	0.117		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Lithium (Li)-Total	<0.50		0.50	mg/kg	25-NOV-16	27-NOV-16	R3606078
Magnesium (Mg)-Total	1180		2.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Manganese (Mn)-Total	251		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Molybdenum (Mo)-Total	0.056		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Nickel (Ni)-Total	0.67		0.20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Phosphorus (P)-Total	734		10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Potassium (K)-Total	4000		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Rubidium (Rb)-Total	0.526		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Selenium (Se)-Total	<0.050		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Sodium (Na)-Total	<20		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Strontium (Sr)-Total	9.28		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Tellurium (Te)-Total	<0.020		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Tin (Sn)-Total	<0.10		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Uranium (U)-Total	0.0024		0.0020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Vanadium (V)-Total	<0.10		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Zinc (Zn)-Total	8.95		0.50	mg/kg	25-NOV-16	27-NOV-16	R3606078
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	21.7		0.40	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Antimony (Sb)-Total	0.0775		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Arsenic (As)-Total	0.549		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Barium (Ba)-Total	22.8		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Boron (B)-Total	7.18		0.20	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Cadmium (Cd)-Total	0.0128		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Calcium (Ca)-Total	2480		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Cesium (Cs)-Total	0.0013		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Chromium (Cr)-Total	0.041		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-38 16-GIANT-CR-79							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0354		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Copper (Cu)-Total	0.989		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Iron (Fe)-Total	29.5		0.60	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Lead (Pb)-Total	0.0556		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Magnesium (Mg)-Total	565		0.40	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Manganese (Mn)-Total	120		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Molybdenum (Mo)-Total	0.0268		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Nickel (Ni)-Total	0.320		0.040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Phosphorus (P)-Total	351		2.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Potassium (K)-Total	1910		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Rubidium (Rb)-Total	0.251		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Strontium (Sr)-Total	4.43		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Uranium (U)-Total	0.00115		0.00040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Vanadium (V)-Total	0.041		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Zinc (Zn)-Total	4.27		0.10	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
L1842753-39 16-GIANT-CR-80							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	52.9		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0143		0.0050	mg/kg	25-NOV-16	28-NOV-16	R3606149
Mercury (Hg)-Total	0.0067		0.0010	mg/kg wwt	25-NOV-16	28-NOV-16	R3606146
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	53.7		2.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Antimony (Sb)-Total	0.196		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Arsenic (As)-Total	1.71		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Barium (Ba)-Total	22.4		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Beryllium (Be)-Total	<0.010		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Boron (B)-Total	18.5		1.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cadmium (Cd)-Total	0.0364		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Calcium (Ca)-Total	5350		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cesium (Cs)-Total	0.0052		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Chromium (Cr)-Total	0.098		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cobalt (Co)-Total	0.093		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Copper (Cu)-Total	2.51		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Iron (Fe)-Total	78.2		3.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Lead (Pb)-Total	0.131		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Lithium (Li)-Total	<0.50		0.50	mg/kg	25-NOV-16	27-NOV-16	R3606078
Magnesium (Mg)-Total	1000		2.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Manganese (Mn)-Total	332		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Molybdenum (Mo)-Total	0.036		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-39 16-GIANT-CR-80							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.29		0.20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Phosphorus (P)-Total	721		10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Potassium (K)-Total	3930		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Rubidium (Rb)-Total	2.20		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Selenium (Se)-Total	<0.050		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Sodium (Na)-Total	<20		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Strontium (Sr)-Total	4.65		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Tellurium (Te)-Total	<0.020		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Tin (Sn)-Total	<0.10		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Uranium (U)-Total	0.0023		0.0020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Vanadium (V)-Total	0.11		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Zinc (Zn)-Total	16.7		0.50	mg/kg	25-NOV-16	27-NOV-16	R3606078
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	25.3		0.40	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Antimony (Sb)-Total	0.0926		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Arsenic (As)-Total	0.806		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Barium (Ba)-Total	10.5		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Boron (B)-Total	8.72		0.20	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Cadmium (Cd)-Total	0.0171		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Calcium (Ca)-Total	2520		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Cesium (Cs)-Total	0.0024		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Chromium (Cr)-Total	0.046		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Cobalt (Co)-Total	0.0436		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Copper (Cu)-Total	1.18		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Iron (Fe)-Total	36.9		0.60	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Lead (Pb)-Total	0.0617		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Magnesium (Mg)-Total	472		0.40	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Manganese (Mn)-Total	156		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Molybdenum (Mo)-Total	0.0168		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Nickel (Ni)-Total	0.137		0.040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Phosphorus (P)-Total	340		2.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Potassium (K)-Total	1850		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Rubidium (Rb)-Total	1.04		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Strontium (Sr)-Total	2.19		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Uranium (U)-Total	0.00110		0.00040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Vanadium (V)-Total	0.051		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Zinc (Zn)-Total	7.87		0.10	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
L1842753-40 16-GIANT-CR-81							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-40 16-GIANT-CR-81							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	52.4		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0126		0.0050	mg/kg	25-NOV-16	28-NOV-16	R3606149
Mercury (Hg)-Total	0.0060		0.0010	mg/kg wwt	25-NOV-16	28-NOV-16	R3606146
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	94.6		2.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Antimony (Sb)-Total	0.176		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Arsenic (As)-Total	1.44		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Barium (Ba)-Total	64.3		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Beryllium (Be)-Total	<0.010		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Boron (B)-Total	11.2		1.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cadmium (Cd)-Total	0.0115		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Calcium (Ca)-Total	5010		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cesium (Cs)-Total	0.0106		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Chromium (Cr)-Total	0.096		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cobalt (Co)-Total	0.371		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Copper (Cu)-Total	3.66		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Iron (Fe)-Total	76.6		3.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Lead (Pb)-Total	0.127		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Lithium (Li)-Total	<0.50		0.50	mg/kg	25-NOV-16	27-NOV-16	R3606078
Magnesium (Mg)-Total	1510		2.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Manganese (Mn)-Total	632		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Molybdenum (Mo)-Total	<0.020		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Nickel (Ni)-Total	1.71		0.20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Phosphorus (P)-Total	747		10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Potassium (K)-Total	2740		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Rubidium (Rb)-Total	2.83		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Selenium (Se)-Total	<0.050		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Sodium (Na)-Total	<20		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Strontium (Sr)-Total	7.37		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Tellurium (Te)-Total	<0.020		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Tin (Sn)-Total	<0.10		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Uranium (U)-Total	<0.0020		0.0020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Vanadium (V)-Total	0.12		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Zinc (Zn)-Total	5.18		0.50	mg/kg	25-NOV-16	27-NOV-16	R3606078
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	45.1		0.40	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Antimony (Sb)-Total	0.0838		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Arsenic (As)-Total	0.687		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Barium (Ba)-Total	30.6		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Boron (B)-Total	5.35		0.20	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Cadmium (Cd)-Total	0.0055		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Calcium (Ca)-Total	2390		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Cesium (Cs)-Total	0.0050		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Chromium (Cr)-Total	0.046		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-40 16-GIANT-CR-81							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.177		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Copper (Cu)-Total	1.75		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Iron (Fe)-Total	36.5		0.60	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Lead (Pb)-Total	0.0607		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Magnesium (Mg)-Total	717		0.40	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Manganese (Mn)-Total	301		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Molybdenum (Mo)-Total	0.0056		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Nickel (Ni)-Total	0.814		0.040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Phosphorus (P)-Total	356		2.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Potassium (K)-Total	1310		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Rubidium (Rb)-Total	1.35		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Strontium (Sr)-Total	3.51		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Uranium (U)-Total	0.00089		0.00040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Vanadium (V)-Total	0.058		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Zinc (Zn)-Total	2.47		0.10	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
L1842753-41 16-GIANT-CB-03-DUP							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	51.8		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0157		0.0050	mg/kg	25-NOV-16	28-NOV-16	R3606149
Mercury (Hg)-Total	0.0076		0.0010	mg/kg wwt	25-NOV-16	28-NOV-16	R3606146
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Silver (Ag)-Total	0.0010		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	106		2.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Antimony (Sb)-Total	0.287		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Arsenic (As)-Total	1.72		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Barium (Ba)-Total	31.7		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Beryllium (Be)-Total	<0.010		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Boron (B)-Total	9.7		1.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Calcium (Ca)-Total	5780		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cesium (Cs)-Total	0.0148		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Chromium (Cr)-Total	0.293		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cobalt (Co)-Total	0.110		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Copper (Cu)-Total	2.36		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Iron (Fe)-Total	174		3.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Lead (Pb)-Total	0.247		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Lithium (Li)-Total	<0.50		0.50	mg/kg	25-NOV-16	27-NOV-16	R3606078
Magnesium (Mg)-Total	2210		2.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Manganese (Mn)-Total	111		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Molybdenum (Mo)-Total	0.043		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-41 16-GIANT-CB-03-DUP							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.41		0.20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Phosphorus (P)-Total	669		10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Potassium (K)-Total	2780		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Rubidium (Rb)-Total	0.569		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Selenium (Se)-Total	<0.050		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Sodium (Na)-Total	<20		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Strontium (Sr)-Total	13.0		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Tellurium (Te)-Total	<0.020		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Tin (Sn)-Total	<0.10		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Uranium (U)-Total	0.0198		0.0020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Vanadium (V)-Total	0.33		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Zinc (Zn)-Total	7.61		0.50	mg/kg	25-NOV-16	27-NOV-16	R3606078
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	51.2		0.40	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Antimony (Sb)-Total	0.138		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Arsenic (As)-Total	0.827		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Barium (Ba)-Total	15.3		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Boron (B)-Total	4.70		0.20	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Cadmium (Cd)-Total	0.0020		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Calcium (Ca)-Total	2790		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Cesium (Cs)-Total	0.0071		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Chromium (Cr)-Total	0.141		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Cobalt (Co)-Total	0.0531		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Copper (Cu)-Total	1.14		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Iron (Fe)-Total	83.8		0.60	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Lead (Pb)-Total	0.119		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Lithium (Li)-Total	0.15		0.10	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Magnesium (Mg)-Total	1060		0.40	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Manganese (Mn)-Total	53.7		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Molybdenum (Mo)-Total	0.0208		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Nickel (Ni)-Total	0.200		0.040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Phosphorus (P)-Total	323		2.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Potassium (K)-Total	1340		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Rubidium (Rb)-Total	0.274		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Strontium (Sr)-Total	6.26		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Thallium (Tl)-Total	0.00076		0.00040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Uranium (U)-Total	0.00953		0.00040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Vanadium (V)-Total	0.158		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Zinc (Zn)-Total	3.67		0.10	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
L1842753-42 16-GIANT-CR-41-DUP							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-42 16-GIANT-CR-41-DUP							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	51.1		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0082		0.0050	mg/kg	25-NOV-16	28-NOV-16	R3606149
Mercury (Hg)-Total	0.0040		0.0010	mg/kg wwt	25-NOV-16	28-NOV-16	R3606146
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	25-NOV-16	29-NOV-16	R3607306
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	108		2.0	mg/kg	25-NOV-16	29-NOV-16	R3607306
Antimony (Sb)-Total	0.039		0.010	mg/kg	25-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	0.783		0.020	mg/kg	25-NOV-16	29-NOV-16	R3607306
Barium (Ba)-Total	47.9		0.050	mg/kg	25-NOV-16	29-NOV-16	R3607306
Beryllium (Be)-Total	<0.010		0.010	mg/kg	25-NOV-16	29-NOV-16	R3607306
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	25-NOV-16	29-NOV-16	R3607306
Boron (B)-Total	9.2		1.0	mg/kg	25-NOV-16	29-NOV-16	R3607306
Cadmium (Cd)-Total	0.0077		0.0050	mg/kg	25-NOV-16	29-NOV-16	R3607306
Calcium (Ca)-Total	4540		20	mg/kg	25-NOV-16	29-NOV-16	R3607306
Cesium (Cs)-Total	0.0257		0.0050	mg/kg	25-NOV-16	29-NOV-16	R3607306
Chromium (Cr)-Total	0.255		0.050	mg/kg	25-NOV-16	29-NOV-16	R3607306
Cobalt (Co)-Total	0.451		0.020	mg/kg	25-NOV-16	29-NOV-16	R3607306
Copper (Cu)-Total	2.61		0.10	mg/kg	25-NOV-16	29-NOV-16	R3607306
Iron (Fe)-Total	117		3.0	mg/kg	25-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	0.078		0.020	mg/kg	25-NOV-16	29-NOV-16	R3607306
Lithium (Li)-Total	<0.50		0.50	mg/kg	25-NOV-16	29-NOV-16	R3607306
Magnesium (Mg)-Total	1360		2.0	mg/kg	25-NOV-16	29-NOV-16	R3607306
Manganese (Mn)-Total	436		0.050	mg/kg	25-NOV-16	29-NOV-16	R3607306
Molybdenum (Mo)-Total	<0.020		0.020	mg/kg	25-NOV-16	29-NOV-16	R3607306
Nickel (Ni)-Total	1.32		0.20	mg/kg	25-NOV-16	29-NOV-16	R3607306
Phosphorus (P)-Total	867		10	mg/kg	25-NOV-16	29-NOV-16	R3607306
Potassium (K)-Total	3760		20	mg/kg	25-NOV-16	29-NOV-16	R3607306
Rubidium (Rb)-Total	5.72		0.050	mg/kg	25-NOV-16	29-NOV-16	R3607306
Selenium (Se)-Total	<0.050		0.050	mg/kg	25-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<20		20	mg/kg	25-NOV-16	29-NOV-16	R3607306
Strontium (Sr)-Total	8.80		0.050	mg/kg	25-NOV-16	29-NOV-16	R3607306
Tellurium (Te)-Total	<0.020		0.020	mg/kg	25-NOV-16	29-NOV-16	R3607306
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	25-NOV-16	29-NOV-16	R3607306
Tin (Sn)-Total	<0.10		0.10	mg/kg	25-NOV-16	29-NOV-16	R3607306
Uranium (U)-Total	0.0041		0.0020	mg/kg	25-NOV-16	29-NOV-16	R3607306
Vanadium (V)-Total	0.24		0.10	mg/kg	25-NOV-16	29-NOV-16	R3607306
Zinc (Zn)-Total	7.89		0.50	mg/kg	25-NOV-16	29-NOV-16	R3607306
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	25-NOV-16	29-NOV-16	R3607306
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	52.7		0.40	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Antimony (Sb)-Total	0.0190		0.0020	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Arsenic (As)-Total	0.383		0.0040	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Barium (Ba)-Total	23.4		0.010	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Boron (B)-Total	4.51		0.20	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Cadmium (Cd)-Total	0.0037		0.0010	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Calcium (Ca)-Total	2220		4.0	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Cesium (Cs)-Total	0.0125		0.0010	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Chromium (Cr)-Total	0.124		0.010	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-42 16-GIANT-CR-41-DUP							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.220		0.0040	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Copper (Cu)-Total	1.28		0.020	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Iron (Fe)-Total	57.3		0.60	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Lead (Pb)-Total	0.0379		0.0040	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Lithium (Li)-Total	0.23		0.10	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Magnesium (Mg)-Total	662		0.40	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Manganese (Mn)-Total	213		0.010	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Molybdenum (Mo)-Total	0.0073		0.0040	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Nickel (Ni)-Total	0.643		0.040	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Phosphorus (P)-Total	424		2.0	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Potassium (K)-Total	1840		4.0	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Rubidium (Rb)-Total	2.80		0.010	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Selenium (Se)-Total	0.010		0.010	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Strontium (Sr)-Total	4.30		0.010	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Thallium (Tl)-Total	0.00042		0.00040	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Uranium (U)-Total	0.00202		0.00040	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Vanadium (V)-Total	0.115		0.020	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Zinc (Zn)-Total	3.86		0.10	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	25-NOV-16	29-NOV-16	R3607306
L1842753-43 16-GIANT-CR-51-DUP							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	55.7		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0114		0.0050	mg/kg	25-NOV-16	28-NOV-16	R3606149
Mercury (Hg)-Total	0.0051		0.0010	mg/kg wwt	25-NOV-16	28-NOV-16	R3606146
Silver (Ag)-Total	0.0108		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Silver (Ag)-Total	0.0048		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	232		2.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Antimony (Sb)-Total	1.64		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Arsenic (As)-Total	15.3		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Barium (Ba)-Total	22.2		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Beryllium (Be)-Total	<0.010		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Boron (B)-Total	9.4		1.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cadmium (Cd)-Total	0.0097		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Calcium (Ca)-Total	11300		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cesium (Cs)-Total	0.0101		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Chromium (Cr)-Total	0.657		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cobalt (Co)-Total	0.375		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Copper (Cu)-Total	1.92		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Iron (Fe)-Total	568		3.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Lead (Pb)-Total	1.07		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Lithium (Li)-Total	<0.50		0.50	mg/kg	25-NOV-16	27-NOV-16	R3606078
Magnesium (Mg)-Total	2820		2.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Manganese (Mn)-Total	30.6		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Molybdenum (Mo)-Total	0.028		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-43 16-GIANT-CR-51-DUP							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.89		0.20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Phosphorus (P)-Total	479		10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Potassium (K)-Total	1300		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Rubidium (Rb)-Total	0.363		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Selenium (Se)-Total	0.072		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Sodium (Na)-Total	<20		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Strontium (Sr)-Total	14.3		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Tellurium (Te)-Total	<0.020		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Tin (Sn)-Total	<0.10		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Uranium (U)-Total	0.0067		0.0020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Vanadium (V)-Total	0.89		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Zinc (Zn)-Total	8.25		0.50	mg/kg	25-NOV-16	27-NOV-16	R3606078
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	103		0.40	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Antimony (Sb)-Total	0.727		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Arsenic (As)-Total	6.77		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Barium (Ba)-Total	9.82		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Boron (B)-Total	4.15		0.20	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Cadmium (Cd)-Total	0.0043		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Calcium (Ca)-Total	4990		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Cesium (Cs)-Total	0.0045		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Chromium (Cr)-Total	0.291		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Cobalt (Co)-Total	0.166		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Copper (Cu)-Total	0.849		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Iron (Fe)-Total	252		0.60	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Lead (Pb)-Total	0.473		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Lithium (Li)-Total	0.16		0.10	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Magnesium (Mg)-Total	1250		0.40	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Manganese (Mn)-Total	13.6		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Molybdenum (Mo)-Total	0.0126		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Nickel (Ni)-Total	0.394		0.040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Phosphorus (P)-Total	212		2.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Potassium (K)-Total	575		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Rubidium (Rb)-Total	0.161		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Selenium (Se)-Total	0.032		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Sodium (Na)-Total	7.1		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Strontium (Sr)-Total	6.34		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Thallium (Tl)-Total	0.00074		0.00040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Uranium (U)-Total	0.00298		0.00040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Vanadium (V)-Total	0.396		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Zinc (Zn)-Total	3.66		0.10	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Zirconium (Zr)-Total	0.041		0.040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
L1842753-44 16-GIANT-CR-53-DUP							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-44 16-GIANT-CR-53-DUP							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	58.1		0.50	%		15-NOV-16	R3596897
Mercury (Hg)-Total	0.0141		0.0050	mg/kg	25-NOV-16	28-NOV-16	R3606149
Mercury (Hg)-Total	0.0059		0.0010	mg/kg wwt	25-NOV-16	28-NOV-16	R3606146
Silver (Ag)-Total	0.0060		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Silver (Ag)-Total	0.0025		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	153		2.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Antimony (Sb)-Total	1.17		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Arsenic (As)-Total	9.38		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Barium (Ba)-Total	16.6		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Beryllium (Be)-Total	<0.010		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	25-NOV-16	27-NOV-16	R3606078
Boron (B)-Total	12.4		1.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cadmium (Cd)-Total	0.0150		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Calcium (Ca)-Total	7070		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cesium (Cs)-Total	0.0107		0.0050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Chromium (Cr)-Total	0.430		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Cobalt (Co)-Total	0.287		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Copper (Cu)-Total	2.01		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Iron (Fe)-Total	384		3.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Lead (Pb)-Total	0.812		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Lithium (Li)-Total	<0.50		0.50	mg/kg	25-NOV-16	27-NOV-16	R3606078
Magnesium (Mg)-Total	1950		2.0	mg/kg	25-NOV-16	27-NOV-16	R3606078
Manganese (Mn)-Total	81.8		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Molybdenum (Mo)-Total	0.030		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Nickel (Ni)-Total	0.94		0.20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Phosphorus (P)-Total	568		10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Potassium (K)-Total	2470		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Rubidium (Rb)-Total	0.904		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Selenium (Se)-Total	0.066		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Sodium (Na)-Total	<20		20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Strontium (Sr)-Total	9.59		0.050	mg/kg	25-NOV-16	27-NOV-16	R3606078
Tellurium (Te)-Total	<0.020		0.020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Tin (Sn)-Total	<0.10		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Uranium (U)-Total	0.0056		0.0020	mg/kg	25-NOV-16	27-NOV-16	R3606078
Vanadium (V)-Total	0.55		0.10	mg/kg	25-NOV-16	27-NOV-16	R3606078
Zinc (Zn)-Total	11.9		0.50	mg/kg	25-NOV-16	27-NOV-16	R3606078
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	25-NOV-16	27-NOV-16	R3606078
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	64.1		0.40	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Antimony (Sb)-Total	0.492		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Arsenic (As)-Total	3.93		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Barium (Ba)-Total	6.95		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Boron (B)-Total	5.19		0.20	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Cadmium (Cd)-Total	0.0063		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Calcium (Ca)-Total	2970		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Cesium (Cs)-Total	0.0045		0.0010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Chromium (Cr)-Total	0.180		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842753-44 16-GIANT-CR-53-DUP							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.121		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Copper (Cu)-Total	0.842		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Iron (Fe)-Total	161		0.60	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Lead (Pb)-Total	0.340		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Lithium (Li)-Total	0.18		0.10	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Magnesium (Mg)-Total	818		0.40	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Manganese (Mn)-Total	34.3		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Molybdenum (Mo)-Total	0.0125		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Nickel (Ni)-Total	0.393		0.040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Phosphorus (P)-Total	238		2.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Potassium (K)-Total	1030		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Rubidium (Rb)-Total	0.379		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Selenium (Se)-Total	0.027		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Strontium (Sr)-Total	4.02		0.010	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Thallium (Tl)-Total	0.00074		0.00040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Uranium (U)-Total	0.00236		0.00040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Vanadium (V)-Total	0.229		0.020	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Zinc (Zn)-Total	5.00		0.10	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	25-NOV-16	27-NOV-16	R3606078

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
AG-DRY-CCMS-N-VA	Tissue	Silver in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

AG-WET-CCMS-N-VA	Tissue	Silver in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

Quality Control Report

Workorder: L1842753 Report Date: 15-DEC-16

Client: GOLDER ASSOCIATES LTD
16820 107 Ave NW
EDMONTON AB T5P 4C3

Contact: Steven Fiddler

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
AG-DRY-CCMS-N-VA	**Tissue**							
Batch R3606078								
WG2440011-3 CRM		**VA-NIST-1575A**						
Silver (Ag)-Total			0.0105		mg/kg		0.0061-0.01	27-NOV-16
WG2440011-2 DUP		**L1842753-35**						
Silver (Ag)-Total		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	40	27-NOV-16
WG2440011-4 LCS								
Silver (Ag)-Total			93.8		%		70-130	27-NOV-16
WG2440011-1 MB								
Silver (Ag)-Total			<0.0050		mg/kg		0.005	27-NOV-16
Batch R3606134								
WG2439113-5 CRM		**VA-NIST-1575A**						
Silver (Ag)-Total			0.0112		mg/kg		0.0061-0.01	25-NOV-16
WG2439113-8 CRM		**VA-NIST-1566B**						
Silver (Ag)-Total			107.9		%		70-130	25-NOV-16
WG2439113-3 DUP		**L1842753-1**						
Silver (Ag)-Total		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	40	25-NOV-16
WG2439113-4 DUP		**L1842753-21**						
Silver (Ag)-Total		0.0165	0.0173		mg/kg	4.8	40	25-NOV-16
WG2439113-6 LCS								
Silver (Ag)-Total			94.5		%		70-130	25-NOV-16
WG2439113-7 LCS								
Silver (Ag)-Total			97.4		%		70-130	25-NOV-16
WG2439113-1 MB								
Silver (Ag)-Total			<0.0050		mg/kg		0.005	25-NOV-16
WG2439113-2 MB								
Silver (Ag)-Total			<0.0050		mg/kg		0.005	25-NOV-16
AG-WET-CCMS-N-VA	**Tissue**							
Batch R3606078								
WG2440011-3 CRM		**VA-NIST-1575A**						
Silver (Ag)-Total			0.0105		mg/kg wwt		0.0061-0.01	27-NOV-16
WG2440011-2 DUP		**L1842753-35**						
Silver (Ag)-Total		<0.0010	<0.0010	RPD-NA	mg/kg wwt	N/A	40	27-NOV-16
WG2440011-4 LCS								
Silver (Ag)-Total			93.8		%		70-130	27-NOV-16
WG2440011-1 MB								
Silver (Ag)-Total			<0.0010		mg/kg wwt		0.001	27-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
AG-WET-CCMS-N-VA	**Tissue**							
Batch R3606134								
WG2439113-5 CRM		**VA-NIST-1575A**						
Silver (Ag)-Total			0.0112		mg/kg wwt		0.0061-0.01	25-NOV-16
WG2439113-8 CRM		**VA-NIST-1566B**						
Silver (Ag)-Total			107.9		%		70-130	25-NOV-16
WG2439113-3 DUP		**L1842753-1**						
Silver (Ag)-Total		0.0011	0.0010		mg/kg wwt	8.0	40	25-NOV-16
WG2439113-4 DUP		**L1842753-21**						
Silver (Ag)-Total		0.0066	0.0069		mg/kg wwt	4.8	40	25-NOV-16
WG2439113-6 LCS								
Silver (Ag)-Total			94.5		%		70-130	25-NOV-16
WG2439113-7 LCS								
Silver (Ag)-Total			97.4		%		70-130	25-NOV-16
WG2439113-1 MB								
Silver (Ag)-Total			<0.0010		mg/kg wwt		0.001	25-NOV-16
WG2439113-2 MB								
Silver (Ag)-Total			<0.0010		mg/kg wwt		0.001	25-NOV-16
HG-DRY-CVAFS-N-VA	**Tissue**							
Batch R3606149								
WG2440011-3 CRM		**VA-NIST-1575A**						
Mercury (Hg)-Total			90.9		%		70-130	28-NOV-16
WG2440011-2 DUP		**L1842753-35**						
Mercury (Hg)-Total		0.0134	0.0136		mg/kg	2.0	40	28-NOV-16
WG2440011-4 LCS								
Mercury (Hg)-Total			111.0		%		70-130	28-NOV-16
WG2440011-1 MB								
Mercury (Hg)-Total			<0.0050		mg/kg		0.005	28-NOV-16
Batch R3606242								
WG2439113-5 CRM		**VA-NIST-1575A**						
Mercury (Hg)-Total			80.2		%		70-130	25-NOV-16
WG2439113-8 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			81.2		%		70-130	25-NOV-16
WG2439113-3 DUP		**L1842753-1**						
Mercury (Hg)-Total		0.0125	0.0128		mg/kg	2.4	40	25-NOV-16
WG2439113-4 DUP		**L1842753-21**						
Mercury (Hg)-Total		0.0192	0.0188		mg/kg	2.0	40	25-NOV-16
WG2439113-6 LCS								
Mercury (Hg)-Total			91.5		%		70-130	25-NOV-16
WG2439113-7 LCS								

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-DRY-CVAFS-N-VA	**Tissue**							
Batch R3606242								
WG2439113-7 LCS								
Mercury (Hg)-Total			93.4		%		70-130	25-NOV-16
WG2439113-1 MB								
Mercury (Hg)-Total			<0.0050		mg/kg		0.005	25-NOV-16
WG2439113-2 MB								
Mercury (Hg)-Total			<0.0050		mg/kg		0.005	25-NOV-16
HG-WET-CVAFS-N-VA	**Tissue**							
Batch R3606146								
WG2440011-3 CRM		**VA-NIST-1575A**						
Mercury (Hg)-Total			90.9		%		70-130	28-NOV-16
WG2440011-2 DUP		**L1842753-35**						
Mercury (Hg)-Total		0.0060	0.0062		mg/kg wwt	2.0	40	28-NOV-16
WG2440011-4 LCS								
Mercury (Hg)-Total			111.0		%		70-130	28-NOV-16
WG2440011-1 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	28-NOV-16
Batch R3606238								
WG2439113-5 CRM		**VA-NIST-1575A**						
Mercury (Hg)-Total			80.2		%		70-130	25-NOV-16
WG2439113-8 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			81.2		%		70-130	25-NOV-16
WG2439113-3 DUP		**L1842753-1**						
Mercury (Hg)-Total		0.0061	0.0063		mg/kg wwt	2.4	40	25-NOV-16
WG2439113-4 DUP		**L1842753-21**						
Mercury (Hg)-Total		0.0077	0.0075		mg/kg wwt	2.0	40	25-NOV-16
WG2439113-6 LCS								
Mercury (Hg)-Total			91.5		%		70-130	25-NOV-16
WG2439113-7 LCS								
Mercury (Hg)-Total			93.4		%		70-130	25-NOV-16
WG2439113-1 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	25-NOV-16
WG2439113-2 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	25-NOV-16
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3606078								
WG2440011-3 CRM		**VA-NIST-1575A**						
Aluminum (Al)-Total			101.3		%		70-130	27-NOV-16
Arsenic (As)-Total			0.041		mg/kg		0.019-0.059	27-NOV-16

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3606078								
WG2440011-3 CRM		**VA-NIST-1575A**						
Barium (Ba)-Total			99.4		%		70-130	27-NOV-16
Boron (B)-Total			84.3		%		70-130	27-NOV-16
Cadmium (Cd)-Total			97.2		%		70-130	27-NOV-16
Calcium (Ca)-Total			96.7		%		70-130	27-NOV-16
Cesium (Cs)-Total			97.5		%		70-130	27-NOV-16
Chromium (Cr)-Total			91.1		%		70-130	27-NOV-16
Cobalt (Co)-Total			0.059		mg/kg		0.041-0.081	27-NOV-16
Copper (Cu)-Total			104.7		%		70-130	27-NOV-16
Iron (Fe)-Total			100.2		%		70-130	27-NOV-16
Lead (Pb)-Total			97.5		%		70-130	27-NOV-16
Magnesium (Mg)-Total			102.9		%		70-130	27-NOV-16
Manganese (Mn)-Total			96.4		%		70-130	27-NOV-16
Nickel (Ni)-Total			99.1		%		70-130	27-NOV-16
Phosphorus (P)-Total			101.9		%		70-130	27-NOV-16
Potassium (K)-Total			100.4		%		70-130	27-NOV-16
Rubidium (Rb)-Total			97.9		%		70-130	27-NOV-16
Selenium (Se)-Total			0.106		mg/kg		0.049-0.149	27-NOV-16
Sodium (Na)-Total			63		mg/kg		43-83	27-NOV-16
Strontium (Sr)-Total			98.5		%		70-130	27-NOV-16
Thallium (Tl)-Total			81.9		%		70-130	27-NOV-16
Uranium (U)-Total			0.0040		mg/kg		0.002-0.006	27-NOV-16
Vanadium (V)-Total			0.09		mg/kg		0-0.19	27-NOV-16
Zinc (Zn)-Total			103.8		%		70-130	27-NOV-16
WG2440011-2 DUP		**L1842753-35**						
Aluminum (Al)-Total		33.6	32.4		mg/kg	3.6	40	27-NOV-16
Antimony (Sb)-Total		0.139	0.121		mg/kg	14	40	27-NOV-16
Arsenic (As)-Total		1.24	1.19		mg/kg	3.7	40	27-NOV-16
Barium (Ba)-Total		33.2	31.4		mg/kg	5.6	40	27-NOV-16
Beryllium (Be)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	27-NOV-16
Bismuth (Bi)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	27-NOV-16
Boron (B)-Total		17.1	17.0		mg/kg	0.7	40	27-NOV-16
Cadmium (Cd)-Total		0.0086	0.0080		mg/kg	6.3	40	27-NOV-16
Calcium (Ca)-Total		4230	4000		mg/kg	5.6	60	27-NOV-16
Cesium (Cs)-Total		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	40	27-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3606078								
WG2440011-2 DUP		**L1842753-35**						
Chromium (Cr)-Total		0.073	0.079		mg/kg	8.2	40	27-NOV-16
Cobalt (Co)-Total		0.044	0.041		mg/kg	6.8	40	27-NOV-16
Copper (Cu)-Total		2.27	2.09		mg/kg	8.3	40	27-NOV-16
Iron (Fe)-Total		62.0	57.6		mg/kg	7.3	40	27-NOV-16
Lead (Pb)-Total		0.094	0.086		mg/kg	8.1	40	27-NOV-16
Lithium (Li)-Total		<0.50	<0.50	RPD-NA	mg/kg	N/A	40	27-NOV-16
Magnesium (Mg)-Total		1780	1660		mg/kg	6.9	40	27-NOV-16
Manganese (Mn)-Total		257	249		mg/kg	3.1	40	27-NOV-16
Molybdenum (Mo)-Total		0.210	0.199		mg/kg	5.6	40	27-NOV-16
Nickel (Ni)-Total		0.20	<0.20	RPD-NA	mg/kg	N/A	40	27-NOV-16
Phosphorus (P)-Total		881	814		mg/kg	7.9	40	27-NOV-16
Potassium (K)-Total		4190	3860		mg/kg	8.1	40	27-NOV-16
Rubidium (Rb)-Total		1.72	1.61		mg/kg	7.0	40	27-NOV-16
Selenium (Se)-Total		<0.050	<0.050	RPD-NA	mg/kg	N/A	40	27-NOV-16
Sodium (Na)-Total		<20	<20	RPD-NA	mg/kg	N/A	40	27-NOV-16
Strontium (Sr)-Total		6.43	6.01		mg/kg	6.8	60	27-NOV-16
Tellurium (Te)-Total		<0.020	<0.020	RPD-NA	mg/kg	N/A	40	27-NOV-16
Thallium (Tl)-Total		<0.0020	<0.0020	RPD-NA	mg/kg	N/A	40	27-NOV-16
Tin (Sn)-Total		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	27-NOV-16
Uranium (U)-Total		0.0024	<0.0020	RPD-NA	mg/kg	N/A	40	27-NOV-16
Vanadium (V)-Total		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	27-NOV-16
Zinc (Zn)-Total		13.8	12.1		mg/kg	13	40	27-NOV-16
Zirconium (Zr)-Total		<0.20	<0.20	RPD-NA	mg/kg	N/A	40	27-NOV-16
WG2440011-4 LCS								
Aluminum (Al)-Total			106.6		%		70-130	27-NOV-16
Antimony (Sb)-Total			100.4		%		70-130	27-NOV-16
Arsenic (As)-Total			106.0		%		70-130	27-NOV-16
Barium (Ba)-Total			102.9		%		70-130	27-NOV-16
Beryllium (Be)-Total			99.7		%		70-130	27-NOV-16
Bismuth (Bi)-Total			97.8		%		70-130	27-NOV-16
Boron (B)-Total			94.1		%		70-130	27-NOV-16
Cadmium (Cd)-Total			101.4		%		70-130	27-NOV-16
Calcium (Ca)-Total			98.7		%		70-130	27-NOV-16
Cesium (Cs)-Total			98.9		%		70-130	27-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3606078								
WG2440011-4 LCS								
Chromium (Cr)-Total			102.5		%		70-130	27-NOV-16
Cobalt (Co)-Total			103.2		%		70-130	27-NOV-16
Copper (Cu)-Total			100.7		%		70-130	27-NOV-16
Iron (Fe)-Total			100.8		%		70-130	27-NOV-16
Lead (Pb)-Total			100.4		%		70-130	27-NOV-16
Lithium (Li)-Total			99.5		%		70-130	27-NOV-16
Magnesium (Mg)-Total			104.9		%		70-130	27-NOV-16
Manganese (Mn)-Total			105.3		%		70-130	27-NOV-16
Molybdenum (Mo)-Total			101.5		%		70-130	27-NOV-16
Nickel (Ni)-Total			101.1		%		70-130	27-NOV-16
Phosphorus (P)-Total			113.2		%		70-130	27-NOV-16
Potassium (K)-Total			106.2		%		70-130	27-NOV-16
Rubidium (Rb)-Total			101.7		%		70-130	27-NOV-16
Selenium (Se)-Total			101.5		%		70-130	27-NOV-16
Sodium (Na)-Total			106.3		%		70-130	27-NOV-16
Strontium (Sr)-Total			107.4		%		70-130	27-NOV-16
Tellurium (Te)-Total			97.5		%		70-130	27-NOV-16
Thallium (Tl)-Total			99.6		%		70-130	27-NOV-16
Tin (Sn)-Total			98.4		%		70-130	27-NOV-16
Uranium (U)-Total			100.9		%		70-130	27-NOV-16
Vanadium (V)-Total			106.5		%		70-130	27-NOV-16
Zinc (Zn)-Total			98.6		%		70-130	27-NOV-16
Zirconium (Zr)-Total			91.4		%		70-130	27-NOV-16
WG2440011-1 MB								
Aluminum (Al)-Total			<2.0		mg/kg		2	27-NOV-16
Antimony (Sb)-Total			<0.010		mg/kg		0.01	27-NOV-16
Arsenic (As)-Total			<0.020		mg/kg		0.02	27-NOV-16
Barium (Ba)-Total			<0.050		mg/kg		0.05	27-NOV-16
Beryllium (Be)-Total			<0.010		mg/kg		0.01	27-NOV-16
Bismuth (Bi)-Total			<0.010		mg/kg		0.01	27-NOV-16
Boron (B)-Total			<1.0		mg/kg		1	27-NOV-16
Cadmium (Cd)-Total			<0.0050		mg/kg		0.005	27-NOV-16
Calcium (Ca)-Total			<20		mg/kg		20	27-NOV-16
Cesium (Cs)-Total			<0.0050		mg/kg		0.005	27-NOV-16

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Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3606078								
WG2440011-1 MB								
Chromium (Cr)-Total			<0.050		mg/kg		0.05	27-NOV-16
Cobalt (Co)-Total			<0.020		mg/kg		0.02	27-NOV-16
Copper (Cu)-Total			<0.10		mg/kg		0.1	27-NOV-16
Iron (Fe)-Total			<3.0		mg/kg		3	27-NOV-16
Lead (Pb)-Total			<0.020		mg/kg		0.02	27-NOV-16
Lithium (Li)-Total			<0.50		mg/kg		0.5	27-NOV-16
Magnesium (Mg)-Total			<2.0		mg/kg		2	27-NOV-16
Manganese (Mn)-Total			<0.050		mg/kg		0.05	27-NOV-16
Molybdenum (Mo)-Total			<0.020		mg/kg		0.02	27-NOV-16
Nickel (Ni)-Total			<0.20		mg/kg		0.2	27-NOV-16
Phosphorus (P)-Total			<10		mg/kg		10	27-NOV-16
Potassium (K)-Total			<20		mg/kg		20	27-NOV-16
Rubidium (Rb)-Total			<0.050		mg/kg		0.05	27-NOV-16
Selenium (Se)-Total			<0.050		mg/kg		0.05	27-NOV-16
Sodium (Na)-Total			<20		mg/kg		20	27-NOV-16
Strontium (Sr)-Total			<0.050		mg/kg		0.05	27-NOV-16
Tellurium (Te)-Total			<0.020		mg/kg		0.02	27-NOV-16
Thallium (Tl)-Total			<0.0020		mg/kg		0.002	27-NOV-16
Tin (Sn)-Total			<0.10		mg/kg		0.1	27-NOV-16
Uranium (U)-Total			<0.0020		mg/kg		0.002	27-NOV-16
Vanadium (V)-Total			<0.10		mg/kg		0.1	27-NOV-16
Zinc (Zn)-Total			<0.50		mg/kg		0.5	27-NOV-16
Zirconium (Zr)-Total			<0.20		mg/kg		0.2	27-NOV-16
Batch R3606134								
WG2439113-5 CRM		**VA-NIST-1575A**						
Aluminum (Al)-Total			104.8		%		70-130	25-NOV-16
Arsenic (As)-Total			0.032		mg/kg		0.019-0.059	25-NOV-16
Barium (Ba)-Total			106.1		%		70-130	25-NOV-16
Boron (B)-Total			93.5		%		70-130	25-NOV-16
Cadmium (Cd)-Total			103.0		%		70-130	25-NOV-16
Calcium (Ca)-Total			101.7		%		70-130	25-NOV-16
Cesium (Cs)-Total			103.9		%		70-130	25-NOV-16
Chromium (Cr)-Total			99.8		%		70-130	25-NOV-16
Cobalt (Co)-Total			0.061		mg/kg		0.041-0.081	25-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3606134								
WG2439113-5 CRM		**VA-NIST-1575A**						
Copper (Cu)-Total			108.5		%		70-130	25-NOV-16
Iron (Fe)-Total			103.4		%		70-130	25-NOV-16
Lead (Pb)-Total			103.3		%		70-130	25-NOV-16
Magnesium (Mg)-Total			103.9		%		70-130	25-NOV-16
Manganese (Mn)-Total			101.4		%		70-130	25-NOV-16
Nickel (Ni)-Total			104.1		%		70-130	25-NOV-16
Phosphorus (P)-Total			108.1		%		70-130	25-NOV-16
Potassium (K)-Total			103.2		%		70-130	25-NOV-16
Rubidium (Rb)-Total			104.5		%		70-130	25-NOV-16
Selenium (Se)-Total			0.107		mg/kg		0.049-0.149	25-NOV-16
Sodium (Na)-Total			64		mg/kg		43-83	25-NOV-16
Strontium (Sr)-Total			103.9		%		70-130	25-NOV-16
Thallium (Tl)-Total			90.1		%		70-130	25-NOV-16
Uranium (U)-Total			0.0040		mg/kg		0.002-0.006	25-NOV-16
Vanadium (V)-Total			0.09		mg/kg		0-0.19	25-NOV-16
Zinc (Zn)-Total			104.8		%		70-130	25-NOV-16
WG2439113-8 CRM		**VA-NIST-1566B**						
Arsenic (As)-Total			105.5		%		70-130	25-NOV-16
Barium (Ba)-Total			107.0		%		70-130	25-NOV-16
Boron (B)-Total			104.8		%		70-130	25-NOV-16
Cadmium (Cd)-Total			92.3		%		70-130	25-NOV-16
Calcium (Ca)-Total			105.6		%		70-130	25-NOV-16
Chromium (Cr)-Total			84.1		%		70-130	25-NOV-16
Cobalt (Co)-Total			99.6		%		70-130	25-NOV-16
Copper (Cu)-Total			101.4		%		70-130	25-NOV-16
Iron (Fe)-Total			106.3		%		70-130	25-NOV-16
Lead (Pb)-Total			115.7		%		70-130	25-NOV-16
Magnesium (Mg)-Total			100.1		%		70-130	25-NOV-16
Manganese (Mn)-Total			103.1		%		70-130	25-NOV-16
Molybdenum (Mo)-Total			111.5		%		70-130	25-NOV-16
Nickel (Ni)-Total			106.2		%		70-130	25-NOV-16
Phosphorus (P)-Total			115.0		%		70-130	25-NOV-16
Potassium (K)-Total			101.6		%		70-130	25-NOV-16
Rubidium (Rb)-Total			108.5		%		70-130	25-NOV-16

Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3606134								
WG2439113-8 CRM		**VA-NIST-1566B**						
Selenium (Se)-Total			112.7		%		70-130	25-NOV-16
Sodium (Na)-Total			98.9		%		70-130	25-NOV-16
Strontium (Sr)-Total			102.5		%		70-130	25-NOV-16
Uranium (U)-Total			105.5		%		70-130	25-NOV-16
Vanadium (V)-Total			101.7		%		70-130	25-NOV-16
Zinc (Zn)-Total			93.5		%		70-130	25-NOV-16
WG2439113-3 DUP		**L1842753-1**						
Aluminum (Al)-Total		261	247		mg/kg	5.4	40	25-NOV-16
Antimony (Sb)-Total		0.151	0.120		mg/kg	23	40	25-NOV-16
Arsenic (As)-Total		1.23	1.13		mg/kg	8.4	40	25-NOV-16
Barium (Ba)-Total		59.1	60.5		mg/kg	2.4	40	25-NOV-16
Beryllium (Be)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	25-NOV-16
Bismuth (Bi)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	25-NOV-16
Boron (B)-Total		7.1	6.9		mg/kg	2.8	40	25-NOV-16
Cadmium (Cd)-Total		0.0064	0.0058		mg/kg	11	40	25-NOV-16
Calcium (Ca)-Total		5610	5270		mg/kg	6.3	60	25-NOV-16
Cesium (Cs)-Total		0.0301	0.0259		mg/kg	15	40	25-NOV-16
Chromium (Cr)-Total		0.621	0.574		mg/kg	7.9	40	25-NOV-16
Cobalt (Co)-Total		0.252	0.239		mg/kg	5.4	40	25-NOV-16
Copper (Cu)-Total		2.60	2.66		mg/kg	2.4	40	25-NOV-16
Lead (Pb)-Total		0.249	0.209		mg/kg	18	40	25-NOV-16
Lithium (Li)-Total		<0.50	<0.50	RPD-NA	mg/kg	N/A	40	25-NOV-16
Magnesium (Mg)-Total		1770	1790		mg/kg	1.0	40	25-NOV-16
Manganese (Mn)-Total		217	214		mg/kg	1.5	40	25-NOV-16
Molybdenum (Mo)-Total		0.059	0.055		mg/kg	7.1	40	25-NOV-16
Nickel (Ni)-Total		1.20	1.16		mg/kg	3.3	40	25-NOV-16
Phosphorus (P)-Total		838	856		mg/kg	2.1	40	25-NOV-16
Potassium (K)-Total		3450	3490		mg/kg	1.1	40	25-NOV-16
Rubidium (Rb)-Total		3.95	3.98		mg/kg	0.7	40	25-NOV-16
Sodium (Na)-Total		<20	<20	RPD-NA	mg/kg	N/A	40	25-NOV-16
Strontium (Sr)-Total		10.6	9.89		mg/kg	6.5	60	25-NOV-16
Tellurium (Te)-Total		<0.020	<0.020	RPD-NA	mg/kg	N/A	40	25-NOV-16
Thallium (Tl)-Total		0.0030	0.0026		mg/kg	16	40	25-NOV-16
Tin (Sn)-Total		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	25-NOV-16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3606134								
WG2439113-3 DUP		**L1842753-1**						
Uranium (U)-Total		0.0326	0.0284		mg/kg	14	40	25-NOV-16
Vanadium (V)-Total		0.59	0.55		mg/kg	7.2	40	25-NOV-16
Zinc (Zn)-Total		11.5	11.1		mg/kg	2.9	40	25-NOV-16
Zirconium (Zr)-Total		<0.20	<0.20	RPD-NA	mg/kg	N/A	40	25-NOV-16
WG2439113-4 DUP		**L1842753-21**						
Aluminum (Al)-Total		475	437		mg/kg	8.4	40	25-NOV-16
Antimony (Sb)-Total		3.16	2.70		mg/kg	16	40	25-NOV-16
Arsenic (As)-Total		31.0	26.4		mg/kg	16	40	25-NOV-16
Barium (Ba)-Total		51.0	49.7		mg/kg	2.7	40	25-NOV-16
Beryllium (Be)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	25-NOV-16
Bismuth (Bi)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	25-NOV-16
Boron (B)-Total		3.7	3.3		mg/kg	8.8	40	25-NOV-16
Cadmium (Cd)-Total		0.0211	0.0186		mg/kg	13	40	25-NOV-16
Calcium (Ca)-Total		7120	6580		mg/kg	7.9	60	25-NOV-16
Cesium (Cs)-Total		0.0235	0.0204		mg/kg	14	40	25-NOV-16
Chromium (Cr)-Total		1.12	1.02		mg/kg	9.6	40	25-NOV-16
Cobalt (Co)-Total		0.948	0.874		mg/kg	8.0	40	25-NOV-16
Copper (Cu)-Total		4.82	4.65		mg/kg	3.6	40	25-NOV-16
Lead (Pb)-Total		2.52	2.04		mg/kg	21	40	25-NOV-16
Lithium (Li)-Total		0.67	0.56		mg/kg	19	40	25-NOV-16
Magnesium (Mg)-Total		1680	1670		mg/kg	0.8	40	25-NOV-16
Manganese (Mn)-Total		110	108		mg/kg	2.0	40	25-NOV-16
Molybdenum (Mo)-Total		0.028	0.022		mg/kg	24	40	25-NOV-16
Nickel (Ni)-Total		2.68	2.52		mg/kg	6.1	40	25-NOV-16
Phosphorus (P)-Total		747	737		mg/kg	1.3	40	25-NOV-16
Potassium (K)-Total		3170	3170		mg/kg	0.1	40	25-NOV-16
Rubidium (Rb)-Total		2.30	2.29		mg/kg	0.4	40	25-NOV-16
Sodium (Na)-Total		<20	<20	RPD-NA	mg/kg	N/A	40	25-NOV-16
Strontium (Sr)-Total		12.0	11.1		mg/kg	8.4	60	25-NOV-16
Tellurium (Te)-Total		<0.020	<0.020	RPD-NA	mg/kg	N/A	40	25-NOV-16
Thallium (Tl)-Total		0.0037	0.0031		mg/kg	17	40	25-NOV-16
Tin (Sn)-Total		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	25-NOV-16
Uranium (U)-Total		0.0122	0.0111		mg/kg	9.0	40	25-NOV-16
Vanadium (V)-Total		1.48	1.31		mg/kg	13	40	25-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3606134								
WG2439113-4 DUP		**L1842753-21**						
Zinc (Zn)-Total		10.2	9.78		mg/kg	4.6	40	25-NOV-16
Zirconium (Zr)-Total		<0.20	<0.20	RPD-NA	mg/kg	N/A	40	25-NOV-16
WG2439113-6 LCS								
Aluminum (Al)-Total			93.6		%		70-130	25-NOV-16
Antimony (Sb)-Total			101.0		%		70-130	25-NOV-16
Arsenic (As)-Total			96.6		%		70-130	25-NOV-16
Barium (Ba)-Total			98.5		%		70-130	25-NOV-16
Beryllium (Be)-Total			103.6		%		70-130	25-NOV-16
Bismuth (Bi)-Total			102.2		%		70-130	25-NOV-16
Boron (B)-Total			91.0		%		70-130	25-NOV-16
Cadmium (Cd)-Total			86.5		%		70-130	25-NOV-16
Calcium (Ca)-Total			100.5		%		70-130	25-NOV-16
Cesium (Cs)-Total			101.2		%		70-130	25-NOV-16
Chromium (Cr)-Total			92.6		%		70-130	25-NOV-16
Cobalt (Co)-Total			91.5		%		70-130	25-NOV-16
Copper (Cu)-Total			90.2		%		70-130	25-NOV-16
Iron (Fe)-Total			94.8		%		70-130	25-NOV-16
Lead (Pb)-Total			100.6		%		70-130	25-NOV-16
Lithium (Li)-Total			103.6		%		70-130	25-NOV-16
Magnesium (Mg)-Total			90.5		%		70-130	25-NOV-16
Manganese (Mn)-Total			99.6		%		70-130	25-NOV-16
Molybdenum (Mo)-Total			104.1		%		70-130	25-NOV-16
Nickel (Ni)-Total			91.5		%		70-130	25-NOV-16
Phosphorus (P)-Total			99.7		%		70-130	25-NOV-16
Potassium (K)-Total			95.0		%		70-130	25-NOV-16
Rubidium (Rb)-Total			95.1		%		70-130	25-NOV-16
Selenium (Se)-Total			93.8		%		70-130	25-NOV-16
Sodium (Na)-Total			92.8		%		70-130	25-NOV-16
Strontium (Sr)-Total			109.5		%		70-130	25-NOV-16
Tellurium (Te)-Total			102.3		%		70-130	25-NOV-16
Thallium (Tl)-Total			98.9		%		70-130	25-NOV-16
Tin (Sn)-Total			90.7		%		70-130	25-NOV-16
Uranium (U)-Total			100.9		%		70-130	25-NOV-16
Vanadium (V)-Total			94.7		%		70-130	25-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3606134								
WG2439113-6 LCS								
Zinc (Zn)-Total			86.9		%		70-130	25-NOV-16
Zirconium (Zr)-Total			89.1		%		70-130	25-NOV-16
WG2439113-7 LCS								
Aluminum (Al)-Total			101.2		%		70-130	25-NOV-16
Antimony (Sb)-Total			100.4		%		70-130	25-NOV-16
Arsenic (As)-Total			105.0		%		70-130	25-NOV-16
Barium (Ba)-Total			106.0		%		70-130	25-NOV-16
Beryllium (Be)-Total			106.5		%		70-130	25-NOV-16
Bismuth (Bi)-Total			102.9		%		70-130	25-NOV-16
Boron (B)-Total			93.1		%		70-130	25-NOV-16
Cadmium (Cd)-Total			97.8		%		70-130	25-NOV-16
Calcium (Ca)-Total			101.9		%		70-130	25-NOV-16
Cesium (Cs)-Total			100.4		%		70-130	25-NOV-16
Chromium (Cr)-Total			98.1		%		70-130	25-NOV-16
Cobalt (Co)-Total			100.5		%		70-130	25-NOV-16
Copper (Cu)-Total			98.9		%		70-130	25-NOV-16
Iron (Fe)-Total			101.9		%		70-130	25-NOV-16
Lead (Pb)-Total			102.3		%		70-130	25-NOV-16
Lithium (Li)-Total			108.5		%		70-130	25-NOV-16
Magnesium (Mg)-Total			99.3		%		70-130	25-NOV-16
Manganese (Mn)-Total			101.8		%		70-130	25-NOV-16
Molybdenum (Mo)-Total			105.2		%		70-130	25-NOV-16
Nickel (Ni)-Total			100.0		%		70-130	25-NOV-16
Phosphorus (P)-Total			108.4		%		70-130	25-NOV-16
Potassium (K)-Total			103.6		%		70-130	25-NOV-16
Rubidium (Rb)-Total			104.0		%		70-130	25-NOV-16
Selenium (Se)-Total			100.2		%		70-130	25-NOV-16
Sodium (Na)-Total			102.5		%		70-130	25-NOV-16
Strontium (Sr)-Total			111.5		%		70-130	25-NOV-16
Tellurium (Te)-Total			100.6		%		70-130	25-NOV-16
Thallium (Tl)-Total			100.5		%		70-130	25-NOV-16
Tin (Sn)-Total			99.7		%		70-130	25-NOV-16
Uranium (U)-Total			103.6		%		70-130	25-NOV-16
Vanadium (V)-Total			103.6		%		70-130	25-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3606134								
WG2439113-7 LCS								
Zinc (Zn)-Total			93.6		%		70-130	25-NOV-16
Zirconium (Zr)-Total			92.9		%		70-130	25-NOV-16
WG2439113-1 MB								
Aluminum (Al)-Total			<2.0		mg/kg		2	25-NOV-16
Antimony (Sb)-Total			<0.010		mg/kg		0.01	25-NOV-16
Arsenic (As)-Total			<0.020		mg/kg		0.02	25-NOV-16
Barium (Ba)-Total			<0.050		mg/kg		0.05	25-NOV-16
Beryllium (Be)-Total			<0.010		mg/kg		0.01	25-NOV-16
Bismuth (Bi)-Total			<0.010		mg/kg		0.01	25-NOV-16
Boron (B)-Total			<1.0		mg/kg		1	25-NOV-16
Cadmium (Cd)-Total			<0.0050		mg/kg		0.005	25-NOV-16
Calcium (Ca)-Total			<20		mg/kg		20	25-NOV-16
Cesium (Cs)-Total			<0.0050		mg/kg		0.005	25-NOV-16
Chromium (Cr)-Total			<0.050		mg/kg		0.05	25-NOV-16
Cobalt (Co)-Total			<0.020		mg/kg		0.02	25-NOV-16
Copper (Cu)-Total			<0.10		mg/kg		0.1	25-NOV-16
Iron (Fe)-Total			<3.0		mg/kg		3	25-NOV-16
Lead (Pb)-Total			<0.020		mg/kg		0.02	25-NOV-16
Lithium (Li)-Total			<0.50		mg/kg		0.5	25-NOV-16
Magnesium (Mg)-Total			<2.0		mg/kg		2	25-NOV-16
Manganese (Mn)-Total			<0.050		mg/kg		0.05	25-NOV-16
Molybdenum (Mo)-Total			<0.020		mg/kg		0.02	25-NOV-16
Nickel (Ni)-Total			<0.20		mg/kg		0.2	25-NOV-16
Phosphorus (P)-Total			<10		mg/kg		10	25-NOV-16
Potassium (K)-Total			<20		mg/kg		20	25-NOV-16
Rubidium (Rb)-Total			<0.050		mg/kg		0.05	25-NOV-16
Selenium (Se)-Total			<0.050		mg/kg		0.05	25-NOV-16
Sodium (Na)-Total			<20		mg/kg		20	25-NOV-16
Strontium (Sr)-Total			<0.050		mg/kg		0.05	25-NOV-16
Tellurium (Te)-Total			<0.020		mg/kg		0.02	25-NOV-16
Thallium (Tl)-Total			<0.0020		mg/kg		0.002	25-NOV-16
Tin (Sn)-Total			<0.10		mg/kg		0.1	25-NOV-16
Uranium (U)-Total			<0.0020		mg/kg		0.002	25-NOV-16
Vanadium (V)-Total			<0.10		mg/kg		0.1	25-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3606134								
WG2439113-1 MB								
Zinc (Zn)-Total			<0.50		mg/kg		0.5	25-NOV-16
Zirconium (Zr)-Total			<0.20		mg/kg		0.2	25-NOV-16
WG2439113-2 MB								
Aluminum (Al)-Total			<2.0		mg/kg		2	25-NOV-16
Antimony (Sb)-Total			<0.010		mg/kg		0.01	25-NOV-16
Arsenic (As)-Total			<0.020		mg/kg		0.02	25-NOV-16
Barium (Ba)-Total			<0.050		mg/kg		0.05	25-NOV-16
Beryllium (Be)-Total			<0.010		mg/kg		0.01	25-NOV-16
Bismuth (Bi)-Total			<0.010		mg/kg		0.01	25-NOV-16
Boron (B)-Total			<1.0		mg/kg		1	25-NOV-16
Cadmium (Cd)-Total			<0.0050		mg/kg		0.005	25-NOV-16
Calcium (Ca)-Total			<20		mg/kg		20	25-NOV-16
Cesium (Cs)-Total			<0.0050		mg/kg		0.005	25-NOV-16
Chromium (Cr)-Total			<0.050		mg/kg		0.05	25-NOV-16
Cobalt (Co)-Total			<0.020		mg/kg		0.02	25-NOV-16
Copper (Cu)-Total			<0.10		mg/kg		0.1	25-NOV-16
Iron (Fe)-Total			<3.0		mg/kg		3	25-NOV-16
Lead (Pb)-Total			<0.020		mg/kg		0.02	25-NOV-16
Lithium (Li)-Total			<0.50		mg/kg		0.5	25-NOV-16
Magnesium (Mg)-Total			<2.0		mg/kg		2	25-NOV-16
Manganese (Mn)-Total			<0.050		mg/kg		0.05	25-NOV-16
Molybdenum (Mo)-Total			<0.020		mg/kg		0.02	25-NOV-16
Nickel (Ni)-Total			<0.20		mg/kg		0.2	25-NOV-16
Phosphorus (P)-Total			<10		mg/kg		10	25-NOV-16
Potassium (K)-Total			<20		mg/kg		20	25-NOV-16
Rubidium (Rb)-Total			<0.050		mg/kg		0.05	25-NOV-16
Selenium (Se)-Total			<0.050		mg/kg		0.05	25-NOV-16
Sodium (Na)-Total			<20		mg/kg		20	25-NOV-16
Strontium (Sr)-Total			<0.050		mg/kg		0.05	25-NOV-16
Tellurium (Te)-Total			<0.020		mg/kg		0.02	25-NOV-16
Thallium (Tl)-Total			<0.0020		mg/kg		0.002	25-NOV-16
Tin (Sn)-Total			<0.10		mg/kg		0.1	25-NOV-16
Uranium (U)-Total			<0.0020		mg/kg		0.002	25-NOV-16
Vanadium (V)-Total			<0.10		mg/kg		0.1	25-NOV-16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3606134								
WG2439113-2 MB								
Zinc (Zn)-Total			<0.50		mg/kg		0.5	25-NOV-16
Zirconium (Zr)-Total			<0.20		mg/kg		0.2	25-NOV-16
Batch R3607306								
WG2439113-8 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.014		mg/kg		0-0.018	29-NOV-16
WG2439113-3 DUP		**L1842753-1**						
Iron (Fe)-Total		304	276		mg/kg	12	40	29-NOV-16
Selenium (Se)-Total		<0.050	<0.050	RPD-NA	mg/kg	N/A	40	29-NOV-16
WG2439113-4 DUP		**L1842753-21**						
Iron (Fe)-Total		1080	973		mg/kg	10	40	29-NOV-16
Selenium (Se)-Total		0.058	0.052		mg/kg	11	40	29-NOV-16
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3606078								
WG2440011-3 CRM		**VA-NIST-1575A**						
Aluminum (Al)-Total			101.3		%		70-130	27-NOV-16
Arsenic (As)-Total			0.0411		mg/kg wwt		0.019-0.059	27-NOV-16
Barium (Ba)-Total			99.4		%		70-130	27-NOV-16
Boron (B)-Total			84.3		%		70-130	27-NOV-16
Cadmium (Cd)-Total			97.2		%		70-130	27-NOV-16
Calcium (Ca)-Total			96.7		%		70-130	27-NOV-16
Cesium (Cs)-Total			97.5		%		70-130	27-NOV-16
Chromium (Cr)-Total			91.1		%		70-130	27-NOV-16
Cobalt (Co)-Total			0.0591		mg/kg wwt		0.041-0.081	27-NOV-16
Copper (Cu)-Total			104.7		%		70-130	27-NOV-16
Iron (Fe)-Total			100.2		%		70-130	27-NOV-16
Lead (Pb)-Total			97.5		%		70-130	27-NOV-16
Magnesium (Mg)-Total			102.9		%		70-130	27-NOV-16
Manganese (Mn)-Total			96.4		%		70-130	27-NOV-16
Nickel (Ni)-Total			99.1		%		70-130	27-NOV-16
Phosphorus (P)-Total			101.9		%		70-130	27-NOV-16
Potassium (K)-Total			100.4		%		70-130	27-NOV-16
Rubidium (Rb)-Total			97.9		%		70-130	27-NOV-16
Selenium (Se)-Total			0.106		mg/kg wwt		0.049-0.149	27-NOV-16
Sodium (Na)-Total			62.6		mg/kg wwt		43-83	27-NOV-16
Strontium (Sr)-Total			98.5		%		70-130	27-NOV-16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3606078								
WG2440011-3 CRM		**VA-NIST-1575A**						
Thallium (Tl)-Total			81.9		%		70-130	27-NOV-16
Uranium (U)-Total			0.00401		mg/kg wwt		0.00203-0.0(	27-NOV-16
Vanadium (V)-Total			0.095		mg/kg wwt		0-0.19	27-NOV-16
Zinc (Zn)-Total			103.8		%		70-130	27-NOV-16
WG2440011-2 DUP		**L1842753-35**						
Aluminum (Al)-Total		15.2	14.6		mg/kg wwt	3.6	40	27-NOV-16
Antimony (Sb)-Total		0.0628	0.0548		mg/kg wwt	14	40	27-NOV-16
Arsenic (As)-Total		0.559	0.539		mg/kg wwt	3.7	40	27-NOV-16
Barium (Ba)-Total		15.0	14.2		mg/kg wwt	5.6	40	27-NOV-16
Beryllium (Be)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	27-NOV-16
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	27-NOV-16
Boron (B)-Total		7.71	7.66		mg/kg wwt	0.7	40	27-NOV-16
Cadmium (Cd)-Total		0.0039	0.0036		mg/kg wwt	6.3	40	27-NOV-16
Calcium (Ca)-Total		1910	1800		mg/kg wwt	5.6	60	27-NOV-16
Cesium (Cs)-Total		0.0017	0.0013		mg/kg wwt	27	40	27-NOV-16
Chromium (Cr)-Total		0.033	0.036		mg/kg wwt	8.2	40	27-NOV-16
Cobalt (Co)-Total		0.0198	0.0185		mg/kg wwt	6.8	40	27-NOV-16
Copper (Cu)-Total		1.03	0.943		mg/kg wwt	8.3	40	27-NOV-16
Iron (Fe)-Total		28.0	26.0		mg/kg wwt	7.3	40	27-NOV-16
Lead (Pb)-Total		0.0422	0.0390		mg/kg wwt	8.1	40	27-NOV-16
Lithium (Li)-Total		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	40	27-NOV-16
Magnesium (Mg)-Total		803	749		mg/kg wwt	6.9	40	27-NOV-16
Manganese (Mn)-Total		116	112		mg/kg wwt	3.1	40	27-NOV-16
Molybdenum (Mo)-Total		0.0950	0.0898		mg/kg wwt	5.6	40	27-NOV-16
Nickel (Ni)-Total		0.091	0.081		mg/kg wwt	12	40	27-NOV-16
Phosphorus (P)-Total		398	367		mg/kg wwt	7.9	40	27-NOV-16
Potassium (K)-Total		1890	1740		mg/kg wwt	8.1	40	27-NOV-16
Rubidium (Rb)-Total		0.778	0.725		mg/kg wwt	7.0	40	27-NOV-16
Selenium (Se)-Total		<0.010	<0.010	RPD-NA	mg/kg wwt	N/A	40	27-NOV-16
Sodium (Na)-Total		<4.0	<4.0	RPD-NA	mg/kg wwt	N/A	40	27-NOV-16
Strontium (Sr)-Total		2.90	2.71		mg/kg wwt	6.8	60	27-NOV-16
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	27-NOV-16
Thallium (Tl)-Total		0.00043	<0.00040	RPD-NA	mg/kg wwt	N/A	40	27-NOV-16
Tin (Sn)-Total		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	40	27-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3606078								
WG2440011-2 DUP		**L1842753-35**						
Uranium (U)-Total		0.00107	0.00067	J	mg/kg wwt	0.00041	0.0008	27-NOV-16
Vanadium (V)-Total		0.037	0.034		mg/kg wwt	8.6	40	27-NOV-16
Zinc (Zn)-Total		6.23	5.48		mg/kg wwt	13	40	27-NOV-16
Zirconium (Zr)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	27-NOV-16
WG2440011-4 LCS								
Aluminum (Al)-Total			106.6		%		70-130	27-NOV-16
Antimony (Sb)-Total			100.4		%		70-130	27-NOV-16
Arsenic (As)-Total			106.0		%		70-130	27-NOV-16
Barium (Ba)-Total			102.9		%		70-130	27-NOV-16
Beryllium (Be)-Total			99.7		%		70-130	27-NOV-16
Bismuth (Bi)-Total			97.8		%		70-130	27-NOV-16
Boron (B)-Total			94.1		%		70-130	27-NOV-16
Cadmium (Cd)-Total			101.4		%		70-130	27-NOV-16
Calcium (Ca)-Total			98.7		%		70-130	27-NOV-16
Cesium (Cs)-Total			98.9		%		70-130	27-NOV-16
Chromium (Cr)-Total			102.5		%		70-130	27-NOV-16
Cobalt (Co)-Total			103.2		%		70-130	27-NOV-16
Copper (Cu)-Total			100.7		%		70-130	27-NOV-16
Iron (Fe)-Total			100.8		%		70-130	27-NOV-16
Lead (Pb)-Total			100.4		%		70-130	27-NOV-16
Lithium (Li)-Total			99.5		%		70-130	27-NOV-16
Magnesium (Mg)-Total			104.9		%		70-130	27-NOV-16
Manganese (Mn)-Total			105.3		%		70-130	27-NOV-16
Molybdenum (Mo)-Total			101.5		%		70-130	27-NOV-16
Nickel (Ni)-Total			101.1		%		70-130	27-NOV-16
Phosphorus (P)-Total			113.2		%		70-130	27-NOV-16
Potassium (K)-Total			106.2		%		70-130	27-NOV-16
Rubidium (Rb)-Total			101.7		%		70-130	27-NOV-16
Selenium (Se)-Total			101.5		%		70-130	27-NOV-16
Sodium (Na)-Total			106.3		%		70-130	27-NOV-16
Strontium (Sr)-Total			107.4		%		70-130	27-NOV-16
Tellurium (Te)-Total			97.5		%		70-130	27-NOV-16
Thallium (Tl)-Total			99.6		%		70-130	27-NOV-16
Tin (Sn)-Total			98.4		%		70-130	27-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3606078								
WG2440011-4 LCS								
Uranium (U)-Total			100.9		%		70-130	27-NOV-16
Vanadium (V)-Total			106.5		%		70-130	27-NOV-16
Zinc (Zn)-Total			98.6		%		70-130	27-NOV-16
Zirconium (Zr)-Total			91.4		%		70-130	27-NOV-16
WG2440011-1 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	27-NOV-16
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	27-NOV-16
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	27-NOV-16
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	27-NOV-16
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	27-NOV-16
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	27-NOV-16
Boron (B)-Total			<0.20		mg/kg wwt		0.2	27-NOV-16
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	27-NOV-16
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	27-NOV-16
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	27-NOV-16
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	27-NOV-16
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	27-NOV-16
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	27-NOV-16
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	27-NOV-16
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	27-NOV-16
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	27-NOV-16
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	27-NOV-16
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	27-NOV-16
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	27-NOV-16
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	27-NOV-16
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	27-NOV-16
Potassium (K)-Total			<4.0		mg/kg wwt		4	27-NOV-16
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	27-NOV-16
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	27-NOV-16
Sodium (Na)-Total			<4.0		mg/kg wwt		4	27-NOV-16
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	27-NOV-16
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	27-NOV-16
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	27-NOV-16
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	27-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3606078								
WG2440011-1 MB								
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	27-NOV-16
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	27-NOV-16
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	27-NOV-16
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	27-NOV-16
Batch R3606134								
WG2439113-5 CRM		**VA-NIST-1575A**						
Aluminum (Al)-Total			104.8		%		70-130	25-NOV-16
Arsenic (As)-Total			0.0323		mg/kg wwt		0.019-0.059	25-NOV-16
Barium (Ba)-Total			106.1		%		70-130	25-NOV-16
Boron (B)-Total			93.5		%		70-130	25-NOV-16
Cadmium (Cd)-Total			103.0		%		70-130	25-NOV-16
Calcium (Ca)-Total			101.7		%		70-130	25-NOV-16
Cesium (Cs)-Total			103.9		%		70-130	25-NOV-16
Chromium (Cr)-Total			99.8		%		70-130	25-NOV-16
Cobalt (Co)-Total			0.0612		mg/kg wwt		0.041-0.081	25-NOV-16
Copper (Cu)-Total			108.5		%		70-130	25-NOV-16
Iron (Fe)-Total			103.4		%		70-130	25-NOV-16
Lead (Pb)-Total			103.3		%		70-130	25-NOV-16
Magnesium (Mg)-Total			103.9		%		70-130	25-NOV-16
Manganese (Mn)-Total			101.4		%		70-130	25-NOV-16
Nickel (Ni)-Total			104.1		%		70-130	25-NOV-16
Phosphorus (P)-Total			108.1		%		70-130	25-NOV-16
Potassium (K)-Total			103.2		%		70-130	25-NOV-16
Rubidium (Rb)-Total			104.5		%		70-130	25-NOV-16
Selenium (Se)-Total			0.107		mg/kg wwt		0.049-0.149	25-NOV-16
Sodium (Na)-Total			64.1		mg/kg wwt		43-83	25-NOV-16
Strontium (Sr)-Total			103.9		%		70-130	25-NOV-16
Thallium (Tl)-Total			90.1		%		70-130	25-NOV-16
Uranium (U)-Total			0.00404		mg/kg wwt		0.00203-0.0	25-NOV-16
Vanadium (V)-Total			0.092		mg/kg wwt		0-0.19	25-NOV-16
Zinc (Zn)-Total			104.8		%		70-130	25-NOV-16
WG2439113-8 CRM		**VA-NIST-1566B**						
Arsenic (As)-Total			105.5		%		70-130	25-NOV-16
Barium (Ba)-Total			107.0		%		70-130	25-NOV-16
Boron (B)-Total			104.8		%		70-130	25-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3606134								
WG2439113-8 CRM		**VA-NIST-1566B**						
Cadmium (Cd)-Total			92.3		%		70-130	25-NOV-16
Calcium (Ca)-Total			105.6		%		70-130	25-NOV-16
Chromium (Cr)-Total			84.1		%		70-130	25-NOV-16
Cobalt (Co)-Total			99.6		%		70-130	25-NOV-16
Copper (Cu)-Total			101.4		%		70-130	25-NOV-16
Iron (Fe)-Total			106.3		%		70-130	25-NOV-16
Lead (Pb)-Total			115.7		%		70-130	25-NOV-16
Magnesium (Mg)-Total			100.1		%		70-130	25-NOV-16
Manganese (Mn)-Total			103.1		%		70-130	25-NOV-16
Molybdenum (Mo)-Total			111.5		%		70-130	25-NOV-16
Nickel (Ni)-Total			106.2		%		70-130	25-NOV-16
Phosphorus (P)-Total			115.0		%		70-130	25-NOV-16
Potassium (K)-Total			101.6		%		70-130	25-NOV-16
Rubidium (Rb)-Total			108.5		%		70-130	25-NOV-16
Selenium (Se)-Total			112.7		%		70-130	25-NOV-16
Sodium (Na)-Total			98.9		%		70-130	25-NOV-16
Strontium (Sr)-Total			102.5		%		70-130	25-NOV-16
Uranium (U)-Total			105.5		%		70-130	25-NOV-16
Vanadium (V)-Total			101.7		%		70-130	25-NOV-16
Zinc (Zn)-Total			93.5		%		70-130	25-NOV-16
WG2439113-3 DUP		**L1842753-1**						
Aluminum (Al)-Total		128	121		mg/kg wwt	5.4	40	25-NOV-16
Antimony (Sb)-Total		0.0739	0.0588		mg/kg wwt	23	40	25-NOV-16
Arsenic (As)-Total		0.600	0.552		mg/kg wwt	8.4	40	25-NOV-16
Barium (Ba)-Total		28.9	29.6		mg/kg wwt	2.4	40	25-NOV-16
Beryllium (Be)-Total		0.0025	0.0024		mg/kg wwt	5.6	40	25-NOV-16
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	25-NOV-16
Boron (B)-Total		3.48	3.38		mg/kg wwt	2.8	40	25-NOV-16
Cadmium (Cd)-Total		0.0031	0.0028		mg/kg wwt	11	40	25-NOV-16
Calcium (Ca)-Total		2740	2580		mg/kg wwt	6.3	60	25-NOV-16
Cesium (Cs)-Total		0.0147	0.0127		mg/kg wwt	15	40	25-NOV-16
Chromium (Cr)-Total		0.304	0.281		mg/kg wwt	7.9	40	25-NOV-16
Cobalt (Co)-Total		0.123	0.117		mg/kg wwt	5.4	40	25-NOV-16
Copper (Cu)-Total		1.27	1.30		mg/kg wwt	2.4	40	25-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3606134								
WG2439113-3 DUP		**L1842753-1**						
Lead (Pb)-Total		0.122	0.102		mg/kg wwt	18	40	25-NOV-16
Lithium (Li)-Total		0.22	0.19		mg/kg wwt	13	40	25-NOV-16
Magnesium (Mg)-Total		864	873		mg/kg wwt	1.0	40	25-NOV-16
Manganese (Mn)-Total		106	104		mg/kg wwt	1.5	40	25-NOV-16
Molybdenum (Mo)-Total		0.0291	0.0271		mg/kg wwt	7.1	40	25-NOV-16
Nickel (Ni)-Total		0.587	0.568		mg/kg wwt	3.3	40	25-NOV-16
Phosphorus (P)-Total		410	418		mg/kg wwt	2.1	40	25-NOV-16
Potassium (K)-Total		1690	1700		mg/kg wwt	1.1	40	25-NOV-16
Rubidium (Rb)-Total		1.93	1.95		mg/kg wwt	0.7	40	25-NOV-16
Sodium (Na)-Total		4.6	4.7		mg/kg wwt	2.0	40	25-NOV-16
Strontium (Sr)-Total		5.15	4.83		mg/kg wwt	6.5	60	25-NOV-16
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	25-NOV-16
Thallium (Tl)-Total		0.00149	0.00126		mg/kg wwt	16	40	25-NOV-16
Tin (Sn)-Total		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	40	25-NOV-16
Uranium (U)-Total		0.0159	0.0139		mg/kg wwt	14	40	25-NOV-16
Vanadium (V)-Total		0.290	0.270		mg/kg wwt	7.2	40	25-NOV-16
Zinc (Zn)-Total		5.60	5.44		mg/kg wwt	2.9	40	25-NOV-16
Zirconium (Zr)-Total		0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	25-NOV-16
WG2439113-4 DUP		**L1842753-21**						
Aluminum (Al)-Total		190	175		mg/kg wwt	8.4	40	25-NOV-16
Antimony (Sb)-Total		1.26	1.08		mg/kg wwt	16	40	25-NOV-16
Arsenic (As)-Total		12.4	10.6		mg/kg wwt	16	40	25-NOV-16
Barium (Ba)-Total		20.4	19.9		mg/kg wwt	2.7	40	25-NOV-16
Beryllium (Be)-Total		0.0035	0.0032		mg/kg wwt	7.1	40	25-NOV-16
Bismuth (Bi)-Total		0.0032	0.0024		mg/kg wwt	26	40	25-NOV-16
Boron (B)-Total		1.46	1.34		mg/kg wwt	8.8	40	25-NOV-16
Cadmium (Cd)-Total		0.0084	0.0074		mg/kg wwt	13	40	25-NOV-16
Calcium (Ca)-Total		2850	2640		mg/kg wwt	7.9	60	25-NOV-16
Cesium (Cs)-Total		0.0094	0.0082		mg/kg wwt	14	40	25-NOV-16
Chromium (Cr)-Total		0.451	0.409		mg/kg wwt	9.6	40	25-NOV-16
Cobalt (Co)-Total		0.380	0.350		mg/kg wwt	8.0	40	25-NOV-16
Copper (Cu)-Total		1.93	1.86		mg/kg wwt	3.6	40	25-NOV-16
Lead (Pb)-Total		1.01	0.815		mg/kg wwt	21	40	25-NOV-16
Lithium (Li)-Total		0.27	0.22		mg/kg wwt	19	40	25-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3606134								
WG2439113-4 DUP		**L1842753-21**						
Magnesium (Mg)-Total		673	667		mg/kg wwt	0.8	40	25-NOV-16
Manganese (Mn)-Total		44.2	43.4		mg/kg wwt	2.0	40	25-NOV-16
Molybdenum (Mo)-Total		0.0113	0.0088		mg/kg wwt	24	40	25-NOV-16
Nickel (Ni)-Total		1.07	1.01		mg/kg wwt	6.1	40	25-NOV-16
Phosphorus (P)-Total		299	295		mg/kg wwt	1.3	40	25-NOV-16
Potassium (K)-Total		1270	1270		mg/kg wwt	0.1	40	25-NOV-16
Rubidium (Rb)-Total		0.920	0.916		mg/kg wwt	0.4	40	25-NOV-16
Sodium (Na)-Total		7.4	5.7		mg/kg wwt	26	40	25-NOV-16
Strontium (Sr)-Total		4.82	4.44		mg/kg wwt	8.4	60	25-NOV-16
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	25-NOV-16
Thallium (Tl)-Total		0.00150	0.00126		mg/kg wwt	17	40	25-NOV-16
Tin (Sn)-Total		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	40	25-NOV-16
Uranium (U)-Total		0.00487	0.00445		mg/kg wwt	9.0	40	25-NOV-16
Vanadium (V)-Total		0.594	0.523		mg/kg wwt	13	40	25-NOV-16
Zinc (Zn)-Total		4.10	3.92		mg/kg wwt	4.6	40	25-NOV-16
Zirconium (Zr)-Total		0.074	0.066		mg/kg wwt	11	40	25-NOV-16
WG2439113-6 LCS								
Aluminum (Al)-Total			93.6		%		70-130	25-NOV-16
Antimony (Sb)-Total			101.0		%		70-130	25-NOV-16
Arsenic (As)-Total			96.6		%		70-130	25-NOV-16
Barium (Ba)-Total			98.5		%		70-130	25-NOV-16
Beryllium (Be)-Total			103.6		%		70-130	25-NOV-16
Bismuth (Bi)-Total			102.2		%		70-130	25-NOV-16
Boron (B)-Total			91.0		%		70-130	25-NOV-16
Cadmium (Cd)-Total			86.5		%		70-130	25-NOV-16
Calcium (Ca)-Total			100.5		%		70-130	25-NOV-16
Cesium (Cs)-Total			101.2		%		70-130	25-NOV-16
Chromium (Cr)-Total			92.6		%		70-130	25-NOV-16
Cobalt (Co)-Total			91.5		%		70-130	25-NOV-16
Copper (Cu)-Total			90.2		%		70-130	25-NOV-16
Iron (Fe)-Total			94.8		%		70-130	25-NOV-16
Lead (Pb)-Total			100.6		%		70-130	25-NOV-16
Lithium (Li)-Total			103.6		%		70-130	25-NOV-16
Magnesium (Mg)-Total			90.5		%		70-130	25-NOV-16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3606134								
WG2439113-6 LCS								
Manganese (Mn)-Total			99.6		%		70-130	25-NOV-16
Molybdenum (Mo)-Total			104.1		%		70-130	25-NOV-16
Nickel (Ni)-Total			91.5		%		70-130	25-NOV-16
Phosphorus (P)-Total			99.7		%		70-130	25-NOV-16
Potassium (K)-Total			95.0		%		70-130	25-NOV-16
Rubidium (Rb)-Total			95.1		%		70-130	25-NOV-16
Selenium (Se)-Total			93.8		%		70-130	25-NOV-16
Sodium (Na)-Total			92.8		%		70-130	25-NOV-16
Strontium (Sr)-Total			109.5		%		70-130	25-NOV-16
Tellurium (Te)-Total			102.3		%		70-130	25-NOV-16
Thallium (Tl)-Total			98.9		%		70-130	25-NOV-16
Tin (Sn)-Total			90.7		%		70-130	25-NOV-16
Uranium (U)-Total			100.9		%		70-130	25-NOV-16
Vanadium (V)-Total			94.7		%		70-130	25-NOV-16
Zinc (Zn)-Total			86.9		%		70-130	25-NOV-16
Zirconium (Zr)-Total			89.1		%		70-130	25-NOV-16
WG2439113-7 LCS								
Aluminum (Al)-Total			101.2		%		70-130	25-NOV-16
Antimony (Sb)-Total			100.4		%		70-130	25-NOV-16
Arsenic (As)-Total			105.0		%		70-130	25-NOV-16
Barium (Ba)-Total			106.0		%		70-130	25-NOV-16
Beryllium (Be)-Total			106.5		%		70-130	25-NOV-16
Bismuth (Bi)-Total			102.9		%		70-130	25-NOV-16
Boron (B)-Total			93.1		%		70-130	25-NOV-16
Cadmium (Cd)-Total			97.8		%		70-130	25-NOV-16
Calcium (Ca)-Total			101.9		%		70-130	25-NOV-16
Cesium (Cs)-Total			100.4		%		70-130	25-NOV-16
Chromium (Cr)-Total			98.1		%		70-130	25-NOV-16
Cobalt (Co)-Total			100.5		%		70-130	25-NOV-16
Copper (Cu)-Total			98.9		%		70-130	25-NOV-16
Iron (Fe)-Total			101.9		%		70-130	25-NOV-16
Lead (Pb)-Total			102.3		%		70-130	25-NOV-16
Lithium (Li)-Total			108.5		%		70-130	25-NOV-16
Magnesium (Mg)-Total			99.3		%		70-130	25-NOV-16

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3606134								
WG2439113-7 LCS								
Manganese (Mn)-Total			101.8		%		70-130	25-NOV-16
Molybdenum (Mo)-Total			105.2		%		70-130	25-NOV-16
Nickel (Ni)-Total			100.0		%		70-130	25-NOV-16
Phosphorus (P)-Total			108.4		%		70-130	25-NOV-16
Potassium (K)-Total			103.6		%		70-130	25-NOV-16
Rubidium (Rb)-Total			104.0		%		70-130	25-NOV-16
Selenium (Se)-Total			100.2		%		70-130	25-NOV-16
Sodium (Na)-Total			102.5		%		70-130	25-NOV-16
Strontium (Sr)-Total			111.5		%		70-130	25-NOV-16
Tellurium (Te)-Total			100.6		%		70-130	25-NOV-16
Thallium (Tl)-Total			100.5		%		70-130	25-NOV-16
Tin (Sn)-Total			99.7		%		70-130	25-NOV-16
Uranium (U)-Total			103.6		%		70-130	25-NOV-16
Vanadium (V)-Total			103.6		%		70-130	25-NOV-16
Zinc (Zn)-Total			93.6		%		70-130	25-NOV-16
Zirconium (Zr)-Total			92.9		%		70-130	25-NOV-16
WG2439113-1 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	25-NOV-16
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	25-NOV-16
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	25-NOV-16
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	25-NOV-16
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	25-NOV-16
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	25-NOV-16
Boron (B)-Total			<0.20		mg/kg wwt		0.2	25-NOV-16
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	25-NOV-16
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	25-NOV-16
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	25-NOV-16
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	25-NOV-16
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	25-NOV-16
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	25-NOV-16
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	25-NOV-16
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	25-NOV-16
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	25-NOV-16
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	25-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3606134								
WG2439113-1 MB								
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	25-NOV-16
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	25-NOV-16
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	25-NOV-16
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	25-NOV-16
Potassium (K)-Total			<4.0		mg/kg wwt		4	25-NOV-16
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	25-NOV-16
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	25-NOV-16
Sodium (Na)-Total			<4.0		mg/kg wwt		4	25-NOV-16
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	25-NOV-16
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	25-NOV-16
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	25-NOV-16
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	25-NOV-16
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	25-NOV-16
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	25-NOV-16
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	25-NOV-16
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	25-NOV-16
WG2439113-2 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	25-NOV-16
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	25-NOV-16
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	25-NOV-16
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	25-NOV-16
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	25-NOV-16
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	25-NOV-16
Boron (B)-Total			<0.20		mg/kg wwt		0.2	25-NOV-16
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	25-NOV-16
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	25-NOV-16
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	25-NOV-16
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	25-NOV-16
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	25-NOV-16
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	25-NOV-16
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	25-NOV-16
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	25-NOV-16
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	25-NOV-16
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	25-NOV-16

Quality Control Report

Workorder: L1842753 Report Date: 15-DEC-16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3606134								
WG2439113-2 MB								
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	25-NOV-16
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	25-NOV-16
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	25-NOV-16
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	25-NOV-16
Potassium (K)-Total			<4.0		mg/kg wwt		4	25-NOV-16
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	25-NOV-16
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	25-NOV-16
Sodium (Na)-Total			<4.0		mg/kg wwt		4	25-NOV-16
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	25-NOV-16
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	25-NOV-16
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	25-NOV-16
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	25-NOV-16
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	25-NOV-16
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	25-NOV-16
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	25-NOV-16
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	25-NOV-16
Batch R3607306								
WG2439113-8 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.0142		mg/kg wwt		0-0.0177	29-NOV-16
WG2439113-3 DUP		**L1842753-1**						
Iron (Fe)-Total		148	135		mg/kg wwt	12	40	29-NOV-16
Selenium (Se)-Total		0.013	0.012		mg/kg wwt	7.4	40	29-NOV-16
WG2439113-4 DUP		**L1842753-21**						
Iron (Fe)-Total		433	390		mg/kg wwt	10	40	29-NOV-16
Selenium (Se)-Total		0.023	0.021		mg/kg wwt	11	40	29-NOV-16
MOISTURE-TISS-VA	**Tissue**							
Batch R3596897								
WG2433297-3 DUP		**L1842753-2**						
% Moisture		51.5	51.8		%	0.7	20	15-NOV-16
WG2433297-8 DUP		**L1842753-17**						
% Moisture		53.0	54.8		%	3.2	20	15-NOV-16
WG2433297-9 DUP		**L1842753-21**						
% Moisture		59.9	60.8		%	1.4	20	15-NOV-16
WG2433297-2 LCS								
% Moisture			99.5		%		90-110	15-NOV-16
WG2433297-5 LCS								

Quality Control Report

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-TISS-VA		**Tissue**							
Batch	**R3596897**								
WG2433297-5	**LCS**								
% Moisture				100.1		%		90-110	15-NOV-16
WG2433297-7	**LCS**								
% Moisture				99.4		%		90-110	15-NOV-16
WG2433297-1	**MB**								
% Moisture				<0.50		%		0.5	15-NOV-16
WG2433297-4	**MB**								
% Moisture				<0.50		%		0.5	15-NOV-16
WG2433297-6	**MB**								
% Moisture				<0.50		%		0.5	15-NOV-16

Quality Control Report

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Burnaby Laboratory
8081 Lougheed Highway
Burnaby, BC
V5A 1W9
Phone: (604) 235-4188
After hours: (604) 220-4188
Contact: Amber Springer

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

	DATE: October 18, 2016	**LAB WORK ORDER #**
REPORT TO:	**REPORT DISTRIBUTION:** **ALL FINAL RESULTS WILL BE EMAILED**	**SERVICE REQUESTED**
COMPANY: Golder Associates Ltd.		X REGULAR SERVICE (DEFAULT)
CONTACT: Steven Fiddler	EMAIL 1: Steven_Fiddler@Golder.com	RUSH SERVICE
ADDRESS: 16820 107 Avenue, Edmonton, Alberta	EMAIL 2: lcesh@golder.com	EMERGENCY SERVICE
T5P 4C3	SELECT: pdf X digital X MDD/EDD X	**ANALYSIS REQUEST**
PHONE: (780) 930-5478 FAX: (780)-483-1574	**INDICATE BOTTLES: FILTERED/PRESERVED (F /P)**	
INVOICE TO: **SAME Y N**	JOB # **13-1377-0044-23000-23003**	
COMPANY: Golder Associates Ltd.		
CONTACT: Steven Fiddler		
ADDRESS: 16820 107 Avenue, Edmonton, Alberta		
T5P 4C3	QUOTE BY EMAIL,	
PHONE: (780) 930-5478 FAX: (780) 483-1574		

Golder SAMPLE ID number	SAMPLED BY / DATE / TIME	SAMPLE TYPE	SAMPLE WEIGHT (g)	% Moisture	Total metals in tissues (including silver, mercury and tin)									HAZARDOUS ? (Y/N)	NUMBER OF CONTAINERS	HIGHLY CONTAMINATED ? (Y/N)	LAB SAMPLE #
16-Giant-CB-01	DPEN/7Sep16	vegetation	31.3	x	x									N	1	Y	
16-Giant-CB-02	DPEN/7Sep16	vegetation	21.8	x	x									N	1	Y	
16-Giant-CB-03	DPEN/7Sep16	vegetation	30.2	x	x									N	1	Y	
16-Giant-CB-04	DPEN/7Sep16	vegetation	45.4	x	x									N	1	Y	
16-Giant-CB-05	DPEN/7Sep16	vegetation	29.6	x	x									N	1	Y	
16-Giant-CR-06	DPEN/7Sep16	vegetation	18.6	x	x									N	1	Y	
16-Giant-CR-07	DPEN/7Sep16	vegetation	27.6	x	x									N	1	Y	
16-Giant-CR-08	DPEN/7Sep16	vegetation	44.9	x	x									N	1	Y	
16-Giant-CR-09	DPEN/7Sep16	vegetation	24.1	x	x									N	1	Y	
16-Giant-CR-15	DPKB/8Sep16	vegetation	26.6	x	x									N	1	Y	
16-Giant-CB-10	DPKB/8Sep16	vegetation	8.9	x	x									N	1	Y	
16-Giant-CB-11	DPKB/8Sep16	vegetation	13.7	x	x									N	1	Y	
16-Giant-CB-12	DPKB/8Sep16	vegetation	16.3	x	x									N	1	Y	
16-Giant-CB-13	DPKB/8Sep16	vegetation	14.1	x	x									N	1	Y	
16-Giant-CB-14	DPKB/8Sep16	vegetation	23.6	x	x									N	1	Y	
16-Giant-CR-40	DPEN/9Sep16	vegetation	15.4	x	x									N	1	Y	
16-Giant-CR-41	DPEN/9Sep16	vegetation	18.7	x	x									N	1	Y	

L1842753-COFC

16-Giant-CR-41	DPEN/9Sep16	vegetation	18.7	x	x									N	1	Y	
16-Giant-CR-45	DPEN/9Sep16	vegetation	5.6	x	x									N	1	Y	
16-Giant-CR-51	ENKB/10Sep16	vegetation	8.7	x	x									N	1	Y	
16-Giant-CR-52	ENKB/10Sep16	vegetation	21.5	x	x									N	1	Y	
16-Giant-CR-53	ENKB/10Sep16	vegetation	16.7	x	x									N	1	Y	
16-Giant-CR-55	ENKB/10Sep16	vegetation	15.8	x	x									N	1	Y	
16-Giant-CR-56	ENKB/10Sep16	vegetation	9.2	x	x									N	1	Y	
16-Giant-CR-57	ENKB/10Sep16	vegetation	16.4	x	x									N	1	Y	
16-Giant-CR-58	ENKB/10Sep16	vegetation	16.1	x	x									N	1	Y	
16-Giant-CR-59	ENKB/10Sep16	vegetation	12.6	x	x									N	1	Y	
16-Giant-CR-60	ENKB/10Sep16	vegetation	13.5	x	x									N	1	Y	
16-Giant-CR-61	ENKB/10Sep16	vegetation	10.7	x	x									N	1	Y	
16-Giant-CR-70	ENKB/11Sep16	vegetation	12	x	x									N	1	Y	
16-Giant-CR-71	ENKB/11Sep16	vegetation	14.9	x	x									N	1	Y	
16-Giant-CR-73	ENKB/11Sep16	vegetation	17.2	x	x									N	1	Y	
16-Giant-CR-74	ENKB/11Sep16	vegetation	12.3	x	x									N	1	Y	
16-Giant-CR-75	ENKB/11Sep16	vegetation	16.5	x	x									N	1	Y	
16-Giant-CR-76	ENKB/11Sep16	vegetation	13.3	x	x									N	1	Y	
16-Giant-CR-77	ENKB/11Sep16	vegetation	13.6	x	x									N	1	Y	
16-Giant-CR-78	ENKB/11Sep16	vegetation	17.9	x	x									N	1	Y	
16-Giant-CR-79	ENKB/11Sep16	vegetation	11.1	x	x									N	1	Y	
16-Giant-CR-80	ENKB/11Sep16	vegetation	18.8	x	x									N	1	Y	
16-Giant-CR-81	ENKB/11Sep16	vegetation	23.3	x	x									N	1	Y	
16-Giant-CB-03-DUP	DPEN/7Sep16	vegetation	30.3	x	x									N	1	Y	
16-Giant-CR-41-DUP	DPEN/9Sep16	vegetation	17.7	x	x									N	1	Y	
16-Giant-CR-51-DUP	ENKB/10Sep16	vegetation	5.6	x	x									N	1	Y	
16-Giant-CR-53-DUP	ENKB/10Sep16	vegetation	17.6	x	x									N	1	Y	

NOTES & CONDITIONS:

1. Quote number must be provided to ensure proper pricing.

2. Turnaround times will vary dependent on complexity of analysis & Lab workload at time of submission. Please contact the Lab to confirm turnaround time.

3. All hazardous samples submitted must be labeled to comply with WHMIS and TDG regulations. This must include the nature of the hazard, as well as a contact name & phone number that the Lab can contact for further information.

4. Failure to properly complete all portions of this form may delay analysis.

GUIDELINES/REGULATIONS	SPECIAL INSTRUCTIONS / NATURE OF HAZARDOUS MATERIAL	SAMPLE CONDITION		
	Stored on Ice. Please ship samples to ALS Burnaby for analysis, contact Steven Fiddler once samples have been recieved in Burnaby. Analysis should be done to the lowest detection limit possible. Plant samples are NOT to be washed prior to analysis. Analysis to be reported in both wet and dry weight.	X	FROZEN	MEAN TEMPERATURE
			COLD	8.8
			AMBIENT	

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	SAMPLE CONDITION ACCEPTABLE UPON RECEIPT ? (Y/N)
Emily Nichol	Oct 18/16	[signature]	Oct 18 2016 2:10	
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	

GOLDER ASSOCIATES LTD
ATTN: Steven Fiddler
16820 107 Ave NW
EDMONTON AB T5P 4C3

Date Received: 18-OCT-16
Report Date: 05-DEC-16 15:51 (MT)
Version: FINAL

Client Phone: 780-483-3499

Certificate of Analysis

Lab Work Order #: L1842829
Project P.O. #: NOT SUBMITTED
Job Reference: 13-1377-0044-23000-23003
C of C Numbers:
Legal Site Desc:

Jessica Spira, Env. Tech. DIPL
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-1 16-GIANT-AL-01							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	62.8		0.50	%		18-NOV-16	R3600317
Mercury (Hg)-Total	0.0099		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0037		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0013		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	389		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.135		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.77		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	12.3		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.036		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	1.3		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	8300		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.163		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.959		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	3.25		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	4.65		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	517		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.362		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.74		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	3290		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	77.0		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.080		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	3.47		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	1090		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	4350		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	16.0		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	21		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	20.9		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0057		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0843		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.95		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	12.5		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	145		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0503		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.660		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	4.58		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.0136		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	0.50		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0014		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	3090		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0607		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.357		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-1 16-GIANT-AL-01							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	1.21		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.73		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	192		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.135		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.27		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1220		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	28.7		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0299		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	1.29		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	406		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	1620		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	5.95		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	7.7		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	7.77		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00212		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0314		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.355		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	4.64		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	0.042		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-2 16-GIANT-AL-02							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	63.5		0.50	%		18-NOV-16	R3600317
Mercury (Hg)-Total	0.0108		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0039		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	0.0072		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0026		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	212		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.404		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	3.11		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	11.7		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	18.6		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0058		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	11200		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0411		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.573		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.987		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	3.25		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	358		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.394		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.65		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2730		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	128		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.434		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-2 16-GIANT-AL-02							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	1.51		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	691		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	8310		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	4.83		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	26		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	34.3		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0035		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0416		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.61		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	12.9		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	77.2		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.147		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.14		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	4.28		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.0031		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	0.0023		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	6.80		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0021		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	4090		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0150		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.209		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.360		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.19		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	131		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.144		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.24		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	995		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	46.6		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.158		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.549		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	252		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3030		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	1.76		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	9.3		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	12.5		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00126		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0152		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.223		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	4.71		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	0.069		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-3 16-GIANT-AL-03							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-3 16-GIANT-AL-03							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	56.4		0.50	%		18-NOV-16	R3600317
Mercury (Hg)-Total	0.0109		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0047		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	72.8		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.246		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	2.13		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	13.6		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	1.5		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	11700		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0581		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.199		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	1.50		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	3.32		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	163		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.172		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1730		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	91.7		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.028		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	2.21		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	779		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	2340		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	5.20		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	8.40		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0142		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.20		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	7.25		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	31.7		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.107		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.930		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	5.94		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.0028		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	0.65		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	5110		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0253		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.087		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-3 16-GIANT-AL-03							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.654		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.45		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	71.2		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0751		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	755		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	40.0		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0121		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.962		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	340		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	1020		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	2.27		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	3.66		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00062		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00618		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.087		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	3.16		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	0.050		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-4 16-GIANT-AL-04							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	59.0		0.50	%		18-NOV-16	R3600317
Mercury (Hg)-Total	0.0078		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0032		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0014		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	136		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.246		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	4.98		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	10.3		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	7.5		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	11300		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0234		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.334		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	1.45		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.04		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	242		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.194		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2150		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	173		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.046		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-4 16-GIANT-AL-04							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	1.57		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	356		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3930		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	3.35		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	16.5		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0026		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0359		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.40		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	12.6		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	55.8		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.101		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	2.04		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	4.24		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.0038		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	3.09		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0016		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	4640		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0096		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.137		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.595		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.838		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	99.2		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0797		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.14		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	882		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	71.0		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0190		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.645		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	146		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	1610		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	1.37		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	5.1		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	6.78		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00107		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0147		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.163		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	5.15		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	0.045		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-5 16-GIANT-AL-05							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-5 16-GIANT-AL-05							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	57.2		0.50	%		18-NOV-16	R3600317
Mercury (Hg)-Total	0.0099		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0042		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	77.9		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.200		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	3.90		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	8.51		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	18.1		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	12500		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0165		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.209		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.209		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	3.00		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	171		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.131		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	3530		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	54.8		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.093		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.29		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	888		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3160		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	4.20		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	28.8		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0196		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.25		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	11.9		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	33.4		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0859		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.67		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	3.65		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	7.76		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	5350		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0071		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.089		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-5 16-GIANT-AL-05							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0897		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.29		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	73.4		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0563		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.10		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1510		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	23.5		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0399		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.124		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	380		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	1350		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	1.80		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	4.8		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	12.3		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00069		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00839		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.107		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	5.08		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-6 16-GIANT-AL-06							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	59.2		0.50	%		18-NOV-16	R3600317
Mercury (Hg)-Total	0.0091		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0037		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0016		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	72.3		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.125		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	2.81		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	10.2		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	15.3		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	14900		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.196		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.200		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.469		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	5.88		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	185		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.087		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.96		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2980		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	55.7		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.239		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-6 16-GIANT-AL-06							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.71		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	1900		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	5050		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	13.0		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	38.0		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0162		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.22		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	13.6		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	29.5		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0511		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.14		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	4.17		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	6.22		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	6070		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0799		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.082		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.191		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.40		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	75.3		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0355		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.39		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1210		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	22.7		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0976		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.291		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	776		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	2060		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	5.29		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	15.5		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00054		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00661		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.088		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	5.56		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-7 16-GIANT-AL-07							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-7 16-GIANT-AL-07							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	57.1		0.50	%		18-NOV-16	R3600317
Mercury (Hg)-Total	0.0076		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0033		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0017		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	72.9		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.212		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	4.26		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	2.48		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	19.8		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	15500		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0992		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.211		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	3.71		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	4.90		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	163		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.155		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2010		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	63.7		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.152		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	2.81		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	931		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	2610		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	6.13		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	10.5		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0132		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.24		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	11.0		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	31.3		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0909		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.82		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	1.06		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	8.48		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	6630		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0425		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.090		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-7 16-GIANT-AL-07							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	1.59		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.10		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	70.1		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0664		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	860		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	27.3		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0651		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	1.20		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	399		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	1120		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	2.63		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.016		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	4.49		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00069		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00565		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.102		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	4.71		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-8 16-GIANT-AL-08							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	58.5		0.50	%		19-NOV-16	R3600321
Mercury (Hg)-Total	0.0100		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0042		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	68.1		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.262		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	3.52		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	14.0		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.016		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	6.8		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	9480		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.675		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.191		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	1.31		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	5.63		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	146		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.192		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2910		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	529		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.026		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-8 16-GIANT-AL-08							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	12.1		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	1080		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	5630		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	42.9		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	18.8		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0216		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.18		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	9.12		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	28.3		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.109		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.46		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	5.82		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.0068		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	2.82		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	3940		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.280		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.079		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.544		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.34		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	60.5		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0797		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1210		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	220		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0110		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	5.01		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	449		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	2340		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	17.8		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	4.6		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	7.82		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00058		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00897		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.073		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	3.79		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-9 16-GIANT-AL-09							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-9 16-GIANT-AL-09							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	57.7		0.50	%		19-NOV-16	R3600321
Mercury (Hg)-Total	0.0089		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0038		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0017		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	20.6		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.130		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	2.74		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	9.16		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	24.9		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	13000		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.150		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.070		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.126		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	6.52		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	74.9		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.073		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1820		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	161		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.389		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.64		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	1160		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3150		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	12.9		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	21.9		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0048		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	16.4		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	8.69		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0550		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.16		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	3.87		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	10.5		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	5490		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0634		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.030		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-9 16-GIANT-AL-09							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0533		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.76		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	31.7		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0308		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	768		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	68.0		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.164		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.269		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	490		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	1330		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	5.45		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	9.24		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00202		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.032		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	6.92		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-10 16-GIANT-AL-10							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	57.7		0.50	%		19-NOV-16	R3600321
Mercury (Hg)-Total	0.0087		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0037		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	62.5		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.171		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.99		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	17.9		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.012		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	7.6		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	16600		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.604		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.167		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.471		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	4.30		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	111		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.171		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	3150		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	635		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.213		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-10 16-GIANT-AL-10							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	2.48		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	690		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	1640		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	23.4		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	41.0		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0323		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.15		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	13.0		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	26.4		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0722		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.843		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	7.58		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.0052		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	3.22		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	7020		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.256		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.071		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.199		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.82		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	46.9		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0724		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1330		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	269		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0901		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	1.05		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	292		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	695		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	9.92		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	17.4		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00067		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0137		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.062		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	5.49		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-11 16-GIANT-AL-11							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-11 16-GIANT-AL-11							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	57.8		0.50	%		19-NOV-16	R3600321
Mercury (Hg)-Total	0.0107		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0045		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	65.4		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.207		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	2.88		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	13.8		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.011		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	18.8		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	12200		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.272		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.172		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.341		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	4.77		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	126		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.253		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	3350		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	388		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.306		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	2.41		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	916		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	2440		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	15.8		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	30.1		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0199		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.16		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	12.4		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	27.6		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0872		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.22		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	5.82		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.0046		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	7.96		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0011		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	5140		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.115		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.073		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-11 16-GIANT-AL-11							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.144		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.01		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	53.2		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.107		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1410		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	164		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.129		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	1.02		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	387		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	1030		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	6.69		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	12.7		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00057		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00841		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.069		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	5.25		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-12 16-GIANT-AL-12							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	61.4		0.50	%		19-NOV-16	R3600321
Mercury (Hg)-Total	0.0103		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0040		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0018		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	198		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.043		0.010	mg/kg	29-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	1.18		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	13.7		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.100		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	1.5		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	6710		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.251		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.113		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	4.34		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	4.51		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	92.3		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.090		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2160		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	172		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.038		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-12 16-GIANT-AL-12							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	4.74		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	2860		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	6090		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	28.3		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	25.7		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0149		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	6.93		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	76.2		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0167		0.0020	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	0.455		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	5.28		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.0386		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	0.58		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	2590		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0969		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.044		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	1.67		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.74		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	35.6		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0346		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.14		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	831		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	66.4		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0147		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	1.83		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	1100		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	2350		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	10.9		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	9.93		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00576		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.037		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	2.67		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-13 16-GIANT-AL-13							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-13 16-GIANT-AL-13							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	53.9		0.50	%		19-NOV-16	R3600321
Mercury (Hg)-Total	0.0079		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0036		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	50.3		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.098		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	2.13		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	12.6		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	5.5		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	9200		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0369		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.131		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.644		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	3.01		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	90.9		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.121		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1980		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	104		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.033		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	1.79		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	456		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	1830		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	6.00		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	12.6		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0075		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.14		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	8.33		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	23.2		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0450		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.982		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	5.80		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.0025		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	2.52		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	4250		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0170		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.060		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-13 16-GIANT-AL-13							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.297		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.39		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	41.9		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0557		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	915		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	47.9		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0151		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.828		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	210		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	844		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	2.77		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	5.83		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00347		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.065		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	3.84		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-14 16-GIANT-AL-14							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	64.3		0.50	%		19-NOV-16	R3600321
Mercury (Hg)-Total	0.0068		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0024		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	46.2		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.143		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	2.91		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	3.09		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	43.1		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	12200		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0768		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.132		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	3.90		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	6.05		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	81.4		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.101		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2030		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	65.9		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.115		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-14 16-GIANT-AL-14							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	3.19		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	1050		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3130		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	9.32		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	8.06		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0031		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0073		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.12		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	23.7		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	16.5		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0509		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.04		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	1.10		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	15.4		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	4350		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0274		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.047		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	1.39		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.16		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	29.1		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0360		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	724		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	23.5		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0409		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	1.14		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	373		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	1120		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	3.33		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	2.88		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00111		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00260		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.045		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	8.46		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-15 16-GIANT-AL-15							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-15 16-GIANT-AL-15							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	67.6		0.50	%		19-NOV-16	R3600321
Mercury (Hg)-Total	0.0119		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0038		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	53.0		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.227		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	3.59		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	13.6		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	12.9		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	14300		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0828		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.139		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.268		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	4.67		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	128		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.144		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2930		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	286		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.084		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.69		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	777		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	2080		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	12.8		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	41.2		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0117		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.15		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	13.6		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	17.2		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0736		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.16		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	4.40		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	4.19		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	4630		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0268		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.045		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-15 16-GIANT-AL-15							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0867		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.51		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	41.4		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0467		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	949		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	92.6		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0271		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.224		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	251		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	674		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	4.16		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	13.3		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00059		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00380		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.047		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	4.40		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-16 16-GIANT-AL-16							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	61.3		0.50	%		19-NOV-16	R3600321
Mercury (Hg)-Total	0.0102		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0039		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	54.6		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.180		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	2.12		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	14.2		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	20.9		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	13900		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0073		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.209		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.255		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	3.48		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	127		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.123		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	3300		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	63.2		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.581		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-16 16-GIANT-AL-16							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.73		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	971		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	5000		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	1.33		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	27.1		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0103		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.21		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	17.4		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	21.1		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0695		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.821		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	5.50		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	8.09		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	5380		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0028		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.081		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.0986		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.35		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	49.1		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0474		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.13		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1280		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	24.4		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.225		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.281		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	375		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	1930		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	0.516		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.015		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	10.5		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00400		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.080		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	6.72		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-17 16-GIANT-AL-17							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-17 16-GIANT-AL-17							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	61.7		0.50	%		19-NOV-16	R3600321
Mercury (Hg)-Total	0.0110		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0042		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	55.3		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.242		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	2.88		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	8.89		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	5.3		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	14500		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.107		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.219		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	1.40		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	3.82		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	134		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.181		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	1.23		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	4240		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	98.2		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.228		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	2.73		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	940		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	2140		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	13.1		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	16.6		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0075		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.20		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	11.7		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	21.2		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0927		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.10		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	3.40		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	2.02		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	5530		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0408		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.084		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-17 16-GIANT-AL-17							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.538		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.46		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	51.4		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0693		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.47		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1620		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	37.6		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0874		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	1.04		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	360		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	818		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	5.03		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.018		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	6.37		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00045		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00288		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.075		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	4.46		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-18 16-GIANT-AL-18							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	59.8		0.50	%		19-NOV-16	R3600321
Mercury (Hg)-Total	0.0080		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0032		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0016		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	51.7		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.174		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	2.51		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	11.0		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.014		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	3.7		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	9810		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0939		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.128		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	2.99		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	4.14		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	110		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.191		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1810		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	242		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.035		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-18 16-GIANT-AL-18							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	3.53		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	851		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	2050		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	11.3		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	12.0		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0028		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0044		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.15		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	12.4		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	20.8		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0698		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.01		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	4.41		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.0057		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	1.48		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0018		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	3940		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0377		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.051		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	1.20		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.67		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	44.2		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0767		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	728		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	97.3		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0140		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	1.42		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	342		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	825		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	4.53		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	4.80		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00112		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00178		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.058		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	4.98		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-19 16-GIANT-AL-19							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-19 16-GIANT-AL-19							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	61.1		0.50	%		19-NOV-16	R3600321
Mercury (Hg)-Total	0.0099		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0038		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	48.0		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.142		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	2.01		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	13.0		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	3.0		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	12800		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0213		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.134		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	1.90		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	3.14		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	101		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.141		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2490		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	195		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.027		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	2.69		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	640		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3330		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	3.44		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	18.5		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0062		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.13		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	11.0		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	18.7		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0551		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.780		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	5.06		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.0035		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	1.18		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	4990		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0083		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.052		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-19 16-GIANT-AL-19							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.739		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.22		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	39.2		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0546		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	967		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	75.7		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0107		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	1.05		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	249		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	1290		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	1.34		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	7.20		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00242		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.049		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	4.27		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-20 16-GIANT-AL-20							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	57.8		0.50	%		19-NOV-16	R3600321
Mercury (Hg)-Total	0.0073		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0031		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	63.4		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.124		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	2.79		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	11.7		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.023		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	1.7		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	7760		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0970		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.105		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	1.12		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	3.90		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	166		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.101		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2530		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	61.5		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.029		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-20 16-GIANT-AL-20							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	2.47		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	925		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	1560		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	11.4		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	13.6		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0037		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.11		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	10.9		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	26.8		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0525		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.18		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	4.92		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.0098		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	0.73		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	3270		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0409		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.044		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.471		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.65		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	70.0		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0427		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.10		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1070		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	25.9		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0121		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	1.04		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	390		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	658		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	4.83		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	5.74		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00058		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00157		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.046		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	4.62		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-21 16-GIANT-AL-21							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-21 16-GIANT-AL-21							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	53.3		0.50	%		19-NOV-16	R3600321
Mercury (Hg)-Total	0.0073		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0034		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0013		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	36.4		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.144		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	2.27		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	7.61		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	18.5		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	13100		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0499		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.112		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.437		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	3.76		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	97.5		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.111		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2540		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	121		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.148		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.91		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	1530		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	2260		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	9.39		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	11.8		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0057		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.12		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	7.93		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	17.0		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0672		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.06		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	3.55		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	8.63		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	6100		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0233		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.052		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-21 16-GIANT-AL-21							
Sampled By: CLIENT on 08-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.204		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.76		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	45.5		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0517		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1180		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	56.2		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0690		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.423		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	715		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	1060		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	4.38		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.016		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	5.51		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00067		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00264		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.058		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	3.70		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-22 16-GIANT-AL-40							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	58.1		0.50	%		21-NOV-16	R3600318
Mercury (Hg)-Total	0.0068		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0028		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	81.9		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.035		0.010	mg/kg	29-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	1.03		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	12.3		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.018		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	8.1		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	7010		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.325		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.142		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	3.56		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	4.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	106		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.098		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1290		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	263		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.048		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-22 16-GIANT-AL-40							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	5.09		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	964		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	4940		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	31.9		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	10.8		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0058		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.18		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	10.9		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	34.3		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0145		0.0020	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	0.429		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	5.14		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.0075		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	3.38		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0015		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	2930		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.136		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.059		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	1.49		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.72		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	44.4		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0410		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	538		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	110		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0201		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	2.13		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	403		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	2070		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	13.4		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	4.54		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00244		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.075		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	4.56		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-23 16-GIANT-AL-41							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-23 16-GIANT-AL-41							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	56.4		0.50	%		21-NOV-16	R3600318
Mercury (Hg)-Total	0.0090		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0039		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	01-DEC-16	R3609346
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	116		2.0	mg/kg	29-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.040		0.010	mg/kg	29-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	0.881		0.020	mg/kg	29-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	6.68		0.050	mg/kg	29-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	0.036		0.010	mg/kg	29-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	2.9		1.0	mg/kg	29-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	6880		20	mg/kg	29-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0853		0.0050	mg/kg	29-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.286		0.050	mg/kg	29-NOV-16	01-DEC-16	R3609346
Cobalt (Co)-Total	7.17		0.020	mg/kg	29-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	3.88		0.10	mg/kg	29-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	177		3.0	mg/kg	29-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.127		0.020	mg/kg	29-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	2780		2.0	mg/kg	29-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	152		0.050	mg/kg	29-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	<0.020		0.020	mg/kg	29-NOV-16	01-DEC-16	R3609346
Nickel (Ni)-Total	5.95		0.20	mg/kg	29-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	780		10	mg/kg	29-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	2010		20	mg/kg	29-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	7.72		0.050	mg/kg	29-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	16.3		0.050	mg/kg	29-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.0069		0.0020	mg/kg	29-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	0.29		0.10	mg/kg	29-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	7.16		0.50	mg/kg	29-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	50.6		0.40	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.0172		0.0020	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	0.384		0.0040	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	2.91		0.010	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	0.0157		0.0020	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	1.25		0.20	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	0.0012		0.0010	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	3000		4.0	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0372		0.0010	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.125		0.010	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-23 16-GIANT-AL-41							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	3.13		0.0040	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	1.69		0.020	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	77.1		0.60	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.0555		0.0040	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	1210		0.40	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	66.5		0.010	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	0.0063		0.0040	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Nickel (Ni)-Total	2.60		0.040	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	340		2.0	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	879		4.0	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	3.37		0.010	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	7.12		0.010	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	0.00048		0.00040	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.00300		0.00040	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	0.125		0.020	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	3.12		0.10	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
L1842829-24 16-GIANT-AL-42							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	55.9		0.50	%		21-NOV-16	R3600318
Mercury (Hg)-Total	0.0094		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0041		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0011		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	97.9		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.118		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.77		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	5.00		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	6.3		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	11800		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0867		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.318		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	1.11		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	3.86		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	208		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.170		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	3170		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	265		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.081		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-24 16-GIANT-AL-42							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	1.70		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	1080		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	6540		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	14.3		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	11.2		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0059		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.32		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	12.6		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	43.1		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0521		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.779		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	2.20		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	2.77		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0012		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	5180		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0382		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.140		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.490		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.70		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	91.7		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0749		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1400		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	117		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0356		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.749		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	477		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	2880		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	6.32		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	6.2		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	4.93		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00043		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00262		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.142		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	5.55		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-25 16-GIANT-AL-43							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-25 16-GIANT-AL-43							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	55.0		0.50	%		21-NOV-16	R3600318
Mercury (Hg)-Total	0.0081		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0036		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	60.8		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.060		0.010	mg/kg	29-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	1.12		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	3.68		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	4.4		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	11800		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0360		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.211		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.594		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.67		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	130		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.103		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	3130		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	134		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.028		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.90		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	737		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	4380		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	8.12		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	50		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	12.1		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0046		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.21		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	10.2		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	27.4		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0269		0.0020	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	0.503		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	1.66		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	1.98		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	5310		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0162		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.095		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-25 16-GIANT-AL-43							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.268		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.20		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	58.3		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0464		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.12		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1410		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	60.3		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0127		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.406		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	332		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	1970		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	3.66		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	22.7		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	5.45		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00049		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00209		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.094		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	4.59		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-26 16-GIANT-AL-44							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	59.1		0.50	%		21-NOV-16	R3600318
Mercury (Hg)-Total	0.0083		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0034		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	61.0		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.104		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.34		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	6.74		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	14.2		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0058		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	14000		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0638		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.255		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.291		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	3.58		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	140		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.125		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2290		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	137		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.125		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-26 16-GIANT-AL-44							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.50		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	770		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3960		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	6.39		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	15.5		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0046		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.23		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	20.7		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	24.9		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0425		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.546		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	2.75		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	5.81		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0024		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	5720		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0261		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.104		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.119		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.46		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	57.3		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0509		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	937		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	55.9		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0512		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.204		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	315		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	1620		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	2.61		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	6.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	6.35		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00189		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.092		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	8.46		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-27 16-GIANT-AL-45							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-27 16-GIANT-AL-45							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	65.2		0.50	%		21-NOV-16	R3600318
Mercury (Hg)-Total	0.0118		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0041		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	137		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.074		0.010	mg/kg	29-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	1.87		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	9.88		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	25.3		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0056		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	14000		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0192		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.514		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.691		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	4.13		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	296		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.183		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2330		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	356		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.65		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	427		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	5860		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	5.04		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	24		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	13.7		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0100		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.57		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	21.8		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	47.5		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0257		0.0020	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	0.649		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	3.44		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	8.80		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0020		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	4870		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0067		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.179		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-27 16-GIANT-AL-45							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.240		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.44		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	103		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0636		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	811		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	124		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0062		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.226		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	148		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	2040		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	1.75		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	8.3		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	4.77		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00041		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00348		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.199		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	7.56		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-28 16-GIANT-AL-51							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	56.5		0.50	%		21-NOV-16	R3600318
Mercury (Hg)-Total	0.0092		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0040		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	0.0064		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0028		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	214		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	1.36		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	15.6		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	6.76		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	12.3		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0101		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	14300		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0243		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.607		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.675		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	3.76		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	598		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.858		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2650		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	76.5		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.026		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-28 16-GIANT-AL-51							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	2.41		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	916		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	7880		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	9.42		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	21		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	15.1		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0071		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.86		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	14.2		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	93.0		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.593		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	6.80		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	2.94		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	5.36		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0044		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	6200		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0106		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.264		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.293		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.63		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	260		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.373		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.13		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1150		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	33.2		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0111		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	1.05		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	398		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3430		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	4.10		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	9.2		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	6.55		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00073		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00310		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.372		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	6.18		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-29 16-GIANT-AL-52							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-29 16-GIANT-AL-52							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	69.3		0.50	%		21-NOV-16	R3600318
Mercury (Hg)-Total	0.0074		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0023		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	0.0058		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0018		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	143		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.819		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	11.4		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	4.84		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.013		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	5.6		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0057		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	10500		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.302		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.342		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	3.50		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	5.83		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	363		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.531		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	4030		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	197		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.021		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	4.95		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	1260		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	6880		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	19.9		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	12.2		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0046		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.43		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	7.99		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	43.8		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.251		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	3.49		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	1.48		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.0041		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	1.73		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0017		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	3240		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0927		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.105		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-29 16-GIANT-AL-52							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	1.07		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.79		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	112		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.163		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.11		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1240		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	60.4		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0064		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	1.52		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	387		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	2110		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	6.12		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	3.75		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00050		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00141		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.132		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	2.45		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-30 16-GIANT-AL-53							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	65.6		0.50	%		21-NOV-16	R3600318
Mercury (Hg)-Total	0.0089		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0031		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0012		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	96.1		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.676		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	6.47		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	4.60		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	3.6		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0122		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	12900		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0426		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.267		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	2.72		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	3.25		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	246		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.809		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	3540		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	251		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.029		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-30 16-GIANT-AL-53							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	3.97		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	536		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	1660		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	4.99		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	11.2		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0052		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0041		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.34		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	30.5		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	33.1		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.232		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	2.23		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	1.58		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	1.23		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0042		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	4440		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0147		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.092		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.935		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.12		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	84.5		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.278		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1220		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	86.3		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0101		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	1.36		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	184		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	571		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	1.71		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	3.84		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00180		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00140		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.115		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	10.5		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-31 16-GIANT-AL-54							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-31 16-GIANT-AL-54							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	43.6		0.50	%		21-NOV-16	R3600318
Mercury (Hg)-Total	0.0066		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0037		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	0.0054		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0031		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	142		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.665		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	7.95		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	8.93		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	9.0		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	14700		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.102		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.403		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.708		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	3.74		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	303		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.512		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2350		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	122		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.83		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	997		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	7960		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	12.8		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	21.3		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0093		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.45		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	14.6		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	80.3		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.375		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	4.49		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	5.04		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	5.09		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0027		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	8310		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0578		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.227		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-31 16-GIANT-AL-54							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.399		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.11		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	171		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.289		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.11		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1330		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	68.6		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0050		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.471		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	563		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	4490		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	7.20		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	4.7		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	12.0		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00097		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00524		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.251		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	8.21		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	0.043		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-32 16-GIANT-AL-55							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	66.1		0.50	%		21-NOV-16	R3600318
Mercury (Hg)-Total	0.0093		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0032		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	01-DEC-16	R3609346
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	62.4		2.0	mg/kg	29-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.364		0.010	mg/kg	29-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	3.79		0.020	mg/kg	29-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	6.34		0.050	mg/kg	29-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	7.6		1.0	mg/kg	29-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	8540		20	mg/kg	29-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0096		0.0050	mg/kg	29-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.198		0.050	mg/kg	29-NOV-16	01-DEC-16	R3609346
Cobalt (Co)-Total	1.32		0.020	mg/kg	29-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	2.23		0.10	mg/kg	29-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	196		3.0	mg/kg	29-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.249		0.020	mg/kg	29-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	1370		2.0	mg/kg	29-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	189		0.050	mg/kg	29-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	0.033		0.020	mg/kg	29-NOV-16	01-DEC-16	R3609346

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-32 16-GIANT-AL-55							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	1.61		0.20	mg/kg	29-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	598		10	mg/kg	29-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	12100		20	mg/kg	29-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	8.04		0.050	mg/kg	29-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	11.6		0.050	mg/kg	29-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.0104		0.0020	mg/kg	29-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	0.26		0.10	mg/kg	29-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	10.6		0.50	mg/kg	29-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	21.1		0.40	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.123		0.0020	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	1.28		0.0040	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	2.15		0.010	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	2.57		0.20	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	2890		4.0	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0033		0.0010	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.067		0.010	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Cobalt (Co)-Total	0.447		0.0040	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	0.756		0.020	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	66.4		0.60	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.0844		0.0040	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	465		0.40	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	63.8		0.010	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	0.0112		0.0040	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Nickel (Ni)-Total	0.546		0.040	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	203		2.0	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	4080		4.0	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	2.72		0.010	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	3.91		0.010	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.00352		0.00040	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	0.088		0.020	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	3.59		0.10	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
L1842829-33 16-GIANT-AL-56							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-33 16-GIANT-AL-56							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	57.8		0.50	%		21-NOV-16	R3600318
Mercury (Hg)-Total	0.0093		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0039		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0016		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	128		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.748		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	8.10		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	12.3		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	5.6		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	11000		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0135		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.375		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	1.47		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.95		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	343		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.547		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1820		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	68.9		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.023		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	1.53		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	620		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	5390		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	4.32		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	18.0		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0024		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0079		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.50		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	9.98		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	54.0		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.315		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	3.42		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	5.18		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.0038		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	2.37		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0019		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	4630		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0057		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.158		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-33 16-GIANT-AL-56							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.621		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.25		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	145		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.231		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	769		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	29.0		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0096		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.647		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	261		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	2280		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	1.82		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	5.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	7.58		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00100		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00334		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.211		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	4.21		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-34 16-GIANT-AL-57							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	58.8		0.50	%		21-NOV-16	R3600318
Mercury (Hg)-Total	0.0088		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3607983
Mercury (Hg)-Total	0.0036		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3607974
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0018		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	94.3		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.033		0.010	mg/kg	29-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	1.03		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	8.89		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.022		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	1.2		1.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	5600		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.312		0.0050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.177		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	1.45		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	4.38		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	134		3.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.085		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2520		2.0	mg/kg	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	85.6		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.047		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-34 16-GIANT-AL-57							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	2.05		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	1860		10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	6280		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	22.7		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	8.10		0.050	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0205		0.0020	mg/kg	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.18		0.10	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	11.3		0.50	mg/kg	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	29-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	38.8		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0137		0.0020	mg/kg wwt	29-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	0.426		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	3.66		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.0089		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	0.51		0.20	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	2300		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.129		0.0010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.073		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.597		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.80		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	55.0		0.60	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0351		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1040		0.40	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	35.3		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0194		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.845		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	765		2.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	2590		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	9.35		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	3.33		0.010	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00048		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00842		0.00040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.073		0.020	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	4.64		0.10	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	29-NOV-16	30-NOV-16	R3608169
L1842829-35 16-GIANT-AL-58							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-35 16-GIANT-AL-58							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	57.9		0.50	%		21-NOV-16	R3600318
Mercury (Hg)-Total	0.0113		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608329
Mercury (Hg)-Total	0.0047		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608330
Silver (Ag)-Total	0.0074		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Silver (Ag)-Total	0.0031		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	94.0		2.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.872		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	7.92		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	7.37		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	0.014		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	2.4		1.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	0.0051		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	9470		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.138		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.265		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cobalt (Co)-Total	5.57		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	4.48		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	251		3.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.545		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	1940		2.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	90.0		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	0.023		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Nickel (Ni)-Total	4.74		0.20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	374		10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	1130		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	3.49		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	<20		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	9.53		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.0056		0.0020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	0.29		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	7.77		0.50	mg/kg	30-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	39.6		0.40	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.367		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	3.34		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	3.10		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	0.0060		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	1.01		0.20	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	0.0022		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	3990		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0583		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.112		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-35 16-GIANT-AL-58							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	2.35		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	1.89		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	106		0.60	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.230		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	0.11		0.10	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	818		0.40	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	37.9		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	0.0095		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Nickel (Ni)-Total	2.00		0.040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	158		2.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	478		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	1.47		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	4.01		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	0.00058		0.00040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.00235		0.00040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	0.123		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	3.27		0.10	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
L1842829-36 16-GIANT-AL-60							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	56.0		0.50	%		21-NOV-16	R3600318
Mercury (Hg)-Total	0.0090		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608329
Mercury (Hg)-Total	0.0040		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608330
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Silver (Ag)-Total	0.0020		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	80.3		2.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	1.37		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	10.0		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	6.67		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	2.4		1.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	0.0075		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	13000		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0579		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.239		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cobalt (Co)-Total	1.89		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	4.02		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	270		3.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.938		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	1960		2.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	117		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	0.022		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-36 16-GIANT-AL-60							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	1.83		0.20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	499		10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	1650		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	4.91		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	<20		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	7.99		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.0031		0.0020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	0.26		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	11.1		0.50	mg/kg	30-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	35.3		0.40	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.602		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	4.42		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	2.94		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	0.0032		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	1.07		0.20	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	0.0033		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	5710		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0255		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.105		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cobalt (Co)-Total	0.833		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	1.77		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	119		0.60	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.413		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	865		0.40	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	51.4		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	0.0097		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Nickel (Ni)-Total	0.805		0.040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	220		2.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	726		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	2.16		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	3.52		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	0.00055		0.00040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.00135		0.00040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	0.114		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	4.90		0.10	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
L1842829-37 16-GIANT-AL-61							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-37 16-GIANT-AL-61							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	46.7		0.50	%		22-NOV-16	R3602129
Mercury (Hg)-Total	0.0081		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608329
Mercury (Hg)-Total	0.0043		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608330
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Silver (Ag)-Total	0.0023		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	47.7		2.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.578		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	5.25		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	3.18		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	49.7		1.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	9420		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0197		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.158		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cobalt (Co)-Total	0.989		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	2.84		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	161		3.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.340		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	1350		2.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	32.3		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	<0.020		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Nickel (Ni)-Total	1.04		0.20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	203		10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	2880		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	5.69		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	<20		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	7.51		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	0.0026		0.0020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.0023		0.0020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	0.19		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	10.7		0.50	mg/kg	30-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	25.4		0.40	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.308		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	2.80		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	1.70		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	26.5		0.20	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	0.0017		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	5020		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0105		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.084		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-37 16-GIANT-AL-61							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.527		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	1.52		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	85.9		0.60	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.181		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	721		0.40	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	17.2		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	0.0090		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Nickel (Ni)-Total	0.557		0.040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	108		2.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	1530		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	3.03		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	4.01		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	0.00141		0.00040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.00121		0.00040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	0.102		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	5.70		0.10	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
L1842829-38 16-GIANT-AL-71							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	54.5		0.50	%		22-NOV-16	R3602129
Mercury (Hg)-Total	0.0107		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608329
Mercury (Hg)-Total	0.0049		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608330
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Silver (Ag)-Total	0.0011		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	39.2		2.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.433		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	4.51		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	8.63		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	8.4		1.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	0.0053		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	13200		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0284		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.102		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cobalt (Co)-Total	1.12		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	3.46		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	126		3.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.293		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	2810		2.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	74.7		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	0.027		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-38 16-GIANT-AL-71							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	2.48		0.20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	617		10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	2350		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	4.59		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	<20		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	23.4		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	0.12		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	9.21		0.50	mg/kg	30-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	17.8		0.40	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.197		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	2.05		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	3.93		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	0.0036		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	3.80		0.20	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	0.0024		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	5990		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0129		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.046		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cobalt (Co)-Total	0.508		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	1.57		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	57.5		0.60	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.133		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	1280		0.40	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	34.0		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	0.0123		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Nickel (Ni)-Total	1.13		0.040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	281		2.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	1070		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	2.09		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	10.6		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.00074		0.00040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	0.053		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	4.19		0.10	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
L1842829-39 16-GIANT-AL-76							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-39 16-GIANT-AL-76							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	57.6		0.50	%		22-NOV-16	R3602129
Mercury (Hg)-Total	0.0098		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608329
Mercury (Hg)-Total	0.0041		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608330
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	35.2		2.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.144		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	1.67		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	7.43		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	4.3		1.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	6100		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0053		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.116		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cobalt (Co)-Total	0.746		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	2.04		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	99.5		3.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.111		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	0.62		0.50	mg/kg	30-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	3080		2.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	92.5		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	0.063		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Nickel (Ni)-Total	1.02		0.20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	458		10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	6300		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	3.90		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	<20		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	15.8		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.0052		0.0020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	0.11		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	8.34		0.50	mg/kg	30-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	14.9		0.40	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.0609		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	0.707		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	3.15		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	0.0020		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	1.82		0.20	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	0.0015		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	2580		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0022		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.049		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-39 16-GIANT-AL-76							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.316		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	0.863		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	42.2		0.60	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.0472		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	0.26		0.10	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	1300		0.40	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	39.2		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	0.0266		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Nickel (Ni)-Total	0.430		0.040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	194		2.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	2670		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	1.65		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	6.70		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.00222		0.00040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	0.046		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	3.53		0.10	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
L1842829-40 16-GIANT-AL-77							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	53.6		0.50	%		22-NOV-16	R3602129
Mercury (Hg)-Total	0.0082		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608329
Mercury (Hg)-Total	0.0038		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608330
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Silver (Ag)-Total	0.0011		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	38.4		2.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.066		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	0.875		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	4.18		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	0.012		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	4.1		1.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	7030		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0257		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.060		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cobalt (Co)-Total	1.86		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	3.08		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	63.6		3.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.068		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	1990		2.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	121		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	0.025		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-40 16-GIANT-AL-77							
Sampled By: CLIENT on 11-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	3.42		0.20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	252		10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	666		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	3.10		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	<20		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	6.89		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	<0.10		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	9.79		0.50	mg/kg	30-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	17.8		0.40	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.0308		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	0.406		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	1.94		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	0.0058		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	1.91		0.20	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	3260		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0119		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.028		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cobalt (Co)-Total	0.862		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	1.43		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	29.5		0.60	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.0316		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	921		0.40	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	56.1		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	0.0118		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Nickel (Ni)-Total	1.59		0.040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	117		2.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	309		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	1.44		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	0.010		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	<4.0		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	3.20		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.00085		0.00040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	4.54		0.10	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
L1842829-41 16-GIANT-AL-02-DUP							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-41 16-GIANT-AL-02-DUP							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	60.8		0.50	%		22-NOV-16	R3602129
Mercury (Hg)-Total	0.0091		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608329
Mercury (Hg)-Total	0.0036		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608330
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Silver (Ag)-Total	0.0013		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	173		2.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.299		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	2.47		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	10.8		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	22.8		1.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	11600		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0361		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.519		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cobalt (Co)-Total	0.611		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	3.07		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	318		3.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.275		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	2800		2.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	106		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	0.219		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Nickel (Ni)-Total	2.24		0.20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	524		10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	6950		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	3.48		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	22		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	34.1		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	0.0030		0.0020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.0401		0.0020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	0.56		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	14.8		0.50	mg/kg	30-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	67.8		0.40	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.117		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	0.968		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	4.25		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	0.0025		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	8.94		0.20	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	0.0013		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	4540		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0142		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.203		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-41 16-GIANT-AL-02-DUP							
Sampled By: CLIENT on 07-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.240		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	1.20		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	125		0.60	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.108		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	0.19		0.10	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	1100		0.40	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	41.4		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	0.0859		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Nickel (Ni)-Total	0.877		0.040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	205		2.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	2720		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	1.36		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	8.5		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	13.4		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	0.00117		0.00040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.0157		0.00040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	0.218		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	5.80		0.10	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	0.059		0.040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
L1842829-42 16-GIANT-AL-41-DUP							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	58.1		0.50	%		22-NOV-16	R3602129
Mercury (Hg)-Total	0.0081		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608329
Mercury (Hg)-Total	0.0034		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608330
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	120		2.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.052		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	0.933		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	6.75		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	0.032		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	3.2		1.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	6400		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0817		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.303		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cobalt (Co)-Total	6.75		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	4.05		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	186		3.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.104		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	2760		2.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	144		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	<0.020		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-42 16-GIANT-AL-41-DUP							
Sampled By: CLIENT on 09-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	5.70		0.20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	831		10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	2110		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	8.17		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	<20		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	15.3		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.0061		0.0020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	0.29		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	7.57		0.50	mg/kg	30-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	50.3		0.40	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.0216		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	0.390		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	2.83		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	0.0133		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	1.34		0.20	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	2680		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0342		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.127		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cobalt (Co)-Total	2.83		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	1.70		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	77.7		0.60	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.0436		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	1160		0.40	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	60.4		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	0.0070		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Nickel (Ni)-Total	2.38		0.040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	348		2.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	884		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	3.42		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	6.2		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	6.40		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	0.00043		0.00040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.00257		0.00040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	0.122		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	3.17		0.10	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
L1842829-43 16-GIANT-AL-51-DUP							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-43 16-GIANT-AL-51-DUP							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	60.0		0.50	%		22-NOV-16	R3602129
Mercury (Hg)-Total	0.0098		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608329
Mercury (Hg)-Total	0.0039		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608330
Silver (Ag)-Total	0.0080		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Silver (Ag)-Total	0.0032		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	237		2.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	1.54		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	17.9		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	5.75		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	8.2		1.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	0.0095		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	13300		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0242		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.799		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cobalt (Co)-Total	0.893		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	3.41		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	732		3.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.949		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	2900		2.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	85.7		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	0.025		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Nickel (Ni)-Total	1.57		0.20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	733		10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	5200		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	6.63		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	20		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	15.5		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.0074		0.0020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	1.07		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	17.4		0.50	mg/kg	30-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	94.9		0.40	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.614		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	7.17		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	2.30		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	3.29		0.20	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	0.0038		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	5340		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0097		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.319		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-43 16-GIANT-AL-51-DUP							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.357		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	1.36		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	293		0.60	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.379		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	0.14		0.10	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	1160		0.40	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	34.3		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	0.0099		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Nickel (Ni)-Total	0.628		0.040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	293		2.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	2080		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	2.65		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	8.1		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	6.21		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	0.00078		0.00040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.00297		0.00040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	0.426		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	6.94		0.10	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	0.050		0.040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
L1842829-44 16-GIANT-AL-53-DUP							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	61.0		0.50	%		22-NOV-16	R3602129
Mercury (Hg)-Total	0.0089		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608329
Mercury (Hg)-Total	0.0035		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608330
Silver (Ag)-Total	0.0052		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Silver (Ag)-Total	0.0020		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	118		2.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.949		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	8.72		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	4.35		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	4.5		1.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	0.0260		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	15700		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0487		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.357		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Cobalt (Co)-Total	2.86		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	3.55		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	320		3.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	1.39		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	4060		2.0	mg/kg	30-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	193		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	0.024		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842829-44 16-GIANT-AL-53-DUP							
Sampled By: CLIENT on 10-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	3.70		0.20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	434		10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	999		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	5.10		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	<20		20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	14.1		0.050	mg/kg	30-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	0.0069		0.0020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.0080		0.0020	mg/kg	30-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	0.44		0.10	mg/kg	30-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	49.4		0.50	mg/kg	30-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	0.24		0.20	mg/kg	30-NOV-16	01-DEC-16	R3609346
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	46.0		0.40	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Antimony (Sb)-Total	0.370		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Arsenic (As)-Total	3.40		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Barium (Ba)-Total	1.70		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Boron (B)-Total	1.74		0.20	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cadmium (Cd)-Total	0.0101		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Calcium (Ca)-Total	6110		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cesium (Cs)-Total	0.0190		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Chromium (Cr)-Total	0.139		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Cobalt (Co)-Total	1.11		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Copper (Cu)-Total	1.38		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Iron (Fe)-Total	125		0.60	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Lead (Pb)-Total	0.541		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Magnesium (Mg)-Total	1580		0.40	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Manganese (Mn)-Total	75.1		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Molybdenum (Mo)-Total	0.0094		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Nickel (Ni)-Total	1.44		0.040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Phosphorus (P)-Total	169		2.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Potassium (K)-Total	389		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Rubidium (Rb)-Total	1.99		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Sodium (Na)-Total	7.4		4.0	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Strontium (Sr)-Total	5.49		0.010	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Thallium (Tl)-Total	0.00268		0.00040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Uranium (U)-Total	0.00310		0.00040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Vanadium (V)-Total	0.173		0.020	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Zinc (Zn)-Total	19.2		0.10	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346
Zirconium (Zr)-Total	0.094		0.040	mg/kg wwt	30-NOV-16	01-DEC-16	R3609346

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
AG-DRY-CCMS-N-VA	Tissue	Silver in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

AG-WET-CCMS-N-VA	Tissue	Silver in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L1842829 Report Date: 05-DEC-16

Client: GOLDER ASSOCIATES LTD
16820 107 Ave NW
EDMONTON AB T5P 4C3
Contact: Steven Fiddler

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
AG-DRY-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442739-5 CRM		**VA-NIST-1575A**						
Silver (Ag)-Total			0.0129		mg/kg		0.0061-0.01	30-NOV-16
WG2442739-8 CRM		**VA-NIST-1566B**						
Silver (Ag)-Total			104.5		%		70-130	30-NOV-16
WG2442739-3 DUP		**L1842829-1**						
Silver (Ag)-Total		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	40	30-NOV-16
WG2442739-4 DUP		**L1842829-21**						
Silver (Ag)-Total		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	40	30-NOV-16
WG2442739-6 LCS								
Silver (Ag)-Total			95.7		%		70-130	30-NOV-16
WG2442739-7 LCS								
Silver (Ag)-Total			96.4		%		70-130	30-NOV-16
WG2442739-1 MB								
Silver (Ag)-Total			<0.0050		mg/kg		0.005	30-NOV-16
WG2442739-2 MB								
Silver (Ag)-Total			<0.0050		mg/kg		0.005	30-NOV-16
Batch R3609346								
WG2443632-3 CRM		**VA-NIST-1575A**						
Silver (Ag)-Total			0.0123		mg/kg		0.0061-0.01	01-DEC-16
WG2443632-2 DUP		**L1842829-35**						
Silver (Ag)-Total		0.0074	0.0066		mg/kg	12	40	01-DEC-16
WG2443632-4 LCS								
Silver (Ag)-Total			93.5		%		70-130	01-DEC-16
WG2443632-1 MB								
Silver (Ag)-Total			<0.0050		mg/kg		0.005	01-DEC-16
AG-WET-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442739-5 CRM		**VA-NIST-1575A**						
Silver (Ag)-Total			0.0129		mg/kg wwt		0.0061-0.01	30-NOV-16
WG2442739-8 CRM		**VA-NIST-1566B**						
Silver (Ag)-Total			104.5		%		70-130	30-NOV-16
WG2442739-3 DUP		**L1842829-1**						
Silver (Ag)-Total		0.0013	0.0016		mg/kg wwt	18	40	30-NOV-16
WG2442739-4 DUP		**L1842829-21**						
Silver (Ag)-Total		0.0013	0.0013		mg/kg wwt	4.3	40	30-NOV-16
WG2442739-6 LCS								
Silver (Ag)-Total			95.7		%		70-130	30-NOV-16
WG2442739-7 LCS								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
AG-WET-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442739-7 LCS								
Silver (Ag)-Total			96.4		%		70-130	30-NOV-16
WG2442739-1 MB								
Silver (Ag)-Total			<0.0010		mg/kg wwt		0.001	30-NOV-16
WG2442739-2 MB								
Silver (Ag)-Total			<0.0010		mg/kg wwt		0.001	30-NOV-16
Batch R3609346								
WG2443632-3 CRM		**VA-NIST-1575A**						
Silver (Ag)-Total			0.0123		mg/kg wwt		0.0061-0.01	01-DEC-16
WG2443632-2 DUP		**L1842829-35**						
Silver (Ag)-Total		0.0031	0.0028		mg/kg wwt	12	40	01-DEC-16
WG2443632-4 LCS								
Silver (Ag)-Total			93.5		%		70-130	01-DEC-16
WG2443632-1 MB								
Silver (Ag)-Total			<0.0010		mg/kg wwt		0.001	01-DEC-16
HG-DRY-CVAFS-N-VA	**Tissue**							
Batch R3607983								
WG2442739-5 CRM		**VA-NIST-1575A**						
Mercury (Hg)-Total			83.2		%		70-130	30-NOV-16
WG2442739-8 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			81.3		%		70-130	30-NOV-16
WG2442739-3 DUP		**L1842829-1**						
Mercury (Hg)-Total		0.0099	0.0111		mg/kg	12	40	30-NOV-16
WG2442739-4 DUP		**L1842829-21**						
Mercury (Hg)-Total		0.0073	0.0079		mg/kg	7.6	40	30-NOV-16
WG2442739-6 LCS								
Mercury (Hg)-Total			94.4		%		70-130	30-NOV-16
WG2442739-7 LCS								
Mercury (Hg)-Total			93.5		%		70-130	30-NOV-16
WG2442739-1 MB								
Mercury (Hg)-Total			<0.0050		mg/kg		0.005	30-NOV-16
WG2442739-2 MB								
Mercury (Hg)-Total			<0.0050		mg/kg		0.005	30-NOV-16
Batch R3608329								
WG2443632-3 CRM		**VA-NIST-1575A**						
Mercury (Hg)-Total			83.2		%		70-130	01-DEC-16
WG2443632-2 DUP		**L1842829-35**						
Mercury (Hg)-Total		0.0113	0.0100		mg/kg	12	40	01-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-DRY-CVAFS-N-VA	**Tissue**							
Batch R3608329								
WG2443632-4 LCS								
Mercury (Hg)-Total			98.0		%		70-130	01-DEC-16
WG2443632-1 MB								
Mercury (Hg)-Total			<0.0050		mg/kg		0.005	01-DEC-16
HG-WET-CVAFS-N-VA	**Tissue**							
Batch R3607974								
WG2442739-5 CRM		**VA-NIST-1575A**						
Mercury (Hg)-Total			83.2		%		70-130	30-NOV-16
WG2442739-8 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			81.3		%		70-130	30-NOV-16
WG2442739-3 DUP		**L1842829-1**						
Mercury (Hg)-Total		0.0037	0.0041		mg/kg wwt	12	40	30-NOV-16
WG2442739-4 DUP		**L1842829-21**						
Mercury (Hg)-Total		0.0034	0.0037		mg/kg wwt	7.6	40	30-NOV-16
WG2442739-6 LCS								
Mercury (Hg)-Total			94.4		%		70-130	30-NOV-16
WG2442739-7 LCS								
Mercury (Hg)-Total			93.5		%		70-130	30-NOV-16
WG2442739-1 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	30-NOV-16
WG2442739-2 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	30-NOV-16
Batch R3608330								
WG2443632-3 CRM		**VA-NIST-1575A**						
Mercury (Hg)-Total			83.2		%		70-130	01-DEC-16
WG2443632-2 DUP		**L1842829-35**						
Mercury (Hg)-Total		0.0047	0.0042		mg/kg wwt	12	40	01-DEC-16
WG2443632-4 LCS								
Mercury (Hg)-Total			98.0		%		70-130	01-DEC-16
WG2443632-1 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	01-DEC-16
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442739-5 CRM		**VA-NIST-1575A**						
Aluminum (Al)-Total			104.3		%		70-130	30-NOV-16
Arsenic (As)-Total			0.035		mg/kg		0.019-0.059	30-NOV-16
Barium (Ba)-Total			110.2		%		70-130	30-NOV-16
Boron (B)-Total			92.3		%		70-130	30-NOV-16

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Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442739-5 CRM		**VA-NIST-1575A**						
Cadmium (Cd)-Total			105.3		%		70-130	30-NOV-16
Calcium (Ca)-Total			104.9		%		70-130	30-NOV-16
Cesium (Cs)-Total			107.0		%		70-130	30-NOV-16
Chromium (Cr)-Total			104.0		%		70-130	30-NOV-16
Cobalt (Co)-Total			0.061		mg/kg		0.041-0.081	30-NOV-16
Copper (Cu)-Total			108.5		%		70-130	30-NOV-16
Iron (Fe)-Total			101.2		%		70-130	30-NOV-16
Lead (Pb)-Total			106.5		%		70-130	30-NOV-16
Magnesium (Mg)-Total			107.1		%		70-130	30-NOV-16
Manganese (Mn)-Total			96.4		%		70-130	30-NOV-16
Nickel (Ni)-Total			103.5		%		70-130	30-NOV-16
Phosphorus (P)-Total			103.0		%		70-130	30-NOV-16
Potassium (K)-Total			98.3		%		70-130	30-NOV-16
Rubidium (Rb)-Total			104.5		%		70-130	30-NOV-16
Selenium (Se)-Total			0.105		mg/kg		0.049-0.149	30-NOV-16
Sodium (Na)-Total			61		mg/kg		43-83	30-NOV-16
Strontium (Sr)-Total			105.0		%		70-130	30-NOV-16
Thallium (Tl)-Total			88.4		%		70-130	30-NOV-16
Uranium (U)-Total			0.0042		mg/kg		0.002-0.006	30-NOV-16
Vanadium (V)-Total			0.09		mg/kg		0-0.19	30-NOV-16
Zinc (Zn)-Total			104.7		%		70-130	30-NOV-16
WG2442739-8 CRM		**VA-NIST-1566B**						
Arsenic (As)-Total			106.8		%		70-130	30-NOV-16
Barium (Ba)-Total			111.9		%		70-130	30-NOV-16
Boron (B)-Total			95.4		%		70-130	30-NOV-16
Cadmium (Cd)-Total			111.6		%		70-130	30-NOV-16
Calcium (Ca)-Total			100.5		%		70-130	30-NOV-16
Chromium (Cr)-Total			98.9		%		70-130	30-NOV-16
Cobalt (Co)-Total			100.3		%		70-130	30-NOV-16
Copper (Cu)-Total			101.1		%		70-130	30-NOV-16
Iron (Fe)-Total			101.2		%		70-130	30-NOV-16
Lead (Pb)-Total			111.6		%		70-130	30-NOV-16
Magnesium (Mg)-Total			100.1		%		70-130	30-NOV-16
Manganese (Mn)-Total			101.7		%		70-130	30-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442739-8 CRM		**VA-NIST-1566B**						
Molybdenum (Mo)-Total			108.6		%		70-130	30-NOV-16
Nickel (Ni)-Total			112.4		%		70-130	30-NOV-16
Phosphorus (P)-Total			102.1		%		70-130	30-NOV-16
Potassium (K)-Total			95.4		%		70-130	30-NOV-16
Rubidium (Rb)-Total			109.2		%		70-130	30-NOV-16
Selenium (Se)-Total			108.3		%		70-130	30-NOV-16
Sodium (Na)-Total			96.9		%		70-130	30-NOV-16
Strontium (Sr)-Total			96.9		%		70-130	30-NOV-16
Uranium (U)-Total			104.5		%		70-130	30-NOV-16
Vanadium (V)-Total			98.5		%		70-130	30-NOV-16
Zinc (Zn)-Total			97.1		%		70-130	30-NOV-16
WG2442739-3 DUP		**L1842829-1**						
Aluminum (Al)-Total		389	425		mg/kg	8.7	40	30-NOV-16
Antimony (Sb)-Total		0.135	0.155		mg/kg	14	40	30-NOV-16
Arsenic (As)-Total		1.77	1.92		mg/kg	7.9	40	30-NOV-16
Barium (Ba)-Total		12.3	12.5		mg/kg	1.5	40	30-NOV-16
Beryllium (Be)-Total		0.036	0.038		mg/kg	3.2	40	30-NOV-16
Bismuth (Bi)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	30-NOV-16
Boron (B)-Total		1.3	1.3		mg/kg	5.0	40	30-NOV-16
Cadmium (Cd)-Total		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	40	30-NOV-16
Calcium (Ca)-Total		8300	8330		mg/kg	0.3	60	30-NOV-16
Cesium (Cs)-Total		0.163	0.156		mg/kg	4.4	40	30-NOV-16
Chromium (Cr)-Total		0.959	1.05		mg/kg	8.9	40	30-NOV-16
Cobalt (Co)-Total		3.25	3.46		mg/kg	6.2	40	30-NOV-16
Copper (Cu)-Total		4.65	4.57		mg/kg	1.6	40	30-NOV-16
Iron (Fe)-Total		517	574		mg/kg	11	40	30-NOV-16
Lead (Pb)-Total		0.362	0.411		mg/kg	12	40	30-NOV-16
Lithium (Li)-Total		0.74	0.84		mg/kg	13	40	30-NOV-16
Magnesium (Mg)-Total		3290	3360		mg/kg	1.9	40	30-NOV-16
Manganese (Mn)-Total		77.0	79.7		mg/kg	3.5	40	30-NOV-16
Molybdenum (Mo)-Total		0.080	0.052	J	mg/kg	0.028	0.04	30-NOV-16
Nickel (Ni)-Total		3.47	3.46		mg/kg	0.1	40	30-NOV-16
Phosphorus (P)-Total		1090	886		mg/kg	21	40	30-NOV-16
Potassium (K)-Total		4350	4290		mg/kg	1.6	40	30-NOV-16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442739-3 DUP		**L1842829-1**						
Rubidium (Rb)-Total		16.0	13.6		mg/kg	16	40	30-NOV-16
Selenium (Se)-Total		<0.050	<0.050	RPD-NA	mg/kg	N/A	40	30-NOV-16
Sodium (Na)-Total		21	21		mg/kg	0.2	40	30-NOV-16
Strontium (Sr)-Total		20.9	20.8		mg/kg	0.4	60	30-NOV-16
Tellurium (Te)-Total		<0.020	<0.020	RPD-NA	mg/kg	N/A	40	30-NOV-16
Thallium (Tl)-Total		0.0057	0.0061		mg/kg	6.9	40	30-NOV-16
Tin (Sn)-Total		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	30-NOV-16
Uranium (U)-Total		0.0843	0.0782		mg/kg	7.6	40	30-NOV-16
Vanadium (V)-Total		0.95	1.04		mg/kg	8.8	40	30-NOV-16
Zinc (Zn)-Total		12.5	11.6		mg/kg	7.5	40	30-NOV-16
Zirconium (Zr)-Total		<0.20	0.22	RPD-NA	mg/kg	N/A	40	30-NOV-16
WG2442739-4 DUP		**L1842829-21**						
Aluminum (Al)-Total		36.4	34.3		mg/kg	5.9	40	30-NOV-16
Antimony (Sb)-Total		0.144	0.134		mg/kg	7.3	40	30-NOV-16
Arsenic (As)-Total		2.27	2.18		mg/kg	4.1	40	30-NOV-16
Barium (Ba)-Total		7.61	7.89		mg/kg	3.6	40	30-NOV-16
Beryllium (Be)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	30-NOV-16
Bismuth (Bi)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	30-NOV-16
Boron (B)-Total		18.5	19.3		mg/kg	4.2	40	30-NOV-16
Cadmium (Cd)-Total		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	40	30-NOV-16
Calcium (Ca)-Total		13100	13100		mg/kg	0.1	60	30-NOV-16
Cesium (Cs)-Total		0.0499	0.0505		mg/kg	1.2	40	30-NOV-16
Chromium (Cr)-Total		0.112	0.104		mg/kg	7.3	40	30-NOV-16
Cobalt (Co)-Total		0.437	0.422		mg/kg	3.5	40	30-NOV-16
Copper (Cu)-Total		3.76	3.78		mg/kg	0.5	40	30-NOV-16
Iron (Fe)-Total		97.5	90.4		mg/kg	7.5	40	30-NOV-16
Lead (Pb)-Total		0.111	0.101		mg/kg	9.4	40	30-NOV-16
Lithium (Li)-Total		<0.50	<0.50	RPD-NA	mg/kg	N/A	40	30-NOV-16
Magnesium (Mg)-Total		2540	2580		mg/kg	1.7	40	30-NOV-16
Manganese (Mn)-Total		121	118		mg/kg	2.3	40	30-NOV-16
Molybdenum (Mo)-Total		0.148	0.176		mg/kg	17	40	30-NOV-16
Nickel (Ni)-Total		0.91	0.89		mg/kg	1.5	40	30-NOV-16
Phosphorus (P)-Total		1530	1500		mg/kg	2.1	40	30-NOV-16
Potassium (K)-Total		2260	2260		mg/kg	0.3	40	30-NOV-16

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442739-4 DUP		**L1842829-21**						
Rubidium (Rb)-Total		9.39	9.64		mg/kg	2.6	40	30-NOV-16
Selenium (Se)-Total		<0.050	<0.050	RPD-NA	mg/kg	N/A	40	30-NOV-16
Sodium (Na)-Total		<20	<20	RPD-NA	mg/kg	N/A	40	30-NOV-16
Strontium (Sr)-Total		11.8	12.0		mg/kg	1.3	60	30-NOV-16
Tellurium (Te)-Total		<0.020	<0.020	RPD-NA	mg/kg	N/A	40	30-NOV-16
Thallium (Tl)-Total		<0.0020	<0.0020	RPD-NA	mg/kg	N/A	40	30-NOV-16
Tin (Sn)-Total		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	30-NOV-16
Uranium (U)-Total		0.0057	0.0065		mg/kg	14	40	30-NOV-16
Vanadium (V)-Total		0.12	0.11		mg/kg	12	40	30-NOV-16
Zinc (Zn)-Total		7.93	7.97		mg/kg	0.5	40	30-NOV-16
Zirconium (Zr)-Total		<0.20	<0.20	RPD-NA	mg/kg	N/A	40	30-NOV-16
WG2442739-6 LCS								
Aluminum (Al)-Total			97.3		%		70-130	30-NOV-16
Antimony (Sb)-Total			97.5		%		70-130	30-NOV-16
Arsenic (As)-Total			98.5		%		70-130	30-NOV-16
Barium (Ba)-Total			101.9		%		70-130	30-NOV-16
Beryllium (Be)-Total			96.8		%		70-130	30-NOV-16
Bismuth (Bi)-Total			97.9		%		70-130	30-NOV-16
Boron (B)-Total			82.8		%		70-130	30-NOV-16
Cadmium (Cd)-Total			97.5		%		70-130	30-NOV-16
Calcium (Ca)-Total			97.6		%		70-130	30-NOV-16
Cesium (Cs)-Total			97.6		%		70-130	30-NOV-16
Chromium (Cr)-Total			91.5		%		70-130	30-NOV-16
Cobalt (Co)-Total			94.3		%		70-130	30-NOV-16
Copper (Cu)-Total			93.3		%		70-130	30-NOV-16
Iron (Fe)-Total			95.0		%		70-130	30-NOV-16
Lead (Pb)-Total			98.7		%		70-130	30-NOV-16
Lithium (Li)-Total			100.6		%		70-130	30-NOV-16
Magnesium (Mg)-Total			96.1		%		70-130	30-NOV-16
Manganese (Mn)-Total			96.2		%		70-130	30-NOV-16
Molybdenum (Mo)-Total			100.4		%		70-130	30-NOV-16
Nickel (Ni)-Total			94.4		%		70-130	30-NOV-16
Phosphorus (P)-Total			105.4		%		70-130	30-NOV-16
Potassium (K)-Total			93.4		%		70-130	30-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442739-6 LCS								
Rubidium (Rb)-Total			98.0		%		70-130	30-NOV-16
Selenium (Se)-Total			92.7		%		70-130	30-NOV-16
Sodium (Na)-Total			95.0		%		70-130	30-NOV-16
Strontium (Sr)-Total			103.2		%		70-130	30-NOV-16
Tellurium (Te)-Total			95.4		%		70-130	30-NOV-16
Thallium (Tl)-Total			96.9		%		70-130	30-NOV-16
Tin (Sn)-Total			97.4		%		70-130	30-NOV-16
Uranium (U)-Total			103.2		%		70-130	30-NOV-16
Vanadium (V)-Total			94.0		%		70-130	30-NOV-16
Zinc (Zn)-Total			91.0		%		70-130	30-NOV-16
Zirconium (Zr)-Total			93.8		%		70-130	30-NOV-16
WG2442739-7 LCS								
Aluminum (Al)-Total			92.1		%		70-130	30-NOV-16
Antimony (Sb)-Total			98.2		%		70-130	30-NOV-16
Arsenic (As)-Total			99.1		%		70-130	30-NOV-16
Barium (Ba)-Total			104.5		%		70-130	30-NOV-16
Beryllium (Be)-Total			97.6		%		70-130	30-NOV-16
Bismuth (Bi)-Total			96.3		%		70-130	30-NOV-16
Boron (B)-Total			86.3		%		70-130	30-NOV-16
Cadmium (Cd)-Total			98.9		%		70-130	30-NOV-16
Calcium (Ca)-Total			98.5		%		70-130	30-NOV-16
Cesium (Cs)-Total			99.6		%		70-130	30-NOV-16
Chromium (Cr)-Total			88.5		%		70-130	30-NOV-16
Cobalt (Co)-Total			91.9		%		70-130	30-NOV-16
Copper (Cu)-Total			91.0		%		70-130	30-NOV-16
Iron (Fe)-Total			94.3		%		70-130	30-NOV-16
Lead (Pb)-Total			97.4		%		70-130	30-NOV-16
Lithium (Li)-Total			101.6		%		70-130	30-NOV-16
Magnesium (Mg)-Total			92.8		%		70-130	30-NOV-16
Manganese (Mn)-Total			93.5		%		70-130	30-NOV-16
Molybdenum (Mo)-Total			102.6		%		70-130	30-NOV-16
Nickel (Ni)-Total			92.3		%		70-130	30-NOV-16
Phosphorus (P)-Total			101.2		%		70-130	30-NOV-16
Potassium (K)-Total			89.1		%		70-130	30-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442739-7 LCS								
Rubidium (Rb)-Total			94.9		%		70-130	30-NOV-16
Selenium (Se)-Total			96.5		%		70-130	30-NOV-16
Sodium (Na)-Total			91.8		%		70-130	30-NOV-16
Strontium (Sr)-Total			106.4		%		70-130	30-NOV-16
Tellurium (Te)-Total			97.5		%		70-130	30-NOV-16
Thallium (Tl)-Total			97.0		%		70-130	30-NOV-16
Tin (Sn)-Total			99.1		%		70-130	30-NOV-16
Uranium (U)-Total			101.5		%		70-130	30-NOV-16
Vanadium (V)-Total			90.8		%		70-130	30-NOV-16
Zinc (Zn)-Total			91.5		%		70-130	30-NOV-16
Zirconium (Zr)-Total			97.0		%		70-130	30-NOV-16
WG2442739-1 MB								
Aluminum (Al)-Total			<2.0		mg/kg		2	30-NOV-16
Antimony (Sb)-Total			<0.010		mg/kg		0.01	30-NOV-16
Arsenic (As)-Total			<0.020		mg/kg		0.02	30-NOV-16
Barium (Ba)-Total			<0.050		mg/kg		0.05	30-NOV-16
Beryllium (Be)-Total			<0.010		mg/kg		0.01	30-NOV-16
Bismuth (Bi)-Total			<0.010		mg/kg		0.01	30-NOV-16
Boron (B)-Total			<1.0		mg/kg		1	30-NOV-16
Cadmium (Cd)-Total			<0.0050		mg/kg		0.005	30-NOV-16
Calcium (Ca)-Total			<20		mg/kg		20	30-NOV-16
Cesium (Cs)-Total			<0.0050		mg/kg		0.005	30-NOV-16
Chromium (Cr)-Total			<0.050		mg/kg		0.05	30-NOV-16
Cobalt (Co)-Total			<0.020		mg/kg		0.02	30-NOV-16
Copper (Cu)-Total			<0.10		mg/kg		0.1	30-NOV-16
Iron (Fe)-Total			<3.0		mg/kg		3	30-NOV-16
Lead (Pb)-Total			<0.020		mg/kg		0.02	30-NOV-16
Lithium (Li)-Total			<0.50		mg/kg		0.5	30-NOV-16
Magnesium (Mg)-Total			<2.0		mg/kg		2	30-NOV-16
Manganese (Mn)-Total			<0.050		mg/kg		0.05	30-NOV-16
Molybdenum (Mo)-Total			<0.020		mg/kg		0.02	30-NOV-16
Nickel (Ni)-Total			<0.20		mg/kg		0.2	30-NOV-16
Phosphorus (P)-Total			<10		mg/kg		10	30-NOV-16
Potassium (K)-Total			<20		mg/kg		20	30-NOV-16

Quality Control Report

Workorder:	L1842829	Report Date:	05-DEC-16	

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442739-1 MB								
Rubidium (Rb)-Total			<0.050		mg/kg		0.05	30-NOV-16
Selenium (Se)-Total			<0.050		mg/kg		0.05	30-NOV-16
Sodium (Na)-Total			<20		mg/kg		20	30-NOV-16
Strontium (Sr)-Total			<0.050		mg/kg		0.05	30-NOV-16
Tellurium (Te)-Total			<0.020		mg/kg		0.02	30-NOV-16
Thallium (Tl)-Total			<0.0020		mg/kg		0.002	30-NOV-16
Tin (Sn)-Total			<0.10		mg/kg		0.1	30-NOV-16
Uranium (U)-Total			<0.0020		mg/kg		0.002	30-NOV-16
Vanadium (V)-Total			<0.10		mg/kg		0.1	30-NOV-16
Zinc (Zn)-Total			<0.50		mg/kg		0.5	30-NOV-16
Zirconium (Zr)-Total			<0.20		mg/kg		0.2	30-NOV-16
WG2442739-2 MB								
Aluminum (Al)-Total			<2.0		mg/kg		2	30-NOV-16
Antimony (Sb)-Total			<0.010		mg/kg		0.01	30-NOV-16
Arsenic (As)-Total			<0.020		mg/kg		0.02	30-NOV-16
Barium (Ba)-Total			<0.050		mg/kg		0.05	30-NOV-16
Beryllium (Be)-Total			<0.010		mg/kg		0.01	30-NOV-16
Bismuth (Bi)-Total			<0.010		mg/kg		0.01	30-NOV-16
Boron (B)-Total			<1.0		mg/kg		1	30-NOV-16
Cadmium (Cd)-Total			<0.0050		mg/kg		0.005	30-NOV-16
Calcium (Ca)-Total			<20		mg/kg		20	30-NOV-16
Cesium (Cs)-Total			<0.0050		mg/kg		0.005	30-NOV-16
Chromium (Cr)-Total			<0.050		mg/kg		0.05	30-NOV-16
Cobalt (Co)-Total			<0.020		mg/kg		0.02	30-NOV-16
Copper (Cu)-Total			<0.10		mg/kg		0.1	30-NOV-16
Iron (Fe)-Total			<3.0		mg/kg		3	30-NOV-16
Lead (Pb)-Total			<0.020		mg/kg		0.02	30-NOV-16
Lithium (Li)-Total			<0.50		mg/kg		0.5	30-NOV-16
Magnesium (Mg)-Total			<2.0		mg/kg		2	30-NOV-16
Manganese (Mn)-Total			<0.050		mg/kg		0.05	30-NOV-16
Molybdenum (Mo)-Total			<0.020		mg/kg		0.02	30-NOV-16
Nickel (Ni)-Total			<0.20		mg/kg		0.2	30-NOV-16
Phosphorus (P)-Total			<10		mg/kg		10	30-NOV-16
Potassium (K)-Total			<20		mg/kg		20	30-NOV-16

Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442739-2 MB								
Rubidium (Rb)-Total			<0.050		mg/kg		0.05	30-NOV-16
Selenium (Se)-Total			<0.050		mg/kg		0.05	30-NOV-16
Sodium (Na)-Total			<20		mg/kg		20	30-NOV-16
Strontium (Sr)-Total			<0.050		mg/kg		0.05	30-NOV-16
Tellurium (Te)-Total			<0.020		mg/kg		0.02	30-NOV-16
Thallium (Tl)-Total			<0.0020		mg/kg		0.002	30-NOV-16
Tin (Sn)-Total			<0.10		mg/kg		0.1	30-NOV-16
Uranium (U)-Total			<0.0020		mg/kg		0.002	30-NOV-16
Vanadium (V)-Total			<0.10		mg/kg		0.1	30-NOV-16
Zinc (Zn)-Total			<0.50		mg/kg		0.5	30-NOV-16
Zirconium (Zr)-Total			<0.20		mg/kg		0.2	30-NOV-16
Batch R3609346								
WG2442739-8 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.001		mg/kg		0-0.018	01-DEC-16
WG2443632-3 CRM		**VA-NIST-1575A**						
Aluminum (Al)-Total			104.7		%		70-130	01-DEC-16
Arsenic (As)-Total			0.036		mg/kg		0.019-0.059	01-DEC-16
Barium (Ba)-Total			100.4		%		70-130	01-DEC-16
Boron (B)-Total			91.6		%		70-130	01-DEC-16
Cadmium (Cd)-Total			101.3		%		70-130	01-DEC-16
Calcium (Ca)-Total			100.4		%		70-130	01-DEC-16
Cesium (Cs)-Total			102.4		%		70-130	01-DEC-16
Chromium (Cr)-Total			112.9		%		70-130	01-DEC-16
Cobalt (Co)-Total			0.064		mg/kg		0.041-0.081	01-DEC-16
Copper (Cu)-Total			109.0		%		70-130	01-DEC-16
Iron (Fe)-Total			107.0		%		70-130	01-DEC-16
Lead (Pb)-Total			101.8		%		70-130	01-DEC-16
Magnesium (Mg)-Total			107.6		%		70-130	01-DEC-16
Manganese (Mn)-Total			98.5		%		70-130	01-DEC-16
Nickel (Ni)-Total			107.5		%		70-130	01-DEC-16
Phosphorus (P)-Total			104.6		%		70-130	01-DEC-16
Potassium (K)-Total			102.2		%		70-130	01-DEC-16
Rubidium (Rb)-Total			103.6		%		70-130	01-DEC-16
Selenium (Se)-Total			0.107		mg/kg		0.049-0.149	01-DEC-16
Sodium (Na)-Total			64		mg/kg		43-83	01-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3609346								
WG2443632-3 CRM		**VA-NIST-1575A**						
Strontium (Sr)-Total			102.3		%		70-130	01-DEC-16
Thallium (Tl)-Total			82.8		%		70-130	01-DEC-16
Uranium (U)-Total			0.0042		mg/kg		0.002-0.006	01-DEC-16
Vanadium (V)-Total			0.10		mg/kg		0-0.19	01-DEC-16
Zinc (Zn)-Total			107.6		%		70-130	01-DEC-16
WG2443632-2 DUP		**L1842829-35**						
Aluminum (Al)-Total		94.0	94.3		mg/kg	0.4	40	01-DEC-16
Antimony (Sb)-Total		0.872	0.863		mg/kg	1.0	40	01-DEC-16
Arsenic (As)-Total		7.92	7.32		mg/kg	7.9	40	01-DEC-16
Barium (Ba)-Total		7.37	7.30		mg/kg	0.9	40	01-DEC-16
Beryllium (Be)-Total		0.014	0.013		mg/kg	12	40	01-DEC-16
Bismuth (Bi)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	01-DEC-16
Boron (B)-Total		2.4	2.3		mg/kg	4.9	40	01-DEC-16
Cadmium (Cd)-Total		0.0051	0.0051		mg/kg	0.9	40	01-DEC-16
Calcium (Ca)-Total		9470	9240		mg/kg	2.5	60	01-DEC-16
Cesium (Cs)-Total		0.138	0.135		mg/kg	2.1	40	01-DEC-16
Chromium (Cr)-Total		0.265	0.262		mg/kg	1.2	40	01-DEC-16
Cobalt (Co)-Total		5.57	5.28		mg/kg	5.3	40	01-DEC-16
Copper (Cu)-Total		4.48	4.33		mg/kg	3.4	40	01-DEC-16
Iron (Fe)-Total		251	243		mg/kg	3.3	40	01-DEC-16
Lead (Pb)-Total		0.545	0.539		mg/kg	1.1	40	01-DEC-16
Lithium (Li)-Total		<0.50	<0.50	RPD-NA	mg/kg	N/A	40	01-DEC-16
Magnesium (Mg)-Total		1940	1890		mg/kg	2.8	40	01-DEC-16
Manganese (Mn)-Total		90.0	84.9		mg/kg	5.8	40	01-DEC-16
Molybdenum (Mo)-Total		0.023	0.024		mg/kg	5.6	40	01-DEC-16
Nickel (Ni)-Total		4.74	4.67		mg/kg	1.6	40	01-DEC-16
Phosphorus (P)-Total		374	343		mg/kg	8.6	40	01-DEC-16
Potassium (K)-Total		1130	1110		mg/kg	1.9	40	01-DEC-16
Rubidium (Rb)-Total		3.49	3.48		mg/kg	0.2	40	01-DEC-16
Selenium (Se)-Total		<0.050	<0.050	RPD-NA	mg/kg	N/A	40	01-DEC-16
Sodium (Na)-Total		<20	<20	RPD-NA	mg/kg	N/A	40	01-DEC-16
Strontium (Sr)-Total		9.53	9.35		mg/kg	1.9	60	01-DEC-16
Tellurium (Te)-Total		<0.020	<0.020	RPD-NA	mg/kg	N/A	40	01-DEC-16
Thallium (Tl)-Total		<0.0020	<0.0020	RPD-NA	mg/kg	N/A	40	01-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3609346								
WG2443632-2 DUP		**L1842829-35**						
Tin (Sn)-Total		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	01-DEC-16
Uranium (U)-Total		0.0056	0.0040		mg/kg	34	40	01-DEC-16
Vanadium (V)-Total		0.29	0.28		mg/kg	5.0	40	01-DEC-16
Zinc (Zn)-Total		7.77	7.69		mg/kg	1.0	40	01-DEC-16
Zirconium (Zr)-Total		<0.20	<0.20	RPD-NA	mg/kg	N/A	40	01-DEC-16
WG2443632-4 LCS								
Aluminum (Al)-Total			89.8		%		70-130	01-DEC-16
Antimony (Sb)-Total			96.1		%		70-130	01-DEC-16
Arsenic (As)-Total			98.9		%		70-130	01-DEC-16
Barium (Ba)-Total			95.6		%		70-130	01-DEC-16
Beryllium (Be)-Total			96.6		%		70-130	01-DEC-16
Bismuth (Bi)-Total			93.2		%		70-130	01-DEC-16
Boron (B)-Total			85.9		%		70-130	01-DEC-16
Cadmium (Cd)-Total			97.4		%		70-130	01-DEC-16
Calcium (Ca)-Total			96.1		%		70-130	01-DEC-16
Cesium (Cs)-Total			98.9		%		70-130	01-DEC-16
Chromium (Cr)-Total			95.7		%		70-130	01-DEC-16
Cobalt (Co)-Total			98.0		%		70-130	01-DEC-16
Copper (Cu)-Total			95.7		%		70-130	01-DEC-16
Iron (Fe)-Total			101.3		%		70-130	01-DEC-16
Lead (Pb)-Total			97.4		%		70-130	01-DEC-16
Lithium (Li)-Total			98.7		%		70-130	01-DEC-16
Magnesium (Mg)-Total			89.8		%		70-130	01-DEC-16
Manganese (Mn)-Total			99.6		%		70-130	01-DEC-16
Molybdenum (Mo)-Total			100.6		%		70-130	01-DEC-16
Nickel (Ni)-Total			97.9		%		70-130	01-DEC-16
Phosphorus (P)-Total			91.3		%		70-130	01-DEC-16
Potassium (K)-Total			89.3		%		70-130	01-DEC-16
Rubidium (Rb)-Total			96.1		%		70-130	01-DEC-16
Selenium (Se)-Total			98.7		%		70-130	01-DEC-16
Sodium (Na)-Total			91.1		%		70-130	01-DEC-16
Strontium (Sr)-Total			106.9		%		70-130	01-DEC-16
Tellurium (Te)-Total			99.7		%		70-130	01-DEC-16
Thallium (Tl)-Total			95.7		%		70-130	01-DEC-16

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3609346								
WG2443632-4 LCS								
Tin (Sn)-Total			96.1		%		70-130	01-DEC-16
Uranium (U)-Total			103.5		%		70-130	01-DEC-16
Vanadium (V)-Total			98.4		%		70-130	01-DEC-16
Zinc (Zn)-Total			94.0		%		70-130	01-DEC-16
Zirconium (Zr)-Total			92.3		%		70-130	01-DEC-16
WG2443632-1 MB								
Aluminum (Al)-Total			<2.0		mg/kg		2	01-DEC-16
Antimony (Sb)-Total			<0.010		mg/kg		0.01	01-DEC-16
Arsenic (As)-Total			<0.020		mg/kg		0.02	01-DEC-16
Barium (Ba)-Total			<0.050		mg/kg		0.05	01-DEC-16
Beryllium (Be)-Total			<0.010		mg/kg		0.01	01-DEC-16
Bismuth (Bi)-Total			<0.010		mg/kg		0.01	01-DEC-16
Boron (B)-Total			<1.0		mg/kg		1	01-DEC-16
Cadmium (Cd)-Total			<0.0050		mg/kg		0.005	01-DEC-16
Calcium (Ca)-Total			<20		mg/kg		20	01-DEC-16
Cesium (Cs)-Total			<0.0050		mg/kg		0.005	01-DEC-16
Chromium (Cr)-Total			<0.050		mg/kg		0.05	01-DEC-16
Cobalt (Co)-Total			<0.020		mg/kg		0.02	01-DEC-16
Copper (Cu)-Total			<0.10		mg/kg		0.1	01-DEC-16
Iron (Fe)-Total			<3.0		mg/kg		3	01-DEC-16
Lead (Pb)-Total			<0.020		mg/kg		0.02	01-DEC-16
Lithium (Li)-Total			<0.50		mg/kg		0.5	01-DEC-16
Magnesium (Mg)-Total			<2.0		mg/kg		2	01-DEC-16
Manganese (Mn)-Total			<0.050		mg/kg		0.05	01-DEC-16
Molybdenum (Mo)-Total			<0.020		mg/kg		0.02	01-DEC-16
Nickel (Ni)-Total			<0.20		mg/kg		0.2	01-DEC-16
Phosphorus (P)-Total			<10		mg/kg		10	01-DEC-16
Potassium (K)-Total			<20		mg/kg		20	01-DEC-16
Rubidium (Rb)-Total			<0.050		mg/kg		0.05	01-DEC-16
Selenium (Se)-Total			<0.050		mg/kg		0.05	01-DEC-16
Sodium (Na)-Total			<20		mg/kg		20	01-DEC-16
Strontium (Sr)-Total			<0.050		mg/kg		0.05	01-DEC-16
Tellurium (Te)-Total			<0.020		mg/kg		0.02	01-DEC-16
Thallium (Tl)-Total			<0.0020		mg/kg		0.002	01-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3609346								
WG2443632-1 MB								
Tin (Sn)-Total			<0.10		mg/kg		0.1	01-DEC-16
Uranium (U)-Total			<0.0020		mg/kg		0.002	01-DEC-16
Vanadium (V)-Total			<0.10		mg/kg		0.1	01-DEC-16
Zinc (Zn)-Total			<0.50		mg/kg		0.5	01-DEC-16
Zirconium (Zr)-Total			<0.20		mg/kg		0.2	01-DEC-16
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442739-5 CRM		**VA-NIST-1575A**						
Aluminum (Al)-Total			104.3		%		70-130	30-NOV-16
Arsenic (As)-Total			0.0348		mg/kg wwt		0.019-0.059	30-NOV-16
Barium (Ba)-Total			110.2		%		70-130	30-NOV-16
Boron (B)-Total			92.3		%		70-130	30-NOV-16
Cadmium (Cd)-Total			105.3		%		70-130	30-NOV-16
Calcium (Ca)-Total			104.9		%		70-130	30-NOV-16
Cesium (Cs)-Total			107.0		%		70-130	30-NOV-16
Chromium (Cr)-Total			104.0		%		70-130	30-NOV-16
Cobalt (Co)-Total			0.0607		mg/kg wwt		0.041-0.081	30-NOV-16
Copper (Cu)-Total			108.5		%		70-130	30-NOV-16
Iron (Fe)-Total			101.2		%		70-130	30-NOV-16
Lead (Pb)-Total			106.5		%		70-130	30-NOV-16
Magnesium (Mg)-Total			107.1		%		70-130	30-NOV-16
Manganese (Mn)-Total			96.4		%		70-130	30-NOV-16
Nickel (Ni)-Total			103.5		%		70-130	30-NOV-16
Phosphorus (P)-Total			103.0		%		70-130	30-NOV-16
Potassium (K)-Total			98.3		%		70-130	30-NOV-16
Rubidium (Rb)-Total			104.5		%		70-130	30-NOV-16
Selenium (Se)-Total			0.105		mg/kg wwt		0.049-0.149	30-NOV-16
Sodium (Na)-Total			61.2		mg/kg wwt		43-83	30-NOV-16
Strontium (Sr)-Total			105.0		%		70-130	30-NOV-16
Thallium (Tl)-Total			88.4		%		70-130	30-NOV-16
Uranium (U)-Total			0.00424		mg/kg wwt		0.00203-0.0(	30-NOV-16
Vanadium (V)-Total			0.091		mg/kg wwt		0-0.19	30-NOV-16
Zinc (Zn)-Total			104.7		%		70-130	30-NOV-16
WG2442739-8 CRM		**VA-NIST-1566B**						

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Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442739-8 CRM		**VA-NIST-1566B**						
Arsenic (As)-Total			106.8		%		70-130	30-NOV-16
Barium (Ba)-Total			111.9		%		70-130	30-NOV-16
Boron (B)-Total			95.4		%		70-130	30-NOV-16
Cadmium (Cd)-Total			111.6		%		70-130	30-NOV-16
Calcium (Ca)-Total			100.5		%		70-130	30-NOV-16
Chromium (Cr)-Total			98.9		%		70-130	30-NOV-16
Cobalt (Co)-Total			100.3		%		70-130	30-NOV-16
Copper (Cu)-Total			101.1		%		70-130	30-NOV-16
Iron (Fe)-Total			101.2		%		70-130	30-NOV-16
Lead (Pb)-Total			111.6		%		70-130	30-NOV-16
Magnesium (Mg)-Total			100.1		%		70-130	30-NOV-16
Manganese (Mn)-Total			101.7		%		70-130	30-NOV-16
Molybdenum (Mo)-Total			108.6		%		70-130	30-NOV-16
Nickel (Ni)-Total			112.4		%		70-130	30-NOV-16
Phosphorus (P)-Total			102.1		%		70-130	30-NOV-16
Potassium (K)-Total			95.4		%		70-130	30-NOV-16
Rubidium (Rb)-Total			109.2		%		70-130	30-NOV-16
Selenium (Se)-Total			108.3		%		70-130	30-NOV-16
Sodium (Na)-Total			96.9		%		70-130	30-NOV-16
Strontium (Sr)-Total			96.9		%		70-130	30-NOV-16
Uranium (U)-Total			104.5		%		70-130	30-NOV-16
Vanadium (V)-Total			98.5		%		70-130	30-NOV-16
Zinc (Zn)-Total			97.1		%		70-130	30-NOV-16
WG2442739-3 DUP		**L1842829-1**						
Aluminum (Al)-Total		145	158		mg/kg wwt	8.7	40	30-NOV-16
Antimony (Sb)-Total		0.0503	0.0576		mg/kg wwt	14	40	30-NOV-16
Arsenic (As)-Total		0.660	0.714		mg/kg wwt	7.9	40	30-NOV-16
Barium (Ba)-Total		4.58	4.65		mg/kg wwt	1.5	40	30-NOV-16
Beryllium (Be)-Total		0.0136	0.0140		mg/kg wwt	3.2	40	30-NOV-16
Bismuth (Bi)-Total		0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	30-NOV-16
Boron (B)-Total		0.50	0.47		mg/kg wwt	5.0	40	30-NOV-16
Cadmium (Cd)-Total		0.0014	0.0014		mg/kg wwt	0.5	40	30-NOV-16
Calcium (Ca)-Total		3090	3100		mg/kg wwt	0.3	60	30-NOV-16
Cesium (Cs)-Total		0.0607	0.0582		mg/kg wwt	4.4	40	30-NOV-16

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442739-3 DUP		**L1842829-1**						
Chromium (Cr)-Total		0.357	0.390		mg/kg wwt	8.9	40	30-NOV-16
Cobalt (Co)-Total		1.21	1.29		mg/kg wwt	6.2	40	30-NOV-16
Copper (Cu)-Total		1.73	1.70		mg/kg wwt	1.6	40	30-NOV-16
Iron (Fe)-Total		192	214		mg/kg wwt	11	40	30-NOV-16
Lead (Pb)-Total		0.135	0.153		mg/kg wwt	12	40	30-NOV-16
Lithium (Li)-Total		0.27	0.31		mg/kg wwt	13	40	30-NOV-16
Magnesium (Mg)-Total		1220	1250		mg/kg wwt	1.9	40	30-NOV-16
Manganese (Mn)-Total		28.7	29.7		mg/kg wwt	3.5	40	30-NOV-16
Molybdenum (Mo)-Total		0.0299	0.0194	DUP-H	mg/kg wwt	43	40	30-NOV-16
Nickel (Ni)-Total		1.29	1.29		mg/kg wwt	0.1	40	30-NOV-16
Phosphorus (P)-Total		406	330		mg/kg wwt	21	40	30-NOV-16
Potassium (K)-Total		1620	1600		mg/kg wwt	1.6	40	30-NOV-16
Rubidium (Rb)-Total		5.95	5.06		mg/kg wwt	16	40	30-NOV-16
Selenium (Se)-Total		<0.010	<0.010	RPD-NA	mg/kg wwt	N/A	40	30-NOV-16
Sodium (Na)-Total		7.7	7.7		mg/kg wwt	0.2	40	30-NOV-16
Strontium (Sr)-Total		7.77	7.74		mg/kg wwt	0.4	60	30-NOV-16
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	30-NOV-16
Thallium (Tl)-Total		0.00212	0.00228		mg/kg wwt	6.9	40	30-NOV-16
Tin (Sn)-Total		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	40	30-NOV-16
Uranium (U)-Total		0.0314	0.0291		mg/kg wwt	7.6	40	30-NOV-16
Vanadium (V)-Total		0.355	0.388		mg/kg wwt	8.8	40	30-NOV-16
Zinc (Zn)-Total		4.64	4.30		mg/kg wwt	7.5	40	30-NOV-16
Zirconium (Zr)-Total		0.042	0.083	J	mg/kg wwt	0.041	0.08	30-NOV-16
WG2442739-4 DUP		**L1842829-21**						
Aluminum (Al)-Total		17.0	16.0		mg/kg wwt	5.9	40	30-NOV-16
Antimony (Sb)-Total		0.0672	0.0625		mg/kg wwt	7.3	40	30-NOV-16
Arsenic (As)-Total		1.06	1.02		mg/kg wwt	4.1	40	30-NOV-16
Barium (Ba)-Total		3.55	3.68		mg/kg wwt	3.6	40	30-NOV-16
Beryllium (Be)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	30-NOV-16
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	30-NOV-16
Boron (B)-Total		8.63	9.00		mg/kg wwt	4.2	40	30-NOV-16
Cadmium (Cd)-Total		<0.0010	<0.0010	RPD-NA	mg/kg wwt	N/A	40	30-NOV-16
Calcium (Ca)-Total		6100	6110		mg/kg wwt	0.1	60	30-NOV-16
Cesium (Cs)-Total		0.0233	0.0236		mg/kg wwt	1.2	40	30-NOV-16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442739-4 DUP		**L1842829-21**						
Chromium (Cr)-Total		0.052	0.048		mg/kg wwt	7.3	40	30-NOV-16
Cobalt (Co)-Total		0.204	0.197		mg/kg wwt	3.5	40	30-NOV-16
Copper (Cu)-Total		1.76	1.76		mg/kg wwt	0.5	40	30-NOV-16
Iron (Fe)-Total		45.5	42.2		mg/kg wwt	7.5	40	30-NOV-16
Lead (Pb)-Total		0.0517	0.0471		mg/kg wwt	9.4	40	30-NOV-16
Lithium (Li)-Total		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	40	30-NOV-16
Magnesium (Mg)-Total		1180	1200		mg/kg wwt	1.7	40	30-NOV-16
Manganese (Mn)-Total		56.2	54.9		mg/kg wwt	2.3	40	30-NOV-16
Molybdenum (Mo)-Total		0.0690	0.0819		mg/kg wwt	17	40	30-NOV-16
Nickel (Ni)-Total		0.423	0.417		mg/kg wwt	1.5	40	30-NOV-16
Phosphorus (P)-Total		715	700		mg/kg wwt	2.1	40	30-NOV-16
Potassium (K)-Total		1060	1050		mg/kg wwt	0.3	40	30-NOV-16
Rubidium (Rb)-Total		4.38	4.50		mg/kg wwt	2.6	40	30-NOV-16
Selenium (Se)-Total		0.016	0.016		mg/kg wwt	4.7	40	30-NOV-16
Sodium (Na)-Total		<4.0	<4.0	RPD-NA	mg/kg wwt	N/A	40	30-NOV-16
Strontium (Sr)-Total		5.51	5.59		mg/kg wwt	1.3	60	30-NOV-16
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	30-NOV-16
Thallium (Tl)-Total		0.00067	0.00070		mg/kg wwt	5.0	40	30-NOV-16
Tin (Sn)-Total		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	40	30-NOV-16
Uranium (U)-Total		0.00264	0.00304		mg/kg wwt	14	40	30-NOV-16
Vanadium (V)-Total		0.058	0.051		mg/kg wwt	12	40	30-NOV-16
Zinc (Zn)-Total		3.70	3.72		mg/kg wwt	0.5	40	30-NOV-16
Zirconium (Zr)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	30-NOV-16
WG2442739-6 LCS								
Aluminum (Al)-Total			97.3		%		70-130	30-NOV-16
Antimony (Sb)-Total			97.5		%		70-130	30-NOV-16
Arsenic (As)-Total			98.5		%		70-130	30-NOV-16
Barium (Ba)-Total			101.9		%		70-130	30-NOV-16
Beryllium (Be)-Total			96.8		%		70-130	30-NOV-16
Bismuth (Bi)-Total			97.9		%		70-130	30-NOV-16
Boron (B)-Total			82.8		%		70-130	30-NOV-16
Cadmium (Cd)-Total			97.5		%		70-130	30-NOV-16
Calcium (Ca)-Total			97.6		%		70-130	30-NOV-16
Cesium (Cs)-Total			97.6		%		70-130	30-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442739-6 LCS								
Chromium (Cr)-Total			91.5		%		70-130	30-NOV-16
Cobalt (Co)-Total			94.3		%		70-130	30-NOV-16
Copper (Cu)-Total			93.3		%		70-130	30-NOV-16
Iron (Fe)-Total			95.0		%		70-130	30-NOV-16
Lead (Pb)-Total			98.7		%		70-130	30-NOV-16
Lithium (Li)-Total			100.6		%		70-130	30-NOV-16
Magnesium (Mg)-Total			96.1		%		70-130	30-NOV-16
Manganese (Mn)-Total			96.2		%		70-130	30-NOV-16
Molybdenum (Mo)-Total			100.4		%		70-130	30-NOV-16
Nickel (Ni)-Total			94.4		%		70-130	30-NOV-16
Phosphorus (P)-Total			105.4		%		70-130	30-NOV-16
Potassium (K)-Total			93.4		%		70-130	30-NOV-16
Rubidium (Rb)-Total			98.0		%		70-130	30-NOV-16
Selenium (Se)-Total			92.7		%		70-130	30-NOV-16
Sodium (Na)-Total			95.0		%		70-130	30-NOV-16
Strontium (Sr)-Total			103.2		%		70-130	30-NOV-16
Tellurium (Te)-Total			95.4		%		70-130	30-NOV-16
Thallium (Tl)-Total			96.9		%		70-130	30-NOV-16
Tin (Sn)-Total			97.4		%		70-130	30-NOV-16
Uranium (U)-Total			103.2		%		70-130	30-NOV-16
Vanadium (V)-Total			94.0		%		70-130	30-NOV-16
Zinc (Zn)-Total			91.0		%		70-130	30-NOV-16
Zirconium (Zr)-Total			93.8		%		70-130	30-NOV-16
WG2442739-7 LCS								
Aluminum (Al)-Total			92.1		%		70-130	30-NOV-16
Antimony (Sb)-Total			98.2		%		70-130	30-NOV-16
Arsenic (As)-Total			99.1		%		70-130	30-NOV-16
Barium (Ba)-Total			104.5		%		70-130	30-NOV-16
Beryllium (Be)-Total			97.6		%		70-130	30-NOV-16
Bismuth (Bi)-Total			96.3		%		70-130	30-NOV-16
Boron (B)-Total			86.3		%		70-130	30-NOV-16
Cadmium (Cd)-Total			98.9		%		70-130	30-NOV-16
Calcium (Ca)-Total			98.5		%		70-130	30-NOV-16
Cesium (Cs)-Total			99.6		%		70-130	30-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442739-7 LCS								
Chromium (Cr)-Total			88.5		%		70-130	30-NOV-16
Cobalt (Co)-Total			91.9		%		70-130	30-NOV-16
Copper (Cu)-Total			91.0		%		70-130	30-NOV-16
Iron (Fe)-Total			94.3		%		70-130	30-NOV-16
Lead (Pb)-Total			97.4		%		70-130	30-NOV-16
Lithium (Li)-Total			101.6		%		70-130	30-NOV-16
Magnesium (Mg)-Total			92.8		%		70-130	30-NOV-16
Manganese (Mn)-Total			93.5		%		70-130	30-NOV-16
Molybdenum (Mo)-Total			102.6		%		70-130	30-NOV-16
Nickel (Ni)-Total			92.3		%		70-130	30-NOV-16
Phosphorus (P)-Total			101.2		%		70-130	30-NOV-16
Potassium (K)-Total			89.1		%		70-130	30-NOV-16
Rubidium (Rb)-Total			94.9		%		70-130	30-NOV-16
Selenium (Se)-Total			96.5		%		70-130	30-NOV-16
Sodium (Na)-Total			91.8		%		70-130	30-NOV-16
Strontium (Sr)-Total			106.4		%		70-130	30-NOV-16
Tellurium (Te)-Total			97.5		%		70-130	30-NOV-16
Thallium (Tl)-Total			97.0		%		70-130	30-NOV-16
Tin (Sn)-Total			99.1		%		70-130	30-NOV-16
Uranium (U)-Total			101.5		%		70-130	30-NOV-16
Vanadium (V)-Total			90.8		%		70-130	30-NOV-16
Zinc (Zn)-Total			91.5		%		70-130	30-NOV-16
Zirconium (Zr)-Total			97.0		%		70-130	30-NOV-16
WG2442739-1 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	30-NOV-16
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	30-NOV-16
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	30-NOV-16
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	30-NOV-16
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	30-NOV-16
Boron (B)-Total			<0.20		mg/kg wwt		0.2	30-NOV-16
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	30-NOV-16
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	30-NOV-16
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	30-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442739-1 MB								
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	30-NOV-16
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	30-NOV-16
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	30-NOV-16
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	30-NOV-16
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	30-NOV-16
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	30-NOV-16
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	30-NOV-16
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	30-NOV-16
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	30-NOV-16
Potassium (K)-Total			<4.0		mg/kg wwt		4	30-NOV-16
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Sodium (Na)-Total			<4.0		mg/kg wwt		4	30-NOV-16
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	30-NOV-16
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	30-NOV-16
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	30-NOV-16
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	30-NOV-16
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	30-NOV-16
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	30-NOV-16
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	30-NOV-16
WG2442739-2 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	30-NOV-16
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	30-NOV-16
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	30-NOV-16
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	30-NOV-16
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	30-NOV-16
Boron (B)-Total			<0.20		mg/kg wwt		0.2	30-NOV-16
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	30-NOV-16
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	30-NOV-16
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	30-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442739-2 MB								
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	30-NOV-16
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	30-NOV-16
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	30-NOV-16
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	30-NOV-16
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	30-NOV-16
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	30-NOV-16
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	30-NOV-16
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	30-NOV-16
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	30-NOV-16
Potassium (K)-Total			<4.0		mg/kg wwt		4	30-NOV-16
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Sodium (Na)-Total			<4.0		mg/kg wwt		4	30-NOV-16
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	30-NOV-16
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	30-NOV-16
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	30-NOV-16
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	30-NOV-16
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	30-NOV-16
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	30-NOV-16
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	30-NOV-16
Batch R3609346								
WG2442739-8 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.0010		mg/kg wwt		0-0.0177	01-DEC-16
WG2443632-3 CRM		**VA-NIST-1575A**						
Aluminum (Al)-Total			104.7		%		70-130	01-DEC-16
Arsenic (As)-Total			0.0355		mg/kg wwt		0.019-0.059	01-DEC-16
Barium (Ba)-Total			100.4		%		70-130	01-DEC-16
Boron (B)-Total			91.6		%		70-130	01-DEC-16
Cadmium (Cd)-Total			101.3		%		70-130	01-DEC-16
Calcium (Ca)-Total			100.4		%		70-130	01-DEC-16
Cesium (Cs)-Total			102.4		%		70-130	01-DEC-16
Chromium (Cr)-Total			112.9		%		70-130	01-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3609346								
WG2443632-3 CRM		**VA-NIST-1575A**						
Cobalt (Co)-Total			0.0638		mg/kg wwt		0.041-0.081	01-DEC-16
Copper (Cu)-Total			109.0		%		70-130	01-DEC-16
Iron (Fe)-Total			107.0		%		70-130	01-DEC-16
Lead (Pb)-Total			101.8		%		70-130	01-DEC-16
Magnesium (Mg)-Total			107.6		%		70-130	01-DEC-16
Manganese (Mn)-Total			98.5		%		70-130	01-DEC-16
Nickel (Ni)-Total			107.5		%		70-130	01-DEC-16
Phosphorus (P)-Total			104.6		%		70-130	01-DEC-16
Potassium (K)-Total			102.2		%		70-130	01-DEC-16
Rubidium (Rb)-Total			103.6		%		70-130	01-DEC-16
Selenium (Se)-Total			0.107		mg/kg wwt		0.049-0.149	01-DEC-16
Sodium (Na)-Total			64.3		mg/kg wwt		43-83	01-DEC-16
Strontium (Sr)-Total			102.3		%		70-130	01-DEC-16
Thallium (Tl)-Total			82.8		%		70-130	01-DEC-16
Uranium (U)-Total			0.00417		mg/kg wwt		0.00203-0.0(	01-DEC-16
Vanadium (V)-Total			0.096		mg/kg wwt		0-0.19	01-DEC-16
Zinc (Zn)-Total			107.6		%		70-130	01-DEC-16
WG2443632-2 DUP		**L1842829-35**						
Aluminum (Al)-Total		39.6	39.7		mg/kg wwt	0.4	40	01-DEC-16
Antimony (Sb)-Total		0.367	0.363		mg/kg wwt	1.0	40	01-DEC-16
Arsenic (As)-Total		3.34	3.08		mg/kg wwt	7.9	40	01-DEC-16
Barium (Ba)-Total		3.10	3.08		mg/kg wwt	0.9	40	01-DEC-16
Beryllium (Be)-Total		0.0060	0.0054		mg/kg wwt	12	40	01-DEC-16
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	01-DEC-16
Boron (B)-Total		1.01	0.96		mg/kg wwt	4.9	40	01-DEC-16
Cadmium (Cd)-Total		0.0022	0.0021		mg/kg wwt	0.9	40	01-DEC-16
Calcium (Ca)-Total		3990	3890		mg/kg wwt	2.5	60	01-DEC-16
Cesium (Cs)-Total		0.0583	0.0571		mg/kg wwt	2.1	40	01-DEC-16
Chromium (Cr)-Total		0.112	0.110		mg/kg wwt	1.2	40	01-DEC-16
Cobalt (Co)-Total		2.35	2.22		mg/kg wwt	5.3	40	01-DEC-16
Copper (Cu)-Total		1.89	1.82		mg/kg wwt	3.4	40	01-DEC-16
Iron (Fe)-Total		106	102		mg/kg wwt	3.3	40	01-DEC-16
Lead (Pb)-Total		0.230	0.227		mg/kg wwt	1.1	40	01-DEC-16
Lithium (Li)-Total		0.11	0.12		mg/kg wwt	4.8	40	01-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3609346								
WG2443632-2 DUP		**L1842829-35**						
Magnesium (Mg)-Total		818	795		mg/kg wwt	2.8	40	01-DEC-16
Manganese (Mn)-Total		37.9	35.8		mg/kg wwt	5.8	40	01-DEC-16
Molybdenum (Mo)-Total		0.0095	0.0100		mg/kg wwt	5.6	40	01-DEC-16
Nickel (Ni)-Total		2.00	1.97		mg/kg wwt	1.6	40	01-DEC-16
Phosphorus (P)-Total		158	145		mg/kg wwt	8.6	40	01-DEC-16
Potassium (K)-Total		478	469		mg/kg wwt	1.9	40	01-DEC-16
Rubidium (Rb)-Total		1.47	1.47		mg/kg wwt	0.2	40	01-DEC-16
Selenium (Se)-Total		<0.010	<0.010	RPD-NA	mg/kg wwt	N/A	40	01-DEC-16
Sodium (Na)-Total		<4.0	<4.0	RPD-NA	mg/kg wwt	N/A	40	01-DEC-16
Strontium (Sr)-Total		4.01	3.94		mg/kg wwt	1.9	60	01-DEC-16
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	01-DEC-16
Thallium (Tl)-Total		0.00058	0.00054		mg/kg wwt	7.6	40	01-DEC-16
Tin (Sn)-Total		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	40	01-DEC-16
Uranium (U)-Total		0.00235	0.00167		mg/kg wwt	34	40	01-DEC-16
Vanadium (V)-Total		0.123	0.117		mg/kg wwt	5.0	40	01-DEC-16
Zinc (Zn)-Total		3.27	3.24		mg/kg wwt	1.0	40	01-DEC-16
Zirconium (Zr)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	01-DEC-16
WG2443632-4 LCS								
Aluminum (Al)-Total			89.8		%		70-130	01-DEC-16
Antimony (Sb)-Total			96.1		%		70-130	01-DEC-16
Arsenic (As)-Total			98.9		%		70-130	01-DEC-16
Barium (Ba)-Total			95.6		%		70-130	01-DEC-16
Beryllium (Be)-Total			96.6		%		70-130	01-DEC-16
Bismuth (Bi)-Total			93.2		%		70-130	01-DEC-16
Boron (B)-Total			85.9		%		70-130	01-DEC-16
Cadmium (Cd)-Total			97.4		%		70-130	01-DEC-16
Calcium (Ca)-Total			96.1		%		70-130	01-DEC-16
Cesium (Cs)-Total			98.9		%		70-130	01-DEC-16
Chromium (Cr)-Total			95.7		%		70-130	01-DEC-16
Cobalt (Co)-Total			98.0		%		70-130	01-DEC-16
Copper (Cu)-Total			95.7		%		70-130	01-DEC-16
Iron (Fe)-Total			101.3		%		70-130	01-DEC-16
Lead (Pb)-Total			97.4		%		70-130	01-DEC-16
Lithium (Li)-Total			98.7		%		70-130	01-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3609346								
WG2443632-4 LCS								
Magnesium (Mg)-Total			89.8		%		70-130	01-DEC-16
Manganese (Mn)-Total			99.6		%		70-130	01-DEC-16
Molybdenum (Mo)-Total			100.6		%		70-130	01-DEC-16
Nickel (Ni)-Total			97.9		%		70-130	01-DEC-16
Phosphorus (P)-Total			91.3		%		70-130	01-DEC-16
Potassium (K)-Total			89.3		%		70-130	01-DEC-16
Rubidium (Rb)-Total			96.1		%		70-130	01-DEC-16
Selenium (Se)-Total			98.7		%		70-130	01-DEC-16
Sodium (Na)-Total			91.1		%		70-130	01-DEC-16
Strontium (Sr)-Total			106.9		%		70-130	01-DEC-16
Tellurium (Te)-Total			99.7		%		70-130	01-DEC-16
Thallium (Tl)-Total			95.7		%		70-130	01-DEC-16
Tin (Sn)-Total			96.1		%		70-130	01-DEC-16
Uranium (U)-Total			103.5		%		70-130	01-DEC-16
Vanadium (V)-Total			98.4		%		70-130	01-DEC-16
Zinc (Zn)-Total			94.0		%		70-130	01-DEC-16
Zirconium (Zr)-Total			92.3		%		70-130	01-DEC-16
WG2443632-1 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	01-DEC-16
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	01-DEC-16
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	01-DEC-16
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	01-DEC-16
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	01-DEC-16
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	01-DEC-16
Boron (B)-Total			<0.20		mg/kg wwt		0.2	01-DEC-16
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	01-DEC-16
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	01-DEC-16
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	01-DEC-16
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	01-DEC-16
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	01-DEC-16
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	01-DEC-16
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	01-DEC-16
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	01-DEC-16
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	01-DEC-16

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3609346								
WG2443632-1 MB								
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	01-DEC-16
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	01-DEC-16
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	01-DEC-16
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	01-DEC-16
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	01-DEC-16
Potassium (K)-Total			<4.0		mg/kg wwt		4	01-DEC-16
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	01-DEC-16
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	01-DEC-16
Sodium (Na)-Total			<4.0		mg/kg wwt		4	01-DEC-16
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	01-DEC-16
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	01-DEC-16
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	01-DEC-16
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	01-DEC-16
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	01-DEC-16
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	01-DEC-16
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	01-DEC-16
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	01-DEC-16
MOISTURE-TISS-VA	**Tissue**							
Batch R3600317								
WG2436108-3 DUP		**L1842829-2**						
% Moisture		63.5	62.5		%	1.7	20	18-NOV-16
WG2436108-2 LCS								
% Moisture			99.6		%		90-110	18-NOV-16
WG2436108-1 MB								
% Moisture			<0.50		%		0.5	18-NOV-16
Batch R3600318								
WG2437586-3 DUP		**L1842829-23**						
% Moisture		56.4	56.6		%	0.4	20	21-NOV-16
WG2437586-2 LCS								
% Moisture			99.8		%		90-110	21-NOV-16
WG2437586-1 MB								
% Moisture			<0.50		%		0.5	21-NOV-16
Batch R3600321								
WG2436113-3 DUP		**L1842829-8**						
% Moisture		58.5	60.4		%	3.2	20	19-NOV-16
WG2436113-2 LCS								

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-TISS-VA	**Tissue**							
Batch R3600321								
WG2436113-2 LCS								
% Moisture			100.4		%		90-110	19-NOV-16
WG2436113-1 MB								
% Moisture			<0.50		%		0.5	19-NOV-16
Batch R3602129								
WG2437960-3 DUP		**L1842829-44**						
% Moisture		61.0	59.7		%	2.2	20	22-NOV-16
WG2437960-2 LCS								
% Moisture			99.1		%		90-110	22-NOV-16
WG2437960-1 MB								
% Moisture			<0.50		%		0.5	22-NOV-16

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Burnaby Laboratory
8081 Lougheed Highway
Burnaby, BC
V5A 1W9
Phone: (604) 235-4188
After hours: (604) 220-4188
Contact: Amber Springer

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

DATE: October 13, 2016

LAB WORK ORDER #

REPORT TO:
COMPANY: Golder Associates Ltd.
CONTACT: Steven Fiddler
ADDRESS: 16820 107 Avenue, Edmonton, Alberta
T5P 4C3
PHONE: (780) 930-5478 FAX: (780)-483-1574

REPORT DISTRIBUTION: **ALL FINAL RESULTS WILL BE EMAILED**
EMAIL 1: Steven_Fiddler@Golder.com
EMAIL 2: lcesh@golder.com
SELECT: pdf X digital X MDD/EDD X

SERVICE REQUESTED

X	REGULAR SERVICE (DEFAULT)
	RUSH SERVICE
	EMERGENCY SERVICE

ANALYSIS REQUEST

INDICATE BOTTLES: FILTERED/PRESERVED (F /P)

INVOICE TO: **SAME Y / N**
COMPANY: Golder Associates Ltd.
CONTACT: Steven Fiddler
ADDRESS: 16820 107 Avenue, Edmonton, Alberta
T5P 4C3
PHONE: (780) 930-5478 FAX: (780) 483-1574

JOB # **13-1377-0044-23000-23003**

QUOTE BY EMAIL,

L1842829-COFC

Golder SAMPLE ID number	SAMPLED BY / DATE / TIME	SAMPLE TYPE	SAMPLE WEIGHT (g)	% Moisture	Total metals in tissues (including silver, mercury and tin)	HAZARDOUS ? (Y/N)	NUMBER OF CONTAINERS	HIGHLY CONTAMINATED ? (Y/N)	LAB SAMPLE #
16-Giant-AL-01	DPEN/7Sep16	vegetation	95.47	x	x	N	1	Y	
16-Giant-AL-02	DPEN/7Sep16	vegetation	52.4	x	x	N	1	Y	
16-Giant-AL-03	DPEN/7Sep16	vegetation	80.02	x	x	N	1	Y	
16-Giant-AL-04	DPEN/7Sep16	vegetation	83.24	x	x	N	1	Y	
16-Giant-AL-05	DPEN/7Sep16	vegetation	58.24	x	x	N	1	Y	
16-Giant-AL-06	DPEN/7Sep16	vegetation	73.8	x	x	N	1	Y	
16-Giant-AL-07	DPEN/7Sep16	vegetation	65.18	x	x	N	1	Y	
16-Giant-AL-08	DPEN/7Sep16	vegetation	56.4	x	x	N	1	Y	
16-Giant-AL-09	DPEN/7Sep16	vegetation	52.8	x	x	N	1	Y	
16-Giant-AL-10	DPEN/7Sep16	vegetation	45.5	x	x	N	1	Y	
16-Giant-AL-11	DPEN/7Sep16	vegetation	55.2	x	x	N	1	Y	
16-Giant-AL-12	DPKB/8Sep16	vegetation	58.5	x	x	N	1	Y	
16-Giant-AL-13	DPKB/8Sep17	vegetation	10.6	x	x	N	1	Y	
16-Giant-AL-14	DPKB/8Sep18	vegetation	28.8	x	x	N	1	Y	
16-Giant-AL-15	DPKB/8Sep19	vegetation	41.2	x	x	N	1	Y	
16-Giant-AL-16	DPKB/8Sep20	vegetation	41.6	x	x	N	1	Y	
16-Giant-AL-17	DPKB/8Sep21	vegetation	37.3	x	x	N	1	Y	

GOLDER ASSOCIATES LTD
ATTN: Steven Fiddler
16820 107 Ave NW
EDMONTON AB T5P 4C3

Date Received: 18-OCT-16
Report Date: 14-DEC-16 14:03 (MT)
Version: FINAL

Client Phone: 780-483-3499

Certificate of Analysis

Lab Work Order #: L1842843
Project P.O. #: NOT SUBMITTED
Job Reference: 13-1377-0044-23000-23003
C of C Numbers:
Legal Site Desc:

Jessica Spira, Env. Tech. DIPL
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-1 16-GIANT-DM-34							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	74.8		0.50	%		07-DEC-16	R3612958
Mercury (Hg)-Total	0.198		0.0050	mg/kg	07-DEC-16	08-DEC-16	R3613376
Mercury (Hg)-Total	0.0497		0.0010	mg/kg wwt	07-DEC-16	08-DEC-16	R3613374
Silver (Ag)-Total	0.0177		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Silver (Ag)-Total	0.0044		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	73.9		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.085		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	5.07		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	15.5		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	1.7		1.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.178		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	48900		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	1.99		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.276		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	0.257		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	9.86		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	381		3.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.222		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.50		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	1700		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	9.60		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.472		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	0.79		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	32000		10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	10800		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	81.7		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	1.06		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	5070		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	16.4		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.020		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.0035		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	0.12		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.0122		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	0.24		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	115		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	18.6		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.0213		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	1.28		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	3.91		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	0.43		0.20	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0447		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	12300		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.500		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.069		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-1 16-GIANT-DM-34							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0646		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	2.48		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	96.0		0.60	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.0558		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	428		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	2.41		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.119		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	0.198		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	8040		2.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	2730		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	20.6		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.268		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	1280		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	4.13		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.00087		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	0.030		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.00308		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	0.060		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	28.9		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
L1842843-2 16-GIANT-DM-01							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	66.4		0.50	%		07-DEC-16	R3612958
Mercury (Hg)-Total	0.0191		0.0050	mg/kg	07-DEC-16	08-DEC-16	R3613376
Mercury (Hg)-Total	0.0064		0.0010	mg/kg wwt	07-DEC-16	08-DEC-16	R3613374
Silver (Ag)-Total	0.0062		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Silver (Ag)-Total	0.0021		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	42.2		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.032		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	2.29		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	7.75		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	3.0		1.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0530		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	29000		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.0920		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.151		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	0.108		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	10.1		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	255		3.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.153		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.50		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	1280		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	8.37		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.553		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-2 16-GIANT-DM-01							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.90		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	20200		10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	9270		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	15.9		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.745		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	4290		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	9.08		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.020		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.0028		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	<0.10		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.0099		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	0.14		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	81.5		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	14.2		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.0108		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	0.771		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	2.61		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	1.02		0.20	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0178		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	9770		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.0310		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.051		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	0.0363		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	3.38		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	85.8		0.60	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.0514		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	432		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	2.82		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.186		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	0.304		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	6780		2.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	3120		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	5.34		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.251		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	1440		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	3.06		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.00094		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.00332		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	0.046		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	27.4		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
L1842843-3 16-GIANT-RV-02							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-3 16-GIANT-RV-02							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	73.1		0.50	%		07-DEC-16	R3612958
Mercury (Hg)-Total	0.170		0.0050	mg/kg	07-DEC-16	08-DEC-16	R3613376
Mercury (Hg)-Total	0.0457		0.0010	mg/kg wwt	07-DEC-16	08-DEC-16	R3613374
Silver (Ag)-Total	0.0353		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Silver (Ag)-Total	0.0095		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	31.4		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.099		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	10.2		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	13.1		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	3.3		1.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.333		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	38600		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	3.96		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.086		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	0.257		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	8.26		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	271		3.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.260		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.50		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	1530		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	8.81		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.488		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	0.76		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	29000		10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	12600		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	75.7		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.977		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	5630		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	19.9		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.020		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.0040		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	0.15		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.0084		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	<0.10		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	101		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	8.46		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.0267		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	2.76		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	3.52		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	0.88		0.20	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0897		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	10400		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	1.07		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.023		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-3 16-GIANT-RV-02							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0692		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	2.22		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	73.1		0.60	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.0699		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	411		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	2.37		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.131		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	0.204		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	7810		2.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	3400		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	20.4		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.263		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	1520		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	5.36		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.00109		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	0.042		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.00227		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	0.022		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	27.2		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
L1842843-4 16-GIANT-DM-03							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	68.7		0.50	%		07-DEC-16	R3612958
Mercury (Hg)-Total	0.0144		0.0050	mg/kg	07-DEC-16	08-DEC-16	R3613376
Mercury (Hg)-Total	0.0045		0.0010	mg/kg wwt	07-DEC-16	08-DEC-16	R3613374
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	23.0		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.056		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	1.23		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	16.1		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	3.0		1.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0224		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	42900		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.100		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.056		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	0.088		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	9.60		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	243		3.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.179		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.50		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	1760		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	10.1		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.494		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-4 16-GIANT-DM-03							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.64		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	31200		10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	10900		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	31.3		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.747		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	4680		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	9.86		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.020		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	0.12		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	<0.0020		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	<0.10		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	98.6		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	7.21		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.0175		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	0.386		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	5.04		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	0.94		0.20	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0070		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	13400		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.0313		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.017		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	0.0276		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	3.01		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	76.1		0.60	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.0562		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	550		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	3.17		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.155		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	0.201		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	9770		2.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	3410		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	9.81		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.234		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	1470		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	3.09		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.00054		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	0.037		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.00062		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	<0.020		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	30.9		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
L1842843-5 16-GIANT-RV-04							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-5 16-GIANT-RV-04							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	72.5		0.50	%		07-DEC-16	R3612958
Mercury (Hg)-Total	0.136		0.0050	mg/kg	07-DEC-16	08-DEC-16	R3613376
Mercury (Hg)-Total	0.0374		0.0010	mg/kg wwt	07-DEC-16	08-DEC-16	R3613374
Silver (Ag)-Total	0.0211		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Silver (Ag)-Total	0.0058		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	25.4		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.072		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	7.17		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	8.67		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	3.6		1.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.332		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	36100		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	1.86		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.086		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	0.228		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	10.1		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	277		3.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.190		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.50		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	1550		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	8.47		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.487		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	0.51		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	26900		10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	11300		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	61.0		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.951		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	5190		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	16.5		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.020		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.0076		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	0.15		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.0054		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	<0.10		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	94.8		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	6.99		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.0197		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	1.97		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	2.38		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	0.98		0.20	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0911		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	9930		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.513		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.024		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-5 16-GIANT-RV-04							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0626		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	2.77		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	76.2		0.60	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.0522		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	427		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	2.33		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.134		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	0.141		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	7390		2.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	3120		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	16.8		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.261		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	1430		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	4.55		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.00208		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	0.040		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.00149		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	<0.020		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	26.1		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
L1842843-6 16-GIANT-RV-05							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	73.0		0.50	%		07-DEC-16	R3612958
Mercury (Hg)-Total	0.169		0.0050	mg/kg	07-DEC-16	08-DEC-16	R3613376
Mercury (Hg)-Total	0.0457		0.0010	mg/kg wwt	07-DEC-16	08-DEC-16	R3613374
Silver (Ag)-Total	0.0529		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Silver (Ag)-Total	0.0143		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	44.9		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.277		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	7.63		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	6.97		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	2.8		1.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.160		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	34900		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	1.15		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.130		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	0.238		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	9.52		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	338		3.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.305		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.50		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	1280		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	11.0		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.507		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-6 16-GIANT-RV-05							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.49		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	23000		10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	11700		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	54.2		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.921		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	4270		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	8.69		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.020		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.0041		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	0.12		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.0062		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	0.12		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	108		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	12.1		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.0749		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	2.06		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	1.88		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	0.0021		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	0.76		0.20	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0434		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	9420		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.310		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.035		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	0.0642		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	2.57		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	91.4		0.60	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.0825		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	347		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	2.98		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.137		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	0.133		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	6220		2.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	3160		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	14.7		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.249		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	1160		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	2.35		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.00111		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	0.033		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.00167		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	0.032		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	29.1		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
L1842843-7 16-GIANT-SH-06							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-7 16-GIANT-SH-06							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	74.1		0.50	%		07-DEC-16	R3612958
Mercury (Hg)-Total	0.184		0.0050	mg/kg	07-DEC-16	08-DEC-16	R3613376
Mercury (Hg)-Total	0.0476		0.0010	mg/kg wwt	07-DEC-16	08-DEC-16	R3613374
Silver (Ag)-Total	0.0969		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Silver (Ag)-Total	0.0251		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	28.6		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.188		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	6.43		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	5.44		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	1.6		1.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.138		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	27400		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.529		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.082		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	0.247		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	8.45		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	281		3.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.483		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.50		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	1250		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	10.9		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.467		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	0.51		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	21200		10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	12600		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	34.7		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	1.01		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	4610		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	13.5		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.020		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	<0.10		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.0065		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	<0.10		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	87.4		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	7.41		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.0487		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	1.67		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	1.41		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	0.42		0.20	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0358		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	7100		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.137		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.021		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-7 16-GIANT-SH-06							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0639		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	2.19		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	72.7		0.60	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.125		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	324		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	2.83		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.121		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	0.132		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	5480		2.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	3260		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	8.99		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.262		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	1190		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	3.51		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.00051		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.00170		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	0.022		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	22.7		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
L1842843-8 16-GIANT-RV-07							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	65.2		0.50	%		09-DEC-16	R3616053
Mercury (Hg)-Total	0.204		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0709		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	0.0124		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Silver (Ag)-Total	0.0043		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	37.0		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.102		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	3.47		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	2.98		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	1.5		1.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.189		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	27800		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.192		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.142		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.134		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	14.2		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	367		3.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.238		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	1610		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	11.8		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.568		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-8 16-GIANT-RV-07							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.25		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	26000		10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	11700		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	22.3		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	1.98		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	5250		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	6.78		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	0.0054		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.17		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.0090		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.12		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	114		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	12.9		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.0353		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	1.21		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	1.04		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	0.53		0.20	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0657		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	9660		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0669		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.049		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.0467		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	4.92		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	128		0.60	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.0826		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	559		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	4.11		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.198		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.087		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	9050		2.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	4080		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	7.75		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.689		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	1830		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	2.36		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	0.00189		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.060		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.00314		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.042		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	39.7		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
L1842843-9 16-GIANT-RV-08							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-9 16-GIANT-RV-08							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	71.6		0.50	%		07-DEC-16	R3612958
Mercury (Hg)-Total	0.124		0.0050	mg/kg	07-DEC-16	08-DEC-16	R3613376
Mercury (Hg)-Total	0.0354		0.0010	mg/kg wwt	07-DEC-16	08-DEC-16	R3613374
Silver (Ag)-Total	0.0375		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Silver (Ag)-Total	0.0107		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	17.4		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.106		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	6.85		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	8.19		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	1.8		1.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.174		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	42400		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	1.82		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	<0.050		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	0.221		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	8.60		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	267		3.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.252		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.50		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	1340		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	6.74		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.372		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	0.45		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	27200		10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	12000		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	50.9		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	1.07		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	4380		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	13.3		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.020		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.0044		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	<0.10		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.0032		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	<0.10		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	110		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	4.94		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.0302		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	1.95		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	2.33		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	0.51		0.20	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0494		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	12100		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.517		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.014		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-9 16-GIANT-RV-08							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0630		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	2.45		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	76.0		0.60	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.0718		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	383		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	1.92		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.106		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	0.129		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	7720		2.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	3420		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	14.5		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.303		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	1250		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	3.78		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.00124		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.00092		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	<0.020		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	31.3		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
L1842843-10 16-GIANT-DM-09							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	72.2		0.50	%		07-DEC-16	R3612958
Mercury (Hg)-Total	0.0200		0.0050	mg/kg	07-DEC-16	08-DEC-16	R3613376
Mercury (Hg)-Total	0.0056		0.0010	mg/kg wwt	07-DEC-16	08-DEC-16	R3613374
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Silver (Ag)-Total	0.0011		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	110		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.408		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	4.91		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	5.65		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	1.2		1.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0243		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	42300		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.0435		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.368		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	0.278		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	13.5		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	452		3.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	3.92		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.50		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	1570		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	11.5		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.602		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-10 16-GIANT-DM-09							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.98		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	26700		10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	10500		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	10.0		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.822		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	5940		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	12.0		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.020		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.0025		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	<0.10		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.0191		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	0.34		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	99.2		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	30.7		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.114		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	1.37		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	1.57		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	0.34		0.20	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0068		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	11800		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.0121		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.102		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	0.0773		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	3.76		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	126		0.60	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	1.09		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	438		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	3.20		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.168		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	0.272		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	7420		2.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	2930		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	2.78		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.229		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	1650		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	3.33		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.00068		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	0.027		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.00530		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	0.094		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	27.6		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
L1842843-11 16-GIANT-DM-10							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-11 16-GIANT-DM-10							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	68.5		0.50	%		07-DEC-16	R3612958
Mercury (Hg)-Total	0.0684		0.0050	mg/kg	07-DEC-16	08-DEC-16	R3613376
Mercury (Hg)-Total	0.0216		0.0010	mg/kg wwt	07-DEC-16	08-DEC-16	R3613374
Silver (Ag)-Total	0.0087		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Silver (Ag)-Total	0.0028		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	671		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.605		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	9.37		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	9.92		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	0.018		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	1.6		1.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0503		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	39700		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.0815		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	1.74		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	0.690		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	10.4		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	1050		3.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.822		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	1.10		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	1640		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	23.7		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.608		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	1.70		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	24200		10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	9480		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	11.8		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.824		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	4010		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	13.8		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.020		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.0126		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	<0.10		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.102		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	1.86		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	85.8		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	0.33		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	212		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.191		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	2.96		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	3.13		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	0.0058		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	0.0025		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	0.50		0.20	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0159		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	12500		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.0257		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.550		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-11 16-GIANT-DM-10							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.218		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	3.27		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	333		0.60	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.259		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	0.35		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	518		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	7.48		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.192		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	0.536		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	7640		2.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	2990		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	3.71		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.260		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	1260		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	4.37		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.00397		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	0.020		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.0320		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	0.587		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	27.1		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	0.103		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
L1842843-12 16-GIANT-RV-11							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	71.0		0.50	%		07-DEC-16	R3612958
Mercury (Hg)-Total	0.127		0.0050	mg/kg	07-DEC-16	08-DEC-16	R3613376
Mercury (Hg)-Total	0.0369		0.0010	mg/kg wwt	07-DEC-16	08-DEC-16	R3613374
Silver (Ag)-Total	0.0473		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Silver (Ag)-Total	0.0137		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	56.8		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.128		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	5.24		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	8.16		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	2.6		1.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0748		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	34700		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.696		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.166		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	0.240		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	8.29		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	307		3.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.319		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.50		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	1500		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	10.4		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.484		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-12 16-GIANT-RV-11							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.73		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	24500		10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	11800		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	46.6		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.950		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	4680		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	13.8		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.020		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.0020		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	<0.10		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.0043		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	0.16		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	101		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	16.4		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.0370		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	1.52		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	2.36		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	0.75		0.20	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0216		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	10100		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.201		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.048		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	0.0694		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	2.40		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	88.8		0.60	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.0924		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	435		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	3.03		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.140		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	0.212		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	7110		2.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	3400		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	13.5		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.275		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	1360		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	3.98		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.00059		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.00125		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	0.047		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	29.3		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
L1842843-13 16-GIANT-DM-12							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-13 16-GIANT-DM-12							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	69.7		0.50	%		07-DEC-16	R3612958
Mercury (Hg)-Total	0.0207		0.0050	mg/kg	07-DEC-16	08-DEC-16	R3613376
Mercury (Hg)-Total	0.0063		0.0010	mg/kg wwt	07-DEC-16	08-DEC-16	R3613374
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	36.5		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.164		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	4.19		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	10.3		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	1.0		1.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0172		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	49200		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.102		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.136		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	0.183		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	11.6		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	312		3.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	1.37		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.50		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	1730		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	14.1		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.583		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	0.56		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	31400		10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	9980		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	66.2		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.630		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	5240		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	12.8		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.020		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	<0.10		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.0045		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	0.12		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	110		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	11.1		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.0496		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	1.27		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	3.11		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	0.31		0.20	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0052		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	14900		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.0310		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.041		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-13 16-GIANT-DM-12							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0555		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	3.52		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	94.6		0.60	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.414		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	525		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	4.28		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.176		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	0.169		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	9500		2.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	3020		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	20.0		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.191		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	1590		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	3.87		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.00055		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	0.024		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.00138		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	0.037		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	33.3		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
L1842843-14 16-GIANT-DM-13							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	67.8		0.50	%		07-DEC-16	R3612958
Mercury (Hg)-Total	0.0175		0.0050	mg/kg	07-DEC-16	08-DEC-16	R3613376
Mercury (Hg)-Total	0.0056		0.0010	mg/kg wwt	07-DEC-16	08-DEC-16	R3613374
Silver (Ag)-Total	0.0058		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Silver (Ag)-Total	0.0019		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	122		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.223		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	14.2		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	7.41		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	3.7		1.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0487		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	42900		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.106		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.310		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	0.531		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	10.1		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	456		3.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.473		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.50		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	2010		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	28.7		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.747		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-14 16-GIANT-DM-13							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.90		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	29100		10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	11100		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	36.7		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.659		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	5040		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	13.0		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.020		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.0022		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	<0.10		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.0111		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	0.40		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	86.3		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	39.4		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.0719		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	4.57		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	2.39		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	1.19		0.20	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0157		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	13800		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.0343		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.100		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	0.171		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	3.26		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	147		0.60	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.153		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	649		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	9.25		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.241		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	0.291		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	9400		2.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	3570		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	11.8		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.213		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	1620		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	4.20		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.00072		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.00356		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	0.130		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	27.8		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
L1842843-15 16-GIANT-DM-14							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-15 16-GIANT-DM-14							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	69.0		0.50	%		07-DEC-16	R3612958
Mercury (Hg)-Total	0.0092		0.0050	mg/kg	07-DEC-16	08-DEC-16	R3613376
Mercury (Hg)-Total	0.0029		0.0010	mg/kg wwt	07-DEC-16	08-DEC-16	R3613374
Silver (Ag)-Total	0.0102		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Silver (Ag)-Total	0.0032		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	298		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.317		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	29.6		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	7.32		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	1.3		1.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0234		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	39300		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.0350		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.617		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	1.02		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	11.4		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	812		3.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.469		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.50		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	1520		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	43.9		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	1.10		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	1.78		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	24700		10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	9970		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	13.2		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.996		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	4170		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	11.3		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.020		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.0062		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	<0.10		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.0180		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	0.98		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	85.9		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	92.4		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.0983		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	9.17		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	2.27		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	0.41		0.20	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0072		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	12200		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.0109		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.191		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-15 16-GIANT-DM-14							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.317		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	3.53		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	252		0.60	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.145		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	0.11		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	473		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	13.6		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.341		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	0.553		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	7650		2.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	3090		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	4.09		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.309		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	1290		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	3.52		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.00193		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.00559		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	0.305		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	26.6		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	0.040		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
L1842843-16 16-GIANT-DM-15							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	70.7		0.50	%		07-DEC-16	R3612958
Mercury (Hg)-Total	0.0119		0.0050	mg/kg	07-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0039		0.0010	mg/kg wwt	07-DEC-16	08-DEC-16	R3613374
Silver (Ag)-Total	0.0158		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Silver (Ag)-Total	0.0046		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	52.9		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.165		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	6.46		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	7.06		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	1.9		1.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.258		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	36000		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.0572		0.0050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.106		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	0.239		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	11.5		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	294		3.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.269		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.50		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	1650		2.0	mg/kg	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	23.4		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.463		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-16 16-GIANT-DM-15							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.74		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	26300		10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	11400		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	27.1		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.696		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	5130		20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	10.5		0.050	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.020		0.020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	<0.10		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.0048		0.0020	mg/kg	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	0.22		0.10	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	97.1		0.50	mg/kg	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	07-DEC-16	09-DEC-16	R3615468
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	15.5		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Antimony (Sb)-Total	0.0484		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Arsenic (As)-Total	1.89		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Barium (Ba)-Total	2.07		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Boron (B)-Total	0.55		0.20	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cadmium (Cd)-Total	0.0757		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Calcium (Ca)-Total	10600		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cesium (Cs)-Total	0.0168		0.0010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Chromium (Cr)-Total	0.031		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Cobalt (Co)-Total	0.0700		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Copper (Cu)-Total	3.37		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Iron (Fe)-Total	86.3		0.60	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lead (Pb)-Total	0.0789		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Magnesium (Mg)-Total	485		0.40	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Manganese (Mn)-Total	6.87		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Molybdenum (Mo)-Total	0.136		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Nickel (Ni)-Total	0.216		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Phosphorus (P)-Total	7710		2.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Potassium (K)-Total	3350		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Rubidium (Rb)-Total	7.95		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Selenium (Se)-Total	0.204		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Sodium (Na)-Total	1500		4.0	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Strontium (Sr)-Total	3.09		0.010	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Thallium (Tl)-Total	0.00048		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Tin (Sn)-Total	0.024		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Uranium (U)-Total	0.00142		0.00040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Vanadium (V)-Total	0.064		0.020	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zinc (Zn)-Total	28.5		0.10	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	07-DEC-16	09-DEC-16	R3615468
L1842843-17 16-GIANT-DM-16							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-17 16-GIANT-DM-16							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	65.0		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.0146		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0051		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	0.0052		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Silver (Ag)-Total	0.0018		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	58.5		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.153		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	3.86		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	10.8		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	3.9		1.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0303		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	35200		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.253		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.129		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.149		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	9.98		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	279		3.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.239		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	1850		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	42.4		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.793		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	1.09		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	27200		10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	11700		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	48.3		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.514		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	4590		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	13.4		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	0.0043		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.12		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.0079		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.14		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	97.5		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	20.5		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.0535		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	1.35		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	3.77		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	1.38		0.20	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0106		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	12300		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0884		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.045		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-17 16-GIANT-DM-16							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0522		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	3.49		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	97.4		0.60	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.0837		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	648		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	14.8		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.277		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.381		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	9520		2.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	4100		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	16.9		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.180		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	1610		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	4.68		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	0.00151		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.042		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.00276		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.047		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	34.1		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
L1842843-18 16-GIANT-DM-28							
Sampled By: CLIENT on 08-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	67.6		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.0161		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0052		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	117		2.0	mg/kg	09-DEC-16	13-DEC-16	R3616994
Antimony (Sb)-Total	0.082		0.010	mg/kg	09-DEC-16	13-DEC-16	R3616994
Arsenic (As)-Total	2.63		0.020	mg/kg	09-DEC-16	13-DEC-16	R3616994
Barium (Ba)-Total	7.71		0.050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	13-DEC-16	R3616994
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	13-DEC-16	R3616994
Boron (B)-Total	2.1		1.0	mg/kg	09-DEC-16	13-DEC-16	R3616994
Cadmium (Cd)-Total	0.0206		0.0050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Calcium (Ca)-Total	35300		20	mg/kg	09-DEC-16	13-DEC-16	R3616994
Cesium (Cs)-Total	0.129		0.0050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Chromium (Cr)-Total	0.402		0.050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Cobalt (Co)-Total	0.207		0.020	mg/kg	09-DEC-16	13-DEC-16	R3616994
Copper (Cu)-Total	8.87		0.10	mg/kg	09-DEC-16	13-DEC-16	R3616994
Iron (Fe)-Total	339		3.0	mg/kg	09-DEC-16	13-DEC-16	R3616994
Lead (Pb)-Total	3.52		0.020	mg/kg	09-DEC-16	13-DEC-16	R3616994
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	13-DEC-16	R3616994
Magnesium (Mg)-Total	1590		2.0	mg/kg	09-DEC-16	13-DEC-16	R3616994
Manganese (Mn)-Total	9.45		0.050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Molybdenum (Mo)-Total	0.287		0.020	mg/kg	09-DEC-16	13-DEC-16	R3616994

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-18 16-GIANT-DM-28							
Sampled By: CLIENT on 08-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.71		0.20	mg/kg	09-DEC-16	13-DEC-16	R3616994
Phosphorus (P)-Total	27300		10	mg/kg	09-DEC-16	13-DEC-16	R3616994
Potassium (K)-Total	9820		20	mg/kg	09-DEC-16	13-DEC-16	R3616994
Rubidium (Rb)-Total	15.0		0.050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Selenium (Se)-Total	0.660		0.050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Sodium (Na)-Total	3880		20	mg/kg	09-DEC-16	13-DEC-16	R3616994
Strontium (Sr)-Total	11.1		0.050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	13-DEC-16	R3616994
Thallium (Tl)-Total	0.0033		0.0020	mg/kg	09-DEC-16	13-DEC-16	R3616994
Tin (Sn)-Total	<0.10		0.10	mg/kg	09-DEC-16	13-DEC-16	R3616994
Uranium (U)-Total	0.0188		0.0020	mg/kg	09-DEC-16	13-DEC-16	R3616994
Vanadium (V)-Total	0.38		0.10	mg/kg	09-DEC-16	13-DEC-16	R3616994
Zinc (Zn)-Total	79.9		0.50	mg/kg	09-DEC-16	13-DEC-16	R3616994
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	13-DEC-16	R3616994
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	37.9		0.40	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Antimony (Sb)-Total	0.0267		0.0020	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Arsenic (As)-Total	0.851		0.0040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Barium (Ba)-Total	2.50		0.010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Boron (B)-Total	0.68		0.20	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Cadmium (Cd)-Total	0.0067		0.0010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Calcium (Ca)-Total	11400		4.0	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Cesium (Cs)-Total	0.0419		0.0010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Chromium (Cr)-Total	0.130		0.010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Cobalt (Co)-Total	0.0670		0.0040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Copper (Cu)-Total	2.87		0.020	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Iron (Fe)-Total	110		0.60	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Lead (Pb)-Total	1.14		0.0040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Magnesium (Mg)-Total	516		0.40	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Manganese (Mn)-Total	3.06		0.010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Molybdenum (Mo)-Total	0.0930		0.0040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Nickel (Ni)-Total	0.231		0.040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Phosphorus (P)-Total	8850		2.0	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Potassium (K)-Total	3180		4.0	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Rubidium (Rb)-Total	4.86		0.010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Selenium (Se)-Total	0.214		0.010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Sodium (Na)-Total	1260		4.0	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Strontium (Sr)-Total	3.60		0.010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Thallium (Tl)-Total	0.00108		0.00040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Tin (Sn)-Total	0.028		0.020	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Uranium (U)-Total	0.00609		0.00040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Vanadium (V)-Total	0.123		0.020	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Zinc (Zn)-Total	25.9		0.10	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
L1842843-19 16-GIANT-DM-29							
Sampled By: CLIENT on 08-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-19 16-GIANT-DM-29							
Sampled By: CLIENT on 08-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	71.3		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.130		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0372		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	0.0161		0.0050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Silver (Ag)-Total	0.0046		0.0010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	11.0		2.0	mg/kg	09-DEC-16	13-DEC-16	R3616994
Antimony (Sb)-Total	0.063		0.010	mg/kg	09-DEC-16	13-DEC-16	R3616994
Arsenic (As)-Total	4.42		0.020	mg/kg	09-DEC-16	13-DEC-16	R3616994
Barium (Ba)-Total	6.33		0.050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	13-DEC-16	R3616994
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	13-DEC-16	R3616994
Boron (B)-Total	1.5		1.0	mg/kg	09-DEC-16	13-DEC-16	R3616994
Cadmium (Cd)-Total	0.134		0.0050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Calcium (Ca)-Total	27100		20	mg/kg	09-DEC-16	13-DEC-16	R3616994
Cesium (Cs)-Total	1.82		0.0050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Chromium (Cr)-Total	<0.050		0.050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Cobalt (Co)-Total	0.444		0.020	mg/kg	09-DEC-16	13-DEC-16	R3616994
Copper (Cu)-Total	8.58		0.10	mg/kg	09-DEC-16	13-DEC-16	R3616994
Iron (Fe)-Total	267		3.0	mg/kg	09-DEC-16	13-DEC-16	R3616994
Lead (Pb)-Total	0.132		0.020	mg/kg	09-DEC-16	13-DEC-16	R3616994
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	13-DEC-16	R3616994
Magnesium (Mg)-Total	1290		2.0	mg/kg	09-DEC-16	13-DEC-16	R3616994
Manganese (Mn)-Total	10.5		0.050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Molybdenum (Mo)-Total	0.401		0.020	mg/kg	09-DEC-16	13-DEC-16	R3616994
Nickel (Ni)-Total	0.49		0.20	mg/kg	09-DEC-16	13-DEC-16	R3616994
Phosphorus (P)-Total	24900		10	mg/kg	09-DEC-16	13-DEC-16	R3616994
Potassium (K)-Total	11800		20	mg/kg	09-DEC-16	13-DEC-16	R3616994
Rubidium (Rb)-Total	88.3		0.050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Selenium (Se)-Total	0.906		0.050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Sodium (Na)-Total	4600		20	mg/kg	09-DEC-16	13-DEC-16	R3616994
Strontium (Sr)-Total	14.0		0.050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	13-DEC-16	R3616994
Thallium (Tl)-Total	0.0122		0.0020	mg/kg	09-DEC-16	13-DEC-16	R3616994
Tin (Sn)-Total	0.15		0.10	mg/kg	09-DEC-16	13-DEC-16	R3616994
Uranium (U)-Total	<0.0020		0.0020	mg/kg	09-DEC-16	13-DEC-16	R3616994
Vanadium (V)-Total	<0.10		0.10	mg/kg	09-DEC-16	13-DEC-16	R3616994
Zinc (Zn)-Total	92.1		0.50	mg/kg	09-DEC-16	13-DEC-16	R3616994
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	13-DEC-16	R3616994
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	3.15		0.40	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Antimony (Sb)-Total	0.0182		0.0020	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Arsenic (As)-Total	1.27		0.0040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Barium (Ba)-Total	1.81		0.010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Boron (B)-Total	0.42		0.20	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Cadmium (Cd)-Total	0.0384		0.0010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Calcium (Ca)-Total	7760		4.0	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Cesium (Cs)-Total	0.520		0.0010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Chromium (Cr)-Total	0.014		0.010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-19 16-GIANT-DM-29							
Sampled By: CLIENT on 08-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.127		0.0040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Copper (Cu)-Total	2.46		0.020	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Iron (Fe)-Total	76.4		0.60	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Lead (Pb)-Total	0.0378		0.0040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Magnesium (Mg)-Total	369		0.40	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Manganese (Mn)-Total	3.00		0.010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Molybdenum (Mo)-Total	0.115		0.0040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Nickel (Ni)-Total	0.142		0.040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Phosphorus (P)-Total	7140		2.0	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Potassium (K)-Total	3390		4.0	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Rubidium (Rb)-Total	25.3		0.010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Selenium (Se)-Total	0.260		0.010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Sodium (Na)-Total	1320		4.0	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Strontium (Sr)-Total	4.01		0.010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Thallium (Tl)-Total	0.00349		0.00040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Tin (Sn)-Total	0.043		0.020	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Uranium (U)-Total	0.00056		0.00040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Vanadium (V)-Total	<0.020		0.020	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Zinc (Zn)-Total	26.4		0.10	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
L1842843-20 16-GIANT-DM-30							
Sampled By: CLIENT on 08-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	73.7		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.122		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0319		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	0.0257		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Silver (Ag)-Total	0.0068		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	26.4		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.080		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	7.70		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	11.0		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	3.3		1.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.216		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	32200		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	2.04		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.073		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.221		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	8.79		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	253		3.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.269		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	1710		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	14.8		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.487		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-20 16-GIANT-DM-30							
Sampled By: CLIENT on 08-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.58		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	28900		10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	14000		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	50.0		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.810		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	5360		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	21.3		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.18		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.0038		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	<0.10		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	86.2		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	6.95		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.0210		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	2.02		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	2.89		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	0.88		0.20	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0567		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	8470		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.536		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.019		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.0581		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	2.31		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	66.5		0.60	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.0706		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	448		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	3.88		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.128		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.151		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	7580		2.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	3670		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	13.1		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.213		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	1410		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	5.59		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.048		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.00099		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	<0.020		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	22.7		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
L1842843-21 16-GIANT-DM-31							
Sampled By: CLIENT on 08-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-21 16-GIANT-DM-31							
Sampled By: CLIENT on 08-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	76.7		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.149		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0347		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	0.0508		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Silver (Ag)-Total	0.0118		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	52.8		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.077		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	7.15		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	9.12		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	1.7		1.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.404		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	31500		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	1.16		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.169		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.402		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	10.9		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	324		3.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.296		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	1710		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	13.1		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.428		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.68		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	29800		10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	14900		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	42.9		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	1.07		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	5210		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	20.3		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	0.0026		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.13		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.0075		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.15		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	103		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	12.3		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.0180		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	1.67		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	2.12		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	0.40		0.20	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0941		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	7340		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.269		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.039		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-21 16-GIANT-DM-31							
Sampled By: CLIENT on 08-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0936		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	2.53		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	75.6		0.60	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.0690		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	399		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	3.06		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.0996		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.159		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	6930		2.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	3460		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	9.99		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.248		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	1210		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	4.73		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	0.00061		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.031		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.00175		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.034		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	23.9		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
L1842843-22 16-GIANT-DM-32							
Sampled By: CLIENT on 08-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	76.1		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.0118		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0028		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	18.5		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.072		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	8.75		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	14.8		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	2.9		1.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0289		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	44600		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.108		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.053		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.115		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	8.87		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	233		3.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.124		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	2180		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	17.8		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.550		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-22 16-GIANT-DM-32							
Sampled By: CLIENT on 08-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.44		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	36300		10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	15400		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	39.0		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.078		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	5320		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	23.0		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.17		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.0029		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	<0.10		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	104		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	4.42		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.0172		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	2.09		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	3.54		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	0.68		0.20	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0069		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	10700		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0259		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.013		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.0274		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	2.12		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	55.7		0.60	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.0295		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	520		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	4.24		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.131		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.106		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	8660		2.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	3670		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	9.32		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.019		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	1270		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	5.50		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.040		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.00069		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	<0.020		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	24.9		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
L1842843-23 16-GIANT-DM-33							
Sampled By: CLIENT on 08-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-23 16-GIANT-DM-33							
Sampled By: CLIENT on 08-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	71.9		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.121		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0339		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	0.0212		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Silver (Ag)-Total	0.0059		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	67.8		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.225		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	7.04		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	21.4		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	1.2		1.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.841		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	34600		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	4.34		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.217		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.234		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	8.76		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	258		3.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.412		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	1470		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	7.57		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.290		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.48		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	27400		10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	11300		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	84.7		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.760		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	4620		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	15.3		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	0.0026		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.10		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.0084		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.19		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	96.5		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	19.0		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.0632		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	1.98		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	6.00		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	0.35		0.20	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.236		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	9710		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	1.22		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.061		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-23 16-GIANT-DM-33							
Sampled By: CLIENT on 08-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0658		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	2.46		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	72.4		0.60	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.116		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	414		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	2.13		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.0814		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.134		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	7710		2.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	3180		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	23.8		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.213		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	1300		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	4.29		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	0.00072		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.029		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.00236		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.052		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	27.1		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
L1842843-24 16-GIANT-DM-17							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	69.2		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.0101		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0031		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	0.0067		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Silver (Ag)-Total	0.0021		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	50.4		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.168		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	12.4		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	10.6		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	2.3		1.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0169		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	48300		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0893		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.119		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.123		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	9.69		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	311		3.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.555		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	1870		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	13.5		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.456		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-24 16-GIANT-DM-17							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.54		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	35200		10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	12000		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	23.9		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.812		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	4760		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	13.7		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	<0.10		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.0053		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.13		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	110		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	15.5		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.0515		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	3.82		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	3.25		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	0.72		0.20	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0052		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	14900		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0275		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.037		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.0379		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	2.98		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	95.7		0.60	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.171		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	575		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	4.14		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.140		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.167		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	10800		2.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	3700		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	7.37		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.250		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	1460		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	4.21		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.029		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.00164		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.040		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	33.9		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
L1842843-25 16-GIANT-DM-18							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-25 16-GIANT-DM-18							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	69.2		0.50	%		06-DEC-16	R3612201
Mercury (Hg)-Total	0.0095		0.0050	mg/kg	06-DEC-16	07-DEC-16	R3612600
Mercury (Hg)-Total	0.0029		0.0010	mg/kg wwt	06-DEC-16	07-DEC-16	R3612596
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Silver (Ag)-Total	0.0015		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	167		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.160		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	4.52		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	6.30		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	2.5		1.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.0677		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	31600		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.0523		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.449		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cobalt (Co)-Total	0.356		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	11.1		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	475		3.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	1.44		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	1640		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	9.90		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.672		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Nickel (Ni)-Total	0.50		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	24700		10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	12400		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	24.2		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	0.732		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	4560		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	7.58		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	0.0020		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	0.12		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.0122		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.56		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	86.3		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	51.4		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.0494		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	1.39		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	1.94		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	0.78		0.20	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.0209		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	9740		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.0161		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.138		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-25 16-GIANT-DM-18							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.110		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	3.43		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	146		0.60	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	0.444		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	506		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	3.05		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.207		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Nickel (Ni)-Total	0.155		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	7610		2.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	3820		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	7.44		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	0.225		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	1400		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	2.34		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	0.00062		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	0.036		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.00377		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.171		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	26.6		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	0.049		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
L1842843-26 16-GIANT-DM-19							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	69.6		0.50	%		06-DEC-16	R3612201
Mercury (Hg)-Total	0.0134		0.0050	mg/kg	06-DEC-16	07-DEC-16	R3612600
Mercury (Hg)-Total	0.0041		0.0010	mg/kg wwt	06-DEC-16	07-DEC-16	R3612596
Silver (Ag)-Total	0.0081		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Silver (Ag)-Total	0.0025		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	213		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.096		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	6.02		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	6.02		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	1.3		1.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.0735		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	30200		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.0354		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.473		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cobalt (Co)-Total	0.283		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	12.3		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	520		3.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	0.659		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	1640		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	13.7		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.868		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-26 16-GIANT-DM-19							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.70		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	26100		10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	12600		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	12.9		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	1.09		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	4740		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	8.19		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	0.0027		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	0.11		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.0829		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.67		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	86.8		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	0.23		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	64.6		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.0292		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	1.83		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	1.83		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	0.40		0.20	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.0223		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	9180		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.0107		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.144		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cobalt (Co)-Total	0.0859		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	3.75		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	158		0.60	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	0.200		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	498		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	4.15		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.263		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Nickel (Ni)-Total	0.214		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	7920		2.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	3830		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	3.91		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	0.331		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	1440		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	2.49		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	0.00082		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	0.035		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.0252		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.203		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	26.3		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	0.071		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
L1842843-27 16-GIANT-RV-20							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-27 16-GIANT-RV-20							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	71.3		0.50	%		06-DEC-16	R3612201
Mercury (Hg)-Total	0.124		0.0050	mg/kg	06-DEC-16	07-DEC-16	R3612600
Mercury (Hg)-Total	0.0357		0.0010	mg/kg wwt	06-DEC-16	07-DEC-16	R3612596
Silver (Ag)-Total	0.0666		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Silver (Ag)-Total	0.0191		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	109		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.172		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	12.1		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	9.82		0.050	mg/kg	06-DEC-16	07-DEC-16	R3613262
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	2.2		1.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.171		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	48100		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.571		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.338		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cobalt (Co)-Total	0.357		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	8.92		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	390		3.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	0.454		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	2050		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	16.0		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.495		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Nickel (Ni)-Total	0.63		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	36500		10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	12600		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	38.0		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	1.12		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	5320		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	15.1		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	0.0030		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	<0.10		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.0399		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.32		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	101		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	31.4		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.0495		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	3.47		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	2.82		0.010	mg/kg wwt	06-DEC-16	07-DEC-16	R3613262
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	0.63		0.20	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.0492		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	13800		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.164		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.097		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-27 16-GIANT-RV-20							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.103		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	2.56		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	112		0.60	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	0.130		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	588		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	4.61		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.142		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Nickel (Ni)-Total	0.181		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	10500		2.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	3620		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	10.9		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	0.321		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	1530		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	4.34		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	0.00087		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	0.029		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.0115		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.092		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	29.0		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	0.049		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
L1842843-28 16-GIANT-RV-21							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	72.0		0.50	%		06-DEC-16	R3612201
Mercury (Hg)-Total	0.265		0.0050	mg/kg	06-DEC-16	07-DEC-16	R3612600
Mercury (Hg)-Total	0.0742		0.0010	mg/kg wwt	06-DEC-16	07-DEC-16	R3612596
Silver (Ag)-Total	0.0822		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Silver (Ag)-Total	0.0230		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	37.7		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	2.77		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	98.8		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	11.8		0.050	mg/kg	06-DEC-16	07-DEC-16	R3613262
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	1.1		1.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.993		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	25100		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.832		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.124		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cobalt (Co)-Total	0.351		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	11.9		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	385		3.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	0.998		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	1470		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	10.8		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.548		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-28 16-GIANT-RV-21							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.45		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	23700		10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	15100		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	46.7		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	1.36		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	4820		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	11.2		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	0.0023		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	<0.10		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.0037		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.12		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	102		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	10.6		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.776		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	27.7		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	3.30		0.010	mg/kg wwt	06-DEC-16	07-DEC-16	R3613262
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	0.32		0.20	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.279		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	7050		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.233		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.035		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cobalt (Co)-Total	0.0984		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	3.33		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	108		0.60	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	0.280		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	412		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	3.03		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.154		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Nickel (Ni)-Total	0.127		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	6650		2.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	4220		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	13.1		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	0.380		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	1350		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	3.13		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	0.00063		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	0.027		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.00105		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.034		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	28.7		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
L1842843-29 16-GIANT-DM-22							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-29 16-GIANT-DM-22							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	70.3		0.50	%		06-DEC-16	R3612201
Mercury (Hg)-Total	0.0118		0.0050	mg/kg	06-DEC-16	07-DEC-16	R3612600
Mercury (Hg)-Total	0.0035		0.0010	mg/kg wwt	06-DEC-16	07-DEC-16	R3612596
Silver (Ag)-Total	0.0083		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Silver (Ag)-Total	0.0025		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	172		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.499		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	17.2		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	22.6		0.050	mg/kg	06-DEC-16	07-DEC-16	R3613262
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	2.4		1.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.105		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	59800		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.0661		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.337		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cobalt (Co)-Total	0.300		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	10.1		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	458		3.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	46.1		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	2130		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	10.7		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.951		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Nickel (Ni)-Total	0.81		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	42300		10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	13100		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	12.4		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	1.18		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	5160		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	18.4		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	<0.10		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.0200		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.37		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	114		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	51.1		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.148		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	5.10		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	6.71		0.010	mg/kg wwt	06-DEC-16	07-DEC-16	R3613262
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	0.70		0.20	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.0312		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	17700		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.0196		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.100		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-29 16-GIANT-DM-22							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0889		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	2.99		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	136		0.60	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	13.7		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	632		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	3.16		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.282		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Nickel (Ni)-Total	0.241		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	12500		2.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	3890		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	3.68		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	0.351		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	1530		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	5.44		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	0.00054		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	0.022		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.00593		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.110		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	34.0		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	0.049		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
L1842843-30 16-GIANT-DM-23							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	70.0		0.50	%		06-DEC-16	R3612201
Mercury (Hg)-Total	0.0184		0.0050	mg/kg	06-DEC-16	07-DEC-16	R3612600
Mercury (Hg)-Total	0.0055		0.0010	mg/kg wwt	06-DEC-16	07-DEC-16	R3612596
Silver (Ag)-Total	0.0164		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Silver (Ag)-Total	0.0049		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	66.8		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.225		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	10.1		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	7.55		0.050	mg/kg	06-DEC-16	07-DEC-16	R3613262
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	1.8		1.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.0662		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	33200		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.130		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.180		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cobalt (Co)-Total	0.174		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	13.1		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	374		3.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	2.55		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	1700		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	10.2		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	1.05		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-30 16-GIANT-DM-23							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.54		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	28800		10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	12900		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	30.4		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	1.11		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	5270		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	13.2		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	0.28		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.0072		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.18		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	89.2		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	20.1		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.0675		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	3.02		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	2.27		0.010	mg/kg wwt	06-DEC-16	07-DEC-16	R3613262
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	0.55		0.20	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.0199		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	9970		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.0389		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.054		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cobalt (Co)-Total	0.0522		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	3.94		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	112		0.60	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	0.766		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	509		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	3.06		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.315		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Nickel (Ni)-Total	0.161		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	8650		2.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	3860		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	9.13		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	0.334		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	1580		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	3.96		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	0.083		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.00216		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.053		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	26.8		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
L1842843-31 16-GIANT-DM-24							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-31 16-GIANT-DM-24							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	71.7		0.50	%		06-DEC-16	R3612201
Mercury (Hg)-Total	0.0072		0.0050	mg/kg	06-DEC-16	07-DEC-16	R3612600
Mercury (Hg)-Total	0.0020		0.0010	mg/kg wwt	06-DEC-16	07-DEC-16	R3612596
Silver (Ag)-Total	0.0177		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Silver (Ag)-Total	0.0050		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	76.5		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.201		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	9.48		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	5.23		0.050	mg/kg	06-DEC-16	07-DEC-16	R3613262
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	2.2		1.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.132		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	25500		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.0214		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.166		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cobalt (Co)-Total	0.140		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	13.2		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	341		3.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	1.27		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	1760		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	10.8		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	1.19		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Nickel (Ni)-Total	0.88		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	24800		10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	13600		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	11.4		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	1.32		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	5240		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	8.90		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	0.12		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.0106		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.17		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	90.9		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	21.6		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.0568		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	2.68		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	1.48		0.010	mg/kg wwt	06-DEC-16	07-DEC-16	R3613262
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	0.62		0.20	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.0374		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	7210		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.0060		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.047		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-31 16-GIANT-DM-24							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0395		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	3.73		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	96.5		0.60	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	0.358		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	496		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	3.06		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.336		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Nickel (Ni)-Total	0.249		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	7000		2.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	3850		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	3.22		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	0.373		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	1480		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	2.52		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	0.033		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.00301		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.049		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	25.7		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
L1842843-32 16-GIANT-DM-25							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	63.2		0.50	%		06-DEC-16	R3612201
Mercury (Hg)-Total	0.0054		0.0050	mg/kg	06-DEC-16	07-DEC-16	R3612600
Mercury (Hg)-Total	0.0020		0.0010	mg/kg wwt	06-DEC-16	07-DEC-16	R3612596
Silver (Ag)-Total	0.0082		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Silver (Ag)-Total	0.0030		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	200		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.142		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	7.98		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	3.58		0.050	mg/kg	06-DEC-16	07-DEC-16	R3613262
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	3.2		1.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.0706		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	20200		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.0483		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.490		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cobalt (Co)-Total	0.333		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	10.2		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	458		3.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	0.489		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	1680		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	16.2		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.905		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-32 16-GIANT-DM-25							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.74		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	20600		10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	11600		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	14.0		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	0.796		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	4790		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	6.44		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	<0.10		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.0302		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.59		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	72.4		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	73.5		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.0523		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	2.94		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	1.32		0.010	mg/kg wwt	06-DEC-16	07-DEC-16	R3613262
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	1.19		0.20	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.0260		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	7440		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.0178		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.180		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cobalt (Co)-Total	0.123		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	3.77		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	169		0.60	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	0.180		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	618		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	5.98		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.333		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Nickel (Ni)-Total	0.271		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	7570		2.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	4290		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	5.15		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	0.293		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	1760		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	2.37		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	0.00071		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	0.024		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.0111		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.217		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	26.7		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	0.053		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
L1842843-33 16-GIANT-DM-26							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-33 16-GIANT-DM-26							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	69.8		0.50	%		06-DEC-16	R3612201
Mercury (Hg)-Total	0.0087		0.0050	mg/kg	06-DEC-16	07-DEC-16	R3612600
Mercury (Hg)-Total	0.0026		0.0010	mg/kg wwt	06-DEC-16	07-DEC-16	R3612596
Silver (Ag)-Total	0.0114		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Silver (Ag)-Total	0.0034		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	60.3		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.183		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	11.1		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	3.81		0.050	mg/kg	06-DEC-16	07-DEC-16	R3613262
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	1.8		1.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.0632		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	23400		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.115		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.142		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cobalt (Co)-Total	0.169		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	11.1		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	306		3.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	1.10		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	1410		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	7.53		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.806		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Nickel (Ni)-Total	0.88		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	22100		10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	12500		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	19.7		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	0.928		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	4400		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	7.31		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	0.16		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.0080		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.14		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	80.3		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	18.2		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.0553		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	3.36		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	1.15		0.010	mg/kg wwt	06-DEC-16	07-DEC-16	R3613262
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	0.56		0.20	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.0191		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	7070		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.0347		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.043		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-33 16-GIANT-DM-26							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0511		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	3.36		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	92.2		0.60	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	0.333		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	425		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	2.27		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.243		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Nickel (Ni)-Total	0.264		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	6670		2.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	3780		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	5.95		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	0.280		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	1330		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	2.21		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	0.047		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.00241		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.043		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	24.2		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
L1842843-34 16-GIANT-DM-27							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	70.0		0.50	%		06-DEC-16	R3612201
Mercury (Hg)-Total	0.0074		0.0050	mg/kg	06-DEC-16	07-DEC-16	R3612600
Mercury (Hg)-Total	0.0022		0.0010	mg/kg wwt	06-DEC-16	07-DEC-16	R3612596
Silver (Ag)-Total	0.0055		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Silver (Ag)-Total	0.0016		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	53.6		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.133		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	6.15		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	4.19		0.050	mg/kg	06-DEC-16	07-DEC-16	R3613262
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	4.3		1.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.0636		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	28500		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.0535		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.140		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cobalt (Co)-Total	0.299		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	11.2		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	308		3.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	1.83		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	1890		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	12.5		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.943		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-34 16-GIANT-DM-27							
Sampled By: CLIENT on 07-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.59		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	24400		10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	12700		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	12.9		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	0.866		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	4890		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	10.7		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	0.18		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.0052		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.14		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	81.9		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	16.1		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.0399		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	1.84		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	1.26		0.010	mg/kg wwt	06-DEC-16	07-DEC-16	R3613262
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	1.29		0.20	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.0190		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	8550		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.0160		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.042		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cobalt (Co)-Total	0.0898		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	3.37		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	92.2		0.60	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	0.548		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	566		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	3.74		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.283		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Nickel (Ni)-Total	0.178		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	7330		2.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	3790		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	3.86		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	0.259		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	1460		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	3.19		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	0.053		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.00156		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.041		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	24.5		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
L1842843-35 16-GIANT-DM-41							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-35 16-GIANT-DM-41							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	69.7		0.50	%		06-DEC-16	R3612201
Mercury (Hg)-Total	0.189		0.0050	mg/kg	06-DEC-16	07-DEC-16	R3612600
Mercury (Hg)-Total	0.0574		0.0010	mg/kg wwt	06-DEC-16	07-DEC-16	R3612596
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	75.1		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.062		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	1.78		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	7.26		0.050	mg/kg	06-DEC-16	07-DEC-16	R3613262
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	1.5		1.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.0460		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	37600		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.0781		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.273		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cobalt (Co)-Total	0.145		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	9.80		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	419		3.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	0.773		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	1590		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	7.74		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.686		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Nickel (Ni)-Total	0.36		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	28500		10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	11400		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	28.8		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	1.31		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	5340		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	10.4		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	0.0061		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	0.18		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.0060		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.21		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	86.0		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	22.8		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.0190		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	0.539		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	2.20		0.010	mg/kg wwt	06-DEC-16	07-DEC-16	R3613262
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	0.0029		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	0.47		0.20	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.0140		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	11400		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.0237		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.083		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-35 16-GIANT-DM-41							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0440		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	2.97		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	127		0.60	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	0.234		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	482		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	2.35		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.208		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Nickel (Ni)-Total	0.110		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	8660		2.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	3460		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	8.75		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	0.396		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	1620		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	3.17		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	0.00185		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	0.055		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.00182		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.065		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	26.1		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
L1842843-36 16-GIANT-DM-42							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	69.5		0.50	%		06-DEC-16	R3612201
Mercury (Hg)-Total	0.0088		0.0050	mg/kg	06-DEC-16	07-DEC-16	R3612600
Mercury (Hg)-Total	0.0027		0.0010	mg/kg wwt	06-DEC-16	07-DEC-16	R3612596
Silver (Ag)-Total	0.0061		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Silver (Ag)-Total	0.0019		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	81.1		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.028		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	1.36		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	7.09		0.050	mg/kg	06-DEC-16	07-DEC-16	R3613262
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	1.8		1.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.0284		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	40300		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.0567		0.0050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.245		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Cobalt (Co)-Total	0.128		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	8.32		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	270		3.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	0.349		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	1780		2.0	mg/kg	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	7.84		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.452		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-36 16-GIANT-DM-42							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.55		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	30700		10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	11200		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	23.5		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	0.762		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	4700		20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	16.2		0.050	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	0.15		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.0069		0.0020	mg/kg	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.21		0.10	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	80.8		0.50	mg/kg	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-DEC-16	06-DEC-16	R3612601
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	24.7		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Antimony (Sb)-Total	0.0086		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Arsenic (As)-Total	0.415		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Barium (Ba)-Total	2.16		0.010	mg/kg wwt	06-DEC-16	07-DEC-16	R3613262
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Boron (B)-Total	0.54		0.20	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cadmium (Cd)-Total	0.0086		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Calcium (Ca)-Total	12300		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cesium (Cs)-Total	0.0173		0.0010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Chromium (Cr)-Total	0.075		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Cobalt (Co)-Total	0.0391		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Copper (Cu)-Total	2.53		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Iron (Fe)-Total	82.1		0.60	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lead (Pb)-Total	0.106		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Magnesium (Mg)-Total	542		0.40	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Manganese (Mn)-Total	2.39		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Molybdenum (Mo)-Total	0.138		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Nickel (Ni)-Total	0.169		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Phosphorus (P)-Total	9360		2.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Potassium (K)-Total	3410		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Rubidium (Rb)-Total	7.15		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Selenium (Se)-Total	0.232		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Sodium (Na)-Total	1430		4.0	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Strontium (Sr)-Total	4.93		0.010	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Tin (Sn)-Total	0.045		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Uranium (U)-Total	0.00209		0.00040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Vanadium (V)-Total	0.064		0.020	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zinc (Zn)-Total	24.6		0.10	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	06-DEC-16	06-DEC-16	R3612601
L1842843-37 16-GIANT-DM-43A							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-37 16-GIANT-DM-43A							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	76.0		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.0741		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0178		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	0.0398		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Silver (Ag)-Total	0.0096		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	81.8		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.029		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	3.46		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	5.79		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	3.1		1.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.196		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	31800		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	2.65		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	2.11		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.564		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	9.83		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	297		3.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.177		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	1690		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	8.75		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.595		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	1.80		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	28900		10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	14400		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	53.6		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.942		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	5180		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	7.40		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	0.0082		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.87		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.0046		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.19		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	95.8		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	19.6		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.0071		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	0.831		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	1.39		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	0.74		0.20	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0470		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	7650		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.636		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.506		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-37 16-GIANT-DM-43A							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.135		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	2.36		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	71.2		0.60	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.0425		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	406		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	2.10		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.143		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.433		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	6940		2.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	3470		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	12.9		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.226		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	1250		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	1.78		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	0.00198		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.208		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.00111		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.047		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	23.0		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
L1842843-38 16-GIANT-DM-43B							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	75.6		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.0294		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0072		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	46.4		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.048		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	1.04		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	12.8		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	3.0		1.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.164		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	29000		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0614		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	1.95		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.593		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	7.61		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	288		3.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.209		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	1660		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	33.5		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.637		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-38 16-GIANT-DM-43B							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	2.40		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	24000		10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	13100		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	16.6		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.164		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	5520		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	22.1		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.49		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.0047		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.15		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	86.2		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	11.3		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.0117		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	0.254		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	3.12		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	0.74		0.20	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0400		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	7060		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0150		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.474		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.145		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	1.85		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	70.2		0.60	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.0508		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	404		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	8.15		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.155		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.584		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	5850		2.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	3200		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	4.05		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.040		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	1340		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	5.39		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.120		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.00114		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.038		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	21.0		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
L1842843-39 16-GIANT-DM44A							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-39 16-GIANT-DM44A							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	71.1		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.0137		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0040		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Silver (Ag)-Total	0.0012		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	225		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.121		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	5.18		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	8.41		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	1.8		1.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0405		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	46600		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0449		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	8.05		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.439		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	10.7		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	563		3.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.802		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	2000		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	13.0		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	1.33		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	5.48		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	35100		10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	11500		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	13.5		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.909		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	5150		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	15.7		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	0.0022		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.82		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.0183		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.77		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	114		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	65.2		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.0351		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	1.50		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	2.43		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	0.52		0.20	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0117		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	13500		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0130		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	2.33		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-39 16-GIANT-DM44A							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.127		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	3.09		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	163		0.60	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.232		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	578		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	3.76		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.385		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	1.58		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	10100		2.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	3310		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	3.90		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.263		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	1490		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	4.54		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	0.00062		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.237		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.00529		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.224		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	33.0		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
L1842843-40 16-GIANT-DM44B							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	66.3		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.0142		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0048		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	20.4		2.0	mg/kg	09-DEC-16	13-DEC-16	R3616994
Antimony (Sb)-Total	0.013		0.010	mg/kg	09-DEC-16	13-DEC-16	R3616994
Arsenic (As)-Total	0.446		0.020	mg/kg	09-DEC-16	13-DEC-16	R3616994
Barium (Ba)-Total	3.34		0.050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	13-DEC-16	R3616994
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	13-DEC-16	R3616994
Boron (B)-Total	1.3		1.0	mg/kg	09-DEC-16	13-DEC-16	R3616994
Cadmium (Cd)-Total	0.0117		0.0050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Calcium (Ca)-Total	18700		20	mg/kg	09-DEC-16	13-DEC-16	R3616994
Cesium (Cs)-Total	0.0186		0.0050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Chromium (Cr)-Total	0.345		0.050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Cobalt (Co)-Total	0.043		0.020	mg/kg	09-DEC-16	13-DEC-16	R3616994
Copper (Cu)-Total	3.48		0.10	mg/kg	09-DEC-16	13-DEC-16	R3616994
Iron (Fe)-Total	104		3.0	mg/kg	09-DEC-16	13-DEC-16	R3616994
Lead (Pb)-Total	0.206		0.020	mg/kg	09-DEC-16	13-DEC-16	R3616994
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	13-DEC-16	R3616994
Magnesium (Mg)-Total	734		2.0	mg/kg	09-DEC-16	13-DEC-16	R3616994
Manganese (Mn)-Total	4.19		0.050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Molybdenum (Mo)-Total	0.295		0.020	mg/kg	09-DEC-16	13-DEC-16	R3616994

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-40 16-GIANT-DM44B							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.41		0.20	mg/kg	09-DEC-16	13-DEC-16	R3616994
Phosphorus (P)-Total	14100		10	mg/kg	09-DEC-16	13-DEC-16	R3616994
Potassium (K)-Total	4080		20	mg/kg	09-DEC-16	13-DEC-16	R3616994
Rubidium (Rb)-Total	7.42		0.050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Selenium (Se)-Total	0.348		0.050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Sodium (Na)-Total	1900		20	mg/kg	09-DEC-16	13-DEC-16	R3616994
Strontium (Sr)-Total	5.92		0.050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	13-DEC-16	R3616994
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	09-DEC-16	13-DEC-16	R3616994
Tin (Sn)-Total	<0.10		0.10	mg/kg	09-DEC-16	13-DEC-16	R3616994
Uranium (U)-Total	0.0027		0.0020	mg/kg	09-DEC-16	13-DEC-16	R3616994
Vanadium (V)-Total	<0.10		0.10	mg/kg	09-DEC-16	13-DEC-16	R3616994
Zinc (Zn)-Total	41.9		0.50	mg/kg	09-DEC-16	13-DEC-16	R3616994
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	13-DEC-16	R3616994
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	6.88		0.40	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Antimony (Sb)-Total	0.0045		0.0020	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Arsenic (As)-Total	0.150		0.0040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Barium (Ba)-Total	1.13		0.010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Boron (B)-Total	0.43		0.20	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Cadmium (Cd)-Total	0.0040		0.0010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Calcium (Ca)-Total	6290		4.0	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Cesium (Cs)-Total	0.0063		0.0010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Chromium (Cr)-Total	0.116		0.010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Cobalt (Co)-Total	0.0143		0.0040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Copper (Cu)-Total	1.17		0.020	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Iron (Fe)-Total	35.1		0.60	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Lead (Pb)-Total	0.0696		0.0040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Magnesium (Mg)-Total	247		0.40	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Manganese (Mn)-Total	1.41		0.010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Molybdenum (Mo)-Total	0.0995		0.0040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Nickel (Ni)-Total	0.137		0.040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Phosphorus (P)-Total	4770		2.0	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Potassium (K)-Total	1380		4.0	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Rubidium (Rb)-Total	2.50		0.010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Selenium (Se)-Total	0.117		0.010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Sodium (Na)-Total	642		4.0	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Strontium (Sr)-Total	1.99		0.010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Thallium (Tl)-Total	0.00059		0.00040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Tin (Sn)-Total	0.032		0.020	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Uranium (U)-Total	0.00090		0.00040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Vanadium (V)-Total	<0.020		0.020	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Zinc (Zn)-Total	14.1		0.10	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
L1842843-41 16-GIANT-DM-46A							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-41 16-GIANT-DM-46A							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	69.2		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.0260		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0080		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Silver (Ag)-Total	0.0012		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	53.5		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.160		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	5.43		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	4.80		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	3.6		1.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0748		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	31800		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0354		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.202		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.198		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	9.75		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	297		3.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.894		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	1690		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	7.32		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.593		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.50		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	27600		10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	12000		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	13.7		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	1.04		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	4830		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	10.3		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.23		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.0038		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.19		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	97.2		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	16.5		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.0492		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	1.67		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	1.48		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	1.11		0.20	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0231		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	9810		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0109		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.062		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-41 16-GIANT-DM-46A							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0611		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	3.00		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	91.7		0.60	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.276		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	522		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	2.26		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.183		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.156		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	8510		2.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	3700		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	4.23		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.322		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	1490		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	3.17		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.071		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.00119		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.060		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	30.0		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	0.051		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
L1842843-42 16-GIANT-DM-46B							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	67.0		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.0131		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0043		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Silver (Ag)-Total	0.0014		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	159		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.198		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	7.29		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	6.52		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	6.0		1.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0636		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	43700		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0901		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.458		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.332		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	10.2		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	474		3.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	2.28		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	2000		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	10.5		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.720		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-42 16-GIANT-DM-46B							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.91		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	34200		10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	11600		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	17.7		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	1.19		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	4370		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	10.2		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.21		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.0113		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.62		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	108		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	52.6		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.0654		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	2.41		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	2.15		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	1.98		0.20	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0210		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	14400		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0298		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.151		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.110		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	3.38		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	157		0.60	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.752		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	660		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	3.45		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.238		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.301		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	11300		2.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	3850		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	5.84		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.392		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	1440		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	3.36		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	0.00056		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.069		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.00374		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.205		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	35.5		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	0.043		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
L1842843-43 16-GIANT-DM-47							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-43 16-GIANT-DM-47							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	70.3		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.0143		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0042		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Silver (Ag)-Total	0.0011		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	35.3		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.116		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	2.91		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	4.63		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	3.9		1.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0723		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	33300		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0510		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	1.53		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.559		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	10.4		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	299		3.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	1.04		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	1650		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	10.0		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.955		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	1.41		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	28000		10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	12000		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	18.1		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	1.24		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	5190		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	8.35		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.32		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.0023		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.12		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	97.6		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	10.5		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.0343		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	0.864		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	1.38		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	1.16		0.20	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0214		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	9890		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0151		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.454		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-43 16-GIANT-DM-47							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.166		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	3.09		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	88.7		0.60	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.309		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	491		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	2.98		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.283		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.418		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	8310		2.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	3550		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	5.36		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.367		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	1540		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	2.48		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	0.00043		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.095		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.00068		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.035		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	29.0		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	0.053		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
L1842843-44 16-GIANT-DM-48							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	70.5		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.0153		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0045		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	0.0129		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Silver (Ag)-Total	0.0038		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	51.1		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.101		0.010	mg/kg	09-DEC-16	13-DEC-16	R3616994
Arsenic (As)-Total	2.26		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	8.16		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	30.3		1.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.100		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	38500		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0665		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	1.57		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.837		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	10.6		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	328		3.0	mg/kg	09-DEC-16	13-DEC-16	R3616994
Lead (Pb)-Total	1.03		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	1650		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	8.45		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.862		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-44 16-GIANT-DM-48							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	1.52		0.20	mg/kg	09-DEC-16	13-DEC-16	R3616994
Phosphorus (P)-Total	30200		10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	11400		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	16.3		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	1.15		0.050	mg/kg	09-DEC-16	13-DEC-16	R3616994
Sodium (Na)-Total	5450		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	10.2		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.30		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.0098		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.16		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	89.9		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	15.1		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.0297		0.0020	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Arsenic (As)-Total	0.667		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	2.41		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	8.95		0.20	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0295		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	11400		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0196		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.463		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.247		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	3.13		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	96.7		0.60	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Lead (Pb)-Total	0.303		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	487		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	2.49		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.254		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.449		0.040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Phosphorus (P)-Total	8920		2.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	3360		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	4.80		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.339		0.010	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Sodium (Na)-Total	1610		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	3.01		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	0.00053		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.088		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.00288		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.048		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	26.5		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
L1842843-45 16-GIANT-DM-49							
Sampled By: CLIENT on 10-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-45 16-GIANT-DM-49							
Sampled By: CLIENT on 10-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	74.3		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.0082		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0021		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	59.4		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.465		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	5.16		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	4.71		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	2.0		1.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0529		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	40600		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0157		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	2.51		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.596		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	12.5		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	424		3.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	1.84		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	1880		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	7.06		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	1.24		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	2.25		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	34100		10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	14200		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	10.4		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	1.10		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	6040		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	9.59		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.66		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.0072		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.20		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	106		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	15.3		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.120		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	1.32		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	1.21		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	0.50		0.20	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0136		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	10400		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0040		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.646		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-45 16-GIANT-DM-49							
Sampled By: CLIENT on 10-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.153		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	3.21		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	109		0.60	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.473		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	483		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	1.81		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.319		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.577		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	8750		2.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	3640		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	2.68		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.282		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	1550		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	2.46		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.170		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.00184		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.051		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	27.2		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
L1842843-46 16-GIANT-DM-50B							
Sampled By: CLIENT on 10-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	70.5		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.0088		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0026		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	76.1		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.187		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	4.27		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	7.27		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	2.3		1.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0389		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	41600		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0331		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	1.29		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.418		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	11.2		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	360		3.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.654		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	1710		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	9.08		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.986		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-46 16-GIANT-DM-50B							
Sampled By: CLIENT on 10-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	1.43		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	31900		10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	11400		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	18.4		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	1.11		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	5100		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	10.4		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.26		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.0085		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.21		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	100		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	22.5		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.0553		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	1.26		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	2.15		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	0.69		0.20	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0115		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	12300		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0098		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.380		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.123		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	3.31		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	106		0.60	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.193		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	504		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	2.68		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.291		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.422		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	9420		2.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	3380		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	5.42		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.327		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	1510		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	3.07		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.077		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.00251		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.061		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	29.6		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	0.053		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
L1842843-47 16-GIANT-DM-50A							
Sampled By: CLIENT on 10-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-47 16-GIANT-DM-50A							
Sampled By: CLIENT on 10-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	68.5		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.0194		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0061		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Silver (Ag)-Total	0.0014		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	48.7		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.382		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	8.92		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	5.96		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	2.7		1.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0795		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	27900		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0420		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	1.11		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.186		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	8.83		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	299		3.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.534		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	1500		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	11.8		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	1.06		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	1.28		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	23100		10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	10200		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	15.2		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.922		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	4170		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	6.52		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.45		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.0026		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.16		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	80.4		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	15.3		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.120		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	2.81		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	1.88		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	0.85		0.20	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0251		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	8790		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0132		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.350		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-47 16-GIANT-DM-50A							
Sampled By: CLIENT on 10-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0586		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	2.78		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	94.3		0.60	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.168		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	474		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	3.71		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.335		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.403		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	7300		2.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	3210		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	4.79		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.291		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	1310		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	2.06		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.143		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.00083		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.052		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	25.3		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
L1842843-48 16-GIANT-DM-54							
Sampled By: CLIENT on 10-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	76.7		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.0879		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0205		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	0.0950		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Silver (Ag)-Total	0.0222		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	271		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.824		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	13.2		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	7.78		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	3.5		1.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.272		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	31800		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	2.16		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	1.63		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.808		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	12.0		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	765		3.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	1.27		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	2020		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	57.3		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.711		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-48 16-GIANT-DM-54							
Sampled By: CLIENT on 10-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	1.88		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	26400		10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	14600		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	28.1		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	1.03		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	5260		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	17.0		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	0.0024		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.27		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.0160		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.75		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	95.7		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	63.1		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.192		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	3.08		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	1.82		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	0.81		0.20	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0635		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	7430		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.505		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.380		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.189		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	2.81		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	179		0.60	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.296		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	472		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	13.4		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.166		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.439		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	6150		2.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	3410		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	6.56		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.240		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	1230		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	3.97		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	0.00055		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.063		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.00373		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.174		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	22.3		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	0.040		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
L1842843-49 16-GIANT-DM-55							
Sampled By: CLIENT on 10-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-49 16-GIANT-DM-55							
Sampled By: CLIENT on 10-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	67.2		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.0064		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0021		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	0.0066		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Silver (Ag)-Total	0.0022		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	89.0		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.504		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	6.47		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	2.47		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	2.9		1.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0326		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	26800		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0258		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.913		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.275		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	8.08		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	322		3.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.769		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	1520		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	12.1		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.811		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	1.29		0.20	mg/kg	09-DEC-16	13-DEC-16	R3616994
Phosphorus (P)-Total	21300		10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	9410		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	9.66		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.798		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	4230		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	8.73		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.29		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.0023		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.32		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	74.0		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	29.2		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.165		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	2.13		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	0.811		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	0.95		0.20	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0107		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	8790		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0085		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.300		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-49 16-GIANT-DM-55							
Sampled By: CLIENT on 10-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0905		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	2.65		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	106		0.60	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.253		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	498		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	3.99		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.266		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.423		0.040	mg/kg wwt	09-DEC-16	13-DEC-16	R3616994
Phosphorus (P)-Total	6980		2.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	3090		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	3.17		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.262		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	1390		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	2.87		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.096		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.00074		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.104		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	24.3		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	0.044		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
L1842843-50 16-GIANT-DM-56							
Sampled By: CLIENT on 10-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	71.1		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	0.0127		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	0.0037		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	0.0113		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Silver (Ag)-Total	0.0033		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	118		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.498		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	8.54		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	6.75		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	3.0		1.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0441		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	27400		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0986		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	1.63		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.357		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	9.22		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	423		3.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.857		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	1670		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	12.0		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.804		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-50 16-GIANT-DM-56							
Sampled By: CLIENT on 10-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	1.65		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	23500		10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	10800		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	16.3		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.698		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	4770		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	7.61		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.30		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.0040		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.46		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	79.3		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	34.1		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	0.144		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	2.47		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	1.95		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	0.86		0.20	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0127		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	7920		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0285		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.472		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.103		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	2.66		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	122		0.60	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.247		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	481		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	3.47		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	0.232		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.477		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	6770		2.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	3110		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	4.71		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.202		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	1380		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	2.20		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	0.00044		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	0.085		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	0.00115		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	0.132		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	22.9		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
L1842843-51 16-GIANT-BAIT							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-51 16-GIANT-BAIT							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Miscellaneous Parameters							
% Moisture	4.54		0.50	%		08-DEC-16	R3616065
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	09-DEC-16	12-DEC-16	R3615634
Mercury (Hg)-Total	<0.0010		0.0010	mg/kg wwt	09-DEC-16	12-DEC-16	R3615632
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	6.6		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	1.71		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	9.0		1.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0487		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	452		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0110		0.0050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.181		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Cobalt (Co)-Total	0.028		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	4.14		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	24.7		3.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.50		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	1560		2.0	mg/kg	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	22.9		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	1.35		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.98		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	3940		10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	5200		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	5.85		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.181		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	2890		20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	4.10		0.050	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.020		0.020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	<0.10		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	<0.0020		0.0020	mg/kg	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	<0.10		0.10	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	24.1		0.50	mg/kg	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	09-DEC-16	11-DEC-16	R3615366
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	6.27		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Antimony (Sb)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Arsenic (As)-Total	0.0127		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Barium (Ba)-Total	1.63		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Boron (B)-Total	8.59		0.20	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cadmium (Cd)-Total	0.0465		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Calcium (Ca)-Total	431		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Cesium (Cs)-Total	0.0105		0.0010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Chromium (Cr)-Total	0.173		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842843-51 16-GIANT-BAIT							
Sampled By: CLIENT on 09-SEP-16							
Matrix: small mammal							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0270		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Copper (Cu)-Total	3.95		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Iron (Fe)-Total	23.6		0.60	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lead (Pb)-Total	0.0076		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Magnesium (Mg)-Total	1490		0.40	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Manganese (Mn)-Total	21.9		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Molybdenum (Mo)-Total	1.29		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Nickel (Ni)-Total	0.939		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Phosphorus (P)-Total	3760		2.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Potassium (K)-Total	4970		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Rubidium (Rb)-Total	5.59		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Selenium (Se)-Total	0.172		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Sodium (Na)-Total	2760		4.0	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Strontium (Sr)-Total	3.92		0.010	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Uranium (U)-Total	<0.00040		0.00040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Vanadium (V)-Total	<0.020		0.020	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zinc (Zn)-Total	23.0		0.10	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	09-DEC-16	11-DEC-16	R3615366

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
AG-DRY-CCMS-N-VA	Tissue	Silver in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

AG-WET-CCMS-N-VA	Tissue	Silver in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: GOLDER ASSOCIATES LTD
16820 107 Ave NW
EDMONTON AB T5P 4C3
Contact: Steven Fiddler

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
AG-DRY-CCMS-N-VA	**Tissue**							
Batch R3612601								
WG2446500-3 CRM		**VA-NIST-1566B**						
Silver (Ag)-Total			100.6		%		70-130	06-DEC-16
WG2446500-2 DUP		**L1842843-26**						
Silver (Ag)-Total		0.0081	0.0082		mg/kg	1.4	40	06-DEC-16
WG2446500-4 LCS								
Silver (Ag)-Total			97.4		%		70-130	06-DEC-16
WG2446500-1 MB								
Silver (Ag)-Total			<0.0050		mg/kg		0.005	06-DEC-16
Batch R3613168								
WG2447279-3 CRM		**VA-NIST-1566B**						
Silver (Ag)-Total			109.7		%		70-130	07-DEC-16
WG2447279-4 LCS								
Silver (Ag)-Total			101.3		%		70-130	07-DEC-16
WG2447279-1 MB								
Silver (Ag)-Total			<0.0050		mg/kg		0.005	07-DEC-16
Batch R3615366								
WG2448071-3 CRM		**VA-NIST-1566B**						
Silver (Ag)-Total			102.6		%		70-130	11-DEC-16
WG2448806-3 CRM		**VA-NIST-1566B**						
Silver (Ag)-Total			99.7		%		70-130	11-DEC-16
WG2448071-2 DUP		**L1842843-20**						
Silver (Ag)-Total		0.0257	0.0295		mg/kg	14	40	11-DEC-16
WG2448806-2 DUP		**L1842843-51**						
Silver (Ag)-Total		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	40	11-DEC-16
WG2448071-4 LCS								
Silver (Ag)-Total			71.2		%		70-130	11-DEC-16
WG2448806-4 LCS								
Silver (Ag)-Total			75.2		%		70-130	11-DEC-16
WG2448071-1 MB								
Silver (Ag)-Total			<0.0050		mg/kg		0.005	11-DEC-16
WG2448806-1 MB								
Silver (Ag)-Total			<0.0050		mg/kg		0.005	11-DEC-16
Batch R3615468								
WG2447279-2 DUP		**L1842843-12**						
Silver (Ag)-Total		0.0473	0.0483		mg/kg	2.2	40	09-DEC-16
AG-WET-CCMS-N-VA	**Tissue**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
AG-WET-CCMS-N-VA	**Tissue**							
Batch R3612601								
WG2446500-3 CRM		**VA-NIST-1566B**						
Silver (Ag)-Total			100.6		%		70-130	06-DEC-16
WG2446500-2 DUP		**L1842843-26**						
Silver (Ag)-Total		0.0025	0.0025		mg/kg wwt	1.4	40	06-DEC-16
WG2446500-4 LCS								
Silver (Ag)-Total			97.4		%		70-130	06-DEC-16
WG2446500-1 MB								
Silver (Ag)-Total			<0.0010		mg/kg wwt		0.001	06-DEC-16
Batch R3613168								
WG2447279-3 CRM		**VA-NIST-1566B**						
Silver (Ag)-Total			109.7		%		70-130	07-DEC-16
WG2447279-4 LCS								
Silver (Ag)-Total			101.3		%		70-130	07-DEC-16
WG2447279-1 MB								
Silver (Ag)-Total			<0.0010		mg/kg wwt		0.001	07-DEC-16
Batch R3615366								
WG2448071-3 CRM		**VA-NIST-1566B**						
Silver (Ag)-Total			102.6		%		70-130	11-DEC-16
WG2448806-3 CRM		**VA-NIST-1566B**						
Silver (Ag)-Total			99.7		%		70-130	11-DEC-16
WG2448071-2 DUP		**L1842843-20**						
Silver (Ag)-Total		0.0068	0.0078		mg/kg wwt	14	40	11-DEC-16
WG2448806-2 DUP		**L1842843-51**						
Silver (Ag)-Total		<0.0010	<0.0010	RPD-NA	mg/kg wwt	N/A	40	11-DEC-16
WG2448071-4 LCS								
Silver (Ag)-Total			71.2		%		70-130	11-DEC-16
WG2448806-4 LCS								
Silver (Ag)-Total			75.2		%		70-130	11-DEC-16
WG2448071-1 MB								
Silver (Ag)-Total			<0.0010		mg/kg wwt		0.001	11-DEC-16
WG2448806-1 MB								
Silver (Ag)-Total			<0.0010		mg/kg wwt		0.001	11-DEC-16
Batch R3615468								
WG2447279-2 DUP		**L1842843-12**						
Silver (Ag)-Total		0.0137	0.0140		mg/kg wwt	2.2	40	09-DEC-16
HG-DRY-CVAFS-N-VA	**Tissue**							

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-DRY-CVAFS-N-VA	**Tissue**							
Batch R3612600								
WG2446500-3 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			83.9		%		70-130	07-DEC-16
WG2446500-2 DUP		**L1842843-26**						
Mercury (Hg)-Total		0.0134	0.0151		mg/kg	12	40	07-DEC-16
WG2446500-4 LCS								
Mercury (Hg)-Total			94.3		%		70-130	07-DEC-16
WG2446500-1 MB								
Mercury (Hg)-Total			<0.0050		mg/kg		0.005	07-DEC-16
Batch R3613376								
WG2447279-3 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			84.8		%		70-130	08-DEC-16
WG2447279-2 DUP		**L1842843-12**						
Mercury (Hg)-Total		0.127	0.136		mg/kg	7.0	40	08-DEC-16
WG2447279-4 LCS								
Mercury (Hg)-Total			101.5		%		70-130	08-DEC-16
WG2447279-1 MB								
Mercury (Hg)-Total			<0.0050		mg/kg		0.005	08-DEC-16
Batch R3615634								
WG2448071-3 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			86.9		%		70-130	12-DEC-16
WG2448806-3 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			90.1		%		70-130	12-DEC-16
WG2448071-2 DUP		**L1842843-20**						
Mercury (Hg)-Total		0.122	0.132		mg/kg	7.9	40	12-DEC-16
WG2448806-2 DUP		**L1842843-51**						
Mercury (Hg)-Total		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	40	12-DEC-16
WG2448071-4 LCS								
Mercury (Hg)-Total			90.9		%		70-130	12-DEC-16
WG2448806-4 LCS								
Mercury (Hg)-Total			92.7		%		70-130	12-DEC-16
WG2448071-1 MB								
Mercury (Hg)-Total			<0.0050		mg/kg		0.005	12-DEC-16
WG2448806-1 MB								
Mercury (Hg)-Total			<0.0050		mg/kg		0.005	12-DEC-16
HG-WET-CVAFS-N-VA	**Tissue**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-WET-CVAFS-N-VA	**Tissue**							
Batch R3612596								
WG2446500-3 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			83.9		%		70-130	07-DEC-16
WG2446500-2 DUP		**L1842843-26**						
Mercury (Hg)-Total		0.0041	0.0046		mg/kg wwt	12	40	07-DEC-16
WG2446500-4 LCS								
Mercury (Hg)-Total			94.3		%		70-130	07-DEC-16
WG2446500-1 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	07-DEC-16
Batch R3613374								
WG2447279-3 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			84.8		%		70-130	08-DEC-16
WG2447279-2 DUP		**L1842843-12**						
Mercury (Hg)-Total		0.0369	0.0395		mg/kg wwt	7.0	40	08-DEC-16
WG2447279-4 LCS								
Mercury (Hg)-Total			101.5		%		70-130	08-DEC-16
WG2447279-1 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	08-DEC-16
Batch R3615632								
WG2448071-3 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			86.9		%		70-130	12-DEC-16
WG2448806-3 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			90.1		%		70-130	12-DEC-16
WG2448071-2 DUP		**L1842843-20**						
Mercury (Hg)-Total		0.0319	0.0346		mg/kg wwt	7.9	40	12-DEC-16
WG2448806-2 DUP		**L1842843-51**						
Mercury (Hg)-Total		<0.0010	<0.0010	RPD-NA	mg/kg wwt	N/A	40	12-DEC-16
WG2448071-4 LCS								
Mercury (Hg)-Total			90.9		%		70-130	12-DEC-16
WG2448806-4 LCS								
Mercury (Hg)-Total			92.7		%		70-130	12-DEC-16
WG2448071-1 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	12-DEC-16
WG2448806-1 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	12-DEC-16
MET-DRY-CCMS-N-VA	**Tissue**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3612601								
WG2446500-3 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.009		mg/kg		0-0.018	06-DEC-16
Arsenic (As)-Total			114.7		%		70-130	06-DEC-16
Barium (Ba)-Total			118.7		%		70-130	06-DEC-16
Boron (B)-Total			100.5		%		70-130	06-DEC-16
Cadmium (Cd)-Total			116.9		%		70-130	06-DEC-16
Calcium (Ca)-Total			99.6		%		70-130	06-DEC-16
Chromium (Cr)-Total			111.5		%		70-130	06-DEC-16
Cobalt (Co)-Total			112.4		%		70-130	06-DEC-16
Copper (Cu)-Total			113.0		%		70-130	06-DEC-16
Iron (Fe)-Total			113.1		%		70-130	06-DEC-16
Lead (Pb)-Total			111.3		%		70-130	06-DEC-16
Magnesium (Mg)-Total			114.0		%		70-130	06-DEC-16
Manganese (Mn)-Total			114.5		%		70-130	06-DEC-16
Molybdenum (Mo)-Total			106.2		%		70-130	06-DEC-16
Nickel (Ni)-Total			116.4		%		70-130	06-DEC-16
Phosphorus (P)-Total			121.5		%		70-130	06-DEC-16
Potassium (K)-Total			112.2		%		70-130	06-DEC-16
Rubidium (Rb)-Total			121.3		%		70-130	06-DEC-16
Selenium (Se)-Total			112.3		%		70-130	06-DEC-16
Sodium (Na)-Total			109.0		%		70-130	06-DEC-16
Strontium (Sr)-Total			96.8		%		70-130	06-DEC-16
Uranium (U)-Total			104.0		%		70-130	06-DEC-16
Vanadium (V)-Total			128.5		%		70-130	06-DEC-16
Zinc (Zn)-Total			97.0		%		70-130	06-DEC-16
WG2446500-2 DUP		**L1842843-26**						
Aluminum (Al)-Total		213	219		mg/kg	2.8	40	06-DEC-16
Antimony (Sb)-Total		0.096	0.089		mg/kg	7.3	40	06-DEC-16
Arsenic (As)-Total		6.02	6.39		mg/kg	6.1	40	06-DEC-16
Barium (Ba)-Total		6.02	8.36		mg/kg	33	40	06-DEC-16
Beryllium (Be)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	06-DEC-16
Bismuth (Bi)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	06-DEC-16
Boron (B)-Total		1.3	1.4		mg/kg	10	40	06-DEC-16
Cadmium (Cd)-Total		0.0735	0.0776		mg/kg	5.4	40	06-DEC-16
Calcium (Ca)-Total		30200	44500		mg/kg	38	60	06-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3612601								
WG2446500-2 DUP		**L1842843-26**						
Cesium (Cs)-Total		0.0354	0.0373		mg/kg	5.2	40	06-DEC-16
Chromium (Cr)-Total		0.473	0.494		mg/kg	4.2	40	06-DEC-16
Cobalt (Co)-Total		0.283	0.331		mg/kg	16	40	06-DEC-16
Copper (Cu)-Total		12.3	13.2		mg/kg	6.4	40	06-DEC-16
Iron (Fe)-Total		520	527		mg/kg	1.4	40	06-DEC-16
Lead (Pb)-Total		0.659	0.810		mg/kg	21	40	06-DEC-16
Lithium (Li)-Total		<0.50	<0.50	RPD-NA	mg/kg	N/A	40	06-DEC-16
Magnesium (Mg)-Total		1640	2030		mg/kg	21	40	06-DEC-16
Manganese (Mn)-Total		13.7	15.2		mg/kg	11	40	06-DEC-16
Molybdenum (Mo)-Total		0.868	0.895		mg/kg	3.1	40	06-DEC-16
Nickel (Ni)-Total		0.70	0.70		mg/kg	0.0	40	06-DEC-16
Phosphorus (P)-Total		26100	35200		mg/kg	30	40	06-DEC-16
Potassium (K)-Total		12600	13000		mg/kg	2.6	40	06-DEC-16
Rubidium (Rb)-Total		12.9	13.2		mg/kg	2.2	40	06-DEC-16
Selenium (Se)-Total		1.09	1.15		mg/kg	5.1	40	06-DEC-16
Sodium (Na)-Total		4740	5110		mg/kg	7.5	40	06-DEC-16
Strontium (Sr)-Total		8.19	11.8		mg/kg	36	60	06-DEC-16
Tellurium (Te)-Total		<0.020	<0.020	RPD-NA	mg/kg	N/A	40	06-DEC-16
Thallium (Tl)-Total		0.0027	0.0033		mg/kg	19	40	06-DEC-16
Tin (Sn)-Total		0.11	0.15		mg/kg	27	40	06-DEC-16
Uranium (U)-Total		0.0829	0.0995		mg/kg	18	40	06-DEC-16
Vanadium (V)-Total		0.67	0.64		mg/kg	4.6	40	06-DEC-16
Zinc (Zn)-Total		86.8	98.0		mg/kg	12	40	06-DEC-16
Zirconium (Zr)-Total		0.23	0.31		mg/kg	28	40	06-DEC-16
WG2446500-4 LCS								
Aluminum (Al)-Total			107.8		%		70-130	06-DEC-16
Antimony (Sb)-Total			103.6		%		70-130	06-DEC-16
Arsenic (As)-Total			109.1		%		70-130	06-DEC-16
Barium (Ba)-Total			100.7		%		70-130	06-DEC-16
Beryllium (Be)-Total			103.4		%		70-130	06-DEC-16
Bismuth (Bi)-Total			103.7		%		70-130	06-DEC-16
Boron (B)-Total			88.3		%		70-130	06-DEC-16
Cadmium (Cd)-Total			105.0		%		70-130	06-DEC-16
Calcium (Ca)-Total			104.1		%		70-130	06-DEC-16

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3612601								
WG2446500-4 LCS								
Cesium (Cs)-Total			98.9		%		70-130	06-DEC-16
Chromium (Cr)-Total			105.1		%		70-130	06-DEC-16
Cobalt (Co)-Total			103.7		%		70-130	06-DEC-16
Copper (Cu)-Total			101.7		%		70-130	06-DEC-16
Iron (Fe)-Total			99.4		%		70-130	06-DEC-16
Lead (Pb)-Total			104.3		%		70-130	06-DEC-16
Lithium (Li)-Total			102.1		%		70-130	06-DEC-16
Magnesium (Mg)-Total			105.3		%		70-130	06-DEC-16
Manganese (Mn)-Total			98.3		%		70-130	06-DEC-16
Molybdenum (Mo)-Total			105.8		%		70-130	06-DEC-16
Nickel (Ni)-Total			102.5		%		70-130	06-DEC-16
Potassium (K)-Total			106.1		%		70-130	06-DEC-16
Rubidium (Rb)-Total			109.0		%		70-130	06-DEC-16
Selenium (Se)-Total			103.5		%		70-130	06-DEC-16
Sodium (Na)-Total			104.9		%		70-130	06-DEC-16
Strontium (Sr)-Total			109.5		%		70-130	06-DEC-16
Tellurium (Te)-Total			106.5		%		70-130	06-DEC-16
Thallium (Tl)-Total			101.7		%		70-130	06-DEC-16
Tin (Sn)-Total			101.4		%		70-130	06-DEC-16
Uranium (U)-Total			103.6		%		70-130	06-DEC-16
Vanadium (V)-Total			109.0		%		70-130	06-DEC-16
Zinc (Zn)-Total			92.4		%		70-130	06-DEC-16
Zirconium (Zr)-Total			95.1		%		70-130	06-DEC-16
WG2446500-1 MB								
Aluminum (Al)-Total			<2.0		mg/kg		2	06-DEC-16
Antimony (Sb)-Total			<0.010		mg/kg		0.01	06-DEC-16
Arsenic (As)-Total			<0.020		mg/kg		0.02	06-DEC-16
Barium (Ba)-Total			<0.050		mg/kg		0.05	06-DEC-16
Beryllium (Be)-Total			<0.010		mg/kg		0.01	06-DEC-16
Bismuth (Bi)-Total			<0.010		mg/kg		0.01	06-DEC-16
Boron (B)-Total			<1.0		mg/kg		1	06-DEC-16
Cadmium (Cd)-Total			<0.0050		mg/kg		0.005	06-DEC-16
Calcium (Ca)-Total			<20		mg/kg		20	06-DEC-16
Cesium (Cs)-Total			<0.0050		mg/kg		0.005	06-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3612601								
WG2446500-1 MB								
Chromium (Cr)-Total			<0.050		mg/kg		0.05	06-DEC-16
Cobalt (Co)-Total			<0.020		mg/kg		0.02	06-DEC-16
Copper (Cu)-Total			<0.10		mg/kg		0.1	06-DEC-16
Iron (Fe)-Total			<3.0		mg/kg		3	06-DEC-16
Lead (Pb)-Total			<0.020		mg/kg		0.02	06-DEC-16
Lithium (Li)-Total			<0.50		mg/kg		0.5	06-DEC-16
Magnesium (Mg)-Total			<2.0		mg/kg		2	06-DEC-16
Manganese (Mn)-Total			<0.050		mg/kg		0.05	06-DEC-16
Molybdenum (Mo)-Total			<0.020		mg/kg		0.02	06-DEC-16
Nickel (Ni)-Total			<0.20		mg/kg		0.2	06-DEC-16
Phosphorus (P)-Total			<10		mg/kg		10	06-DEC-16
Potassium (K)-Total			<20		mg/kg		20	06-DEC-16
Rubidium (Rb)-Total			<0.050		mg/kg		0.05	06-DEC-16
Selenium (Se)-Total			<0.050		mg/kg		0.05	06-DEC-16
Sodium (Na)-Total			<20		mg/kg		20	06-DEC-16
Strontium (Sr)-Total			<0.050		mg/kg		0.05	06-DEC-16
Tellurium (Te)-Total			<0.020		mg/kg		0.02	06-DEC-16
Thallium (Tl)-Total			<0.0020		mg/kg		0.002	06-DEC-16
Tin (Sn)-Total			<0.10		mg/kg		0.1	06-DEC-16
Uranium (U)-Total			<0.0020		mg/kg		0.002	06-DEC-16
Vanadium (V)-Total			<0.10		mg/kg		0.1	06-DEC-16
Zinc (Zn)-Total			<0.50		mg/kg		0.5	06-DEC-16
Zirconium (Zr)-Total			<0.20		mg/kg		0.2	06-DEC-16
Batch R3613168								
WG2447279-3 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.013		mg/kg		0-0.018	07-DEC-16
Arsenic (As)-Total			106.2		%		70-130	07-DEC-16
Barium (Ba)-Total			106.0		%		70-130	07-DEC-16
Boron (B)-Total			111.9		%		70-130	07-DEC-16
Cadmium (Cd)-Total			102.7		%		70-130	07-DEC-16
Calcium (Ca)-Total			107.4		%		70-130	07-DEC-16
Chromium (Cr)-Total			107.6		%		70-130	07-DEC-16
Cobalt (Co)-Total			110.2		%		70-130	07-DEC-16
Copper (Cu)-Total			104.4		%		70-130	07-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3613168								
WG2447279-3 CRM		**VA-NIST-1566B**						
Iron (Fe)-Total			112.7		%		70-130	07-DEC-16
Lead (Pb)-Total			116.8		%		70-130	07-DEC-16
Magnesium (Mg)-Total			117.1		%		70-130	07-DEC-16
Manganese (Mn)-Total			114.0		%		70-130	07-DEC-16
Molybdenum (Mo)-Total			111.7		%		70-130	07-DEC-16
Nickel (Ni)-Total			123.6		%		70-130	07-DEC-16
Phosphorus (P)-Total			130.0		%		70-130	07-DEC-16
Potassium (K)-Total			120.5		%		70-130	07-DEC-16
Rubidium (Rb)-Total			113.2		%		70-130	07-DEC-16
Selenium (Se)-Total			111.0		%		70-130	07-DEC-16
Sodium (Na)-Total			116.6		%		70-130	07-DEC-16
Strontium (Sr)-Total			100.6		%		70-130	07-DEC-16
Uranium (U)-Total			115.2		%		70-130	07-DEC-16
Vanadium (V)-Total			115.6		%		70-130	07-DEC-16
Zinc (Zn)-Total			94.8		%		70-130	07-DEC-16
WG2447279-4 LCS								
Aluminum (Al)-Total			103.2		%		70-130	07-DEC-16
Antimony (Sb)-Total			99.6		%		70-130	07-DEC-16
Arsenic (As)-Total			99.8		%		70-130	07-DEC-16
Barium (Ba)-Total			98.7		%		70-130	07-DEC-16
Beryllium (Be)-Total			108.1		%		70-130	07-DEC-16
Bismuth (Bi)-Total			102.5		%		70-130	07-DEC-16
Boron (B)-Total			94.8		%		70-130	07-DEC-16
Cadmium (Cd)-Total			95.9		%		70-130	07-DEC-16
Calcium (Ca)-Total			105.1		%		70-130	07-DEC-16
Cesium (Cs)-Total			104.7		%		70-130	07-DEC-16
Chromium (Cr)-Total			91.8		%		70-130	07-DEC-16
Cobalt (Co)-Total			94.7		%		70-130	07-DEC-16
Copper (Cu)-Total			93.6		%		70-130	07-DEC-16
Iron (Fe)-Total			102.2		%		70-130	07-DEC-16
Lead (Pb)-Total			100.3		%		70-130	07-DEC-16
Lithium (Li)-Total			91.8		%		70-130	07-DEC-16
Magnesium (Mg)-Total			102.4		%		70-130	07-DEC-16
Manganese (Mn)-Total			95.7		%		70-130	07-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3613168								
WG2447279-4 LCS								
Molybdenum (Mo)-Total			101.0		%		70-130	07-DEC-16
Nickel (Ni)-Total			95.6		%		70-130	07-DEC-16
Phosphorus (P)-Total			111.3		%		70-130	07-DEC-16
Potassium (K)-Total			101.9		%		70-130	07-DEC-16
Rubidium (Rb)-Total			100.5		%		70-130	07-DEC-16
Selenium (Se)-Total			97.0		%		70-130	07-DEC-16
Sodium (Na)-Total			105.6		%		70-130	07-DEC-16
Strontium (Sr)-Total			107.8		%		70-130	07-DEC-16
Tellurium (Te)-Total			98.2		%		70-130	07-DEC-16
Thallium (Tl)-Total			98.9		%		70-130	07-DEC-16
Tin (Sn)-Total			97.1		%		70-130	07-DEC-16
Uranium (U)-Total			110.5		%		70-130	07-DEC-16
Vanadium (V)-Total			95.0		%		70-130	07-DEC-16
Zinc (Zn)-Total			89.4		%		70-130	07-DEC-16
Zirconium (Zr)-Total			98.9		%		70-130	07-DEC-16
WG2447279-1 MB								
Aluminum (Al)-Total			<2.0		mg/kg		2	07-DEC-16
Antimony (Sb)-Total			<0.010		mg/kg		0.01	07-DEC-16
Arsenic (As)-Total			<0.020		mg/kg		0.02	07-DEC-16
Barium (Ba)-Total			<0.050		mg/kg		0.05	07-DEC-16
Beryllium (Be)-Total			<0.010		mg/kg		0.01	07-DEC-16
Bismuth (Bi)-Total			<0.010		mg/kg		0.01	07-DEC-16
Boron (B)-Total			<1.0		mg/kg		1	07-DEC-16
Cadmium (Cd)-Total			<0.0050		mg/kg		0.005	07-DEC-16
Calcium (Ca)-Total			<20		mg/kg		20	07-DEC-16
Cesium (Cs)-Total			<0.0050		mg/kg		0.005	07-DEC-16
Chromium (Cr)-Total			<0.050		mg/kg		0.05	07-DEC-16
Cobalt (Co)-Total			<0.020		mg/kg		0.02	07-DEC-16
Copper (Cu)-Total			<0.10		mg/kg		0.1	07-DEC-16
Iron (Fe)-Total			<3.0		mg/kg		3	07-DEC-16
Lead (Pb)-Total			<0.020		mg/kg		0.02	07-DEC-16
Lithium (Li)-Total			<0.50		mg/kg		0.5	07-DEC-16
Magnesium (Mg)-Total			<2.0		mg/kg		2	07-DEC-16
Manganese (Mn)-Total			<0.050		mg/kg		0.05	07-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3613168								
WG2447279-1 MB								
Molybdenum (Mo)-Total			<0.020		mg/kg		0.02	07-DEC-16
Nickel (Ni)-Total			<0.20		mg/kg		0.2	07-DEC-16
Phosphorus (P)-Total			<10		mg/kg		10	07-DEC-16
Potassium (K)-Total			<20		mg/kg		20	07-DEC-16
Rubidium (Rb)-Total			<0.050		mg/kg		0.05	07-DEC-16
Selenium (Se)-Total			<0.050		mg/kg		0.05	07-DEC-16
Sodium (Na)-Total			<20		mg/kg		20	07-DEC-16
Strontium (Sr)-Total			<0.050		mg/kg		0.05	07-DEC-16
Tellurium (Te)-Total			<0.020		mg/kg		0.02	07-DEC-16
Thallium (Tl)-Total			<0.0020		mg/kg		0.002	07-DEC-16
Tin (Sn)-Total			<0.10		mg/kg		0.1	07-DEC-16
Uranium (U)-Total			<0.0020		mg/kg		0.002	07-DEC-16
Vanadium (V)-Total			<0.10		mg/kg		0.1	07-DEC-16
Zinc (Zn)-Total			<0.50		mg/kg		0.5	07-DEC-16
Zirconium (Zr)-Total			<0.20		mg/kg		0.2	07-DEC-16
Batch R3613262								
WG2446500-4 LCS								
Phosphorus (P)-Total			103.1		%		70-130	07-DEC-16
Batch R3615366								
WG2448071-3 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.003		mg/kg		0-0.018	11-DEC-16
Arsenic (As)-Total			112.1		%		70-130	11-DEC-16
Barium (Ba)-Total			106.1		%		70-130	11-DEC-16
Boron (B)-Total			110.5		%		70-130	11-DEC-16
Cadmium (Cd)-Total			111.6		%		70-130	11-DEC-16
Calcium (Ca)-Total			105.6		%		70-130	11-DEC-16
Chromium (Cr)-Total			109.4		%		70-130	11-DEC-16
Cobalt (Co)-Total			111.4		%		70-130	11-DEC-16
Copper (Cu)-Total			110.6		%		70-130	11-DEC-16
Iron (Fe)-Total			117.2		%		70-130	11-DEC-16
Lead (Pb)-Total			117.2		%		70-130	11-DEC-16
Magnesium (Mg)-Total			112.8		%		70-130	11-DEC-16
Manganese (Mn)-Total			111.7		%		70-130	11-DEC-16
Molybdenum (Mo)-Total			114.9		%		70-130	11-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3615366								
WG2448071-3 CRM		**VA-NIST-1566B**						
Nickel (Ni)-Total			118.7		%		70-130	11-DEC-16
Phosphorus (P)-Total			120.7		%		70-130	11-DEC-16
Potassium (K)-Total			112.2		%		70-130	11-DEC-16
Rubidium (Rb)-Total			115.3		%		70-130	11-DEC-16
Selenium (Se)-Total			113.4		%		70-130	11-DEC-16
Sodium (Na)-Total			108.6		%		70-130	11-DEC-16
Strontium (Sr)-Total			101.5		%		70-130	11-DEC-16
Uranium (U)-Total			108.5		%		70-130	11-DEC-16
Vanadium (V)-Total			115.1		%		70-130	11-DEC-16
Zinc (Zn)-Total			104.7		%		70-130	11-DEC-16
WG2448806-3 CRM		**VA-NIST-1566B**						
Arsenic (As)-Total			109.8		%		70-130	11-DEC-16
Barium (Ba)-Total			109.7		%		70-130	11-DEC-16
Boron (B)-Total			105.6		%		70-130	11-DEC-16
Cadmium (Cd)-Total			94.1		%		70-130	11-DEC-16
Calcium (Ca)-Total			100.7		%		70-130	11-DEC-16
Chromium (Cr)-Total			107.8		%		70-130	11-DEC-16
Cobalt (Co)-Total			110.2		%		70-130	11-DEC-16
Copper (Cu)-Total			111.3		%		70-130	11-DEC-16
Iron (Fe)-Total			109.8		%		70-130	11-DEC-16
Lead (Pb)-Total			108.3		%		70-130	11-DEC-16
Magnesium (Mg)-Total			112.6		%		70-130	11-DEC-16
Manganese (Mn)-Total			112.9		%		70-130	11-DEC-16
Molybdenum (Mo)-Total			107.7		%		70-130	11-DEC-16
Nickel (Ni)-Total			124.4		%		70-130	11-DEC-16
Phosphorus (P)-Total			122.8		%		70-130	11-DEC-16
Potassium (K)-Total			112.4		%		70-130	11-DEC-16
Rubidium (Rb)-Total			114.5		%		70-130	11-DEC-16
Selenium (Se)-Total			106.9		%		70-130	11-DEC-16
Sodium (Na)-Total			108.6		%		70-130	11-DEC-16
Strontium (Sr)-Total			97.2		%		70-130	11-DEC-16
Uranium (U)-Total			104.8		%		70-130	11-DEC-16
Vanadium (V)-Total			116.8		%		70-130	11-DEC-16
Zinc (Zn)-Total			104.5		%		70-130	11-DEC-16
WG2448071-2 DUP		**L1842843-20**						

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3615366								
WG2448071-2 DUP		**L1842843-20**						
Aluminum (Al)-Total		26.4	32.6		mg/kg	21	40	11-DEC-16
Antimony (Sb)-Total		0.080	0.106		mg/kg	28	40	11-DEC-16
Arsenic (As)-Total		7.70	8.17		mg/kg	6.0	40	11-DEC-16
Barium (Ba)-Total		11.0	12.1		mg/kg	9.2	40	11-DEC-16
Beryllium (Be)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	11-DEC-16
Bismuth (Bi)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	11-DEC-16
Boron (B)-Total		3.3	4.0		mg/kg	18	40	11-DEC-16
Cadmium (Cd)-Total		0.216	0.232		mg/kg	7.5	40	11-DEC-16
Calcium (Ca)-Total		32200	31600		mg/kg	2.1	60	11-DEC-16
Cesium (Cs)-Total		2.04	2.15		mg/kg	5.3	40	11-DEC-16
Chromium (Cr)-Total		0.073	0.103		mg/kg	34	40	11-DEC-16
Cobalt (Co)-Total		0.221	0.248		mg/kg	11	40	11-DEC-16
Copper (Cu)-Total		8.79	9.31		mg/kg	5.8	40	11-DEC-16
Iron (Fe)-Total		253	272		mg/kg	7.0	40	11-DEC-16
Lead (Pb)-Total		0.269	0.326		mg/kg	19	40	11-DEC-16
Lithium (Li)-Total		<0.50	<0.50	RPD-NA	mg/kg	N/A	40	11-DEC-16
Magnesium (Mg)-Total		1710	1790		mg/kg	5.0	40	11-DEC-16
Manganese (Mn)-Total		14.8	15.8		mg/kg	6.7	40	11-DEC-16
Molybdenum (Mo)-Total		0.487	0.538		mg/kg	10	40	11-DEC-16
Nickel (Ni)-Total		0.58	0.77		mg/kg	29	40	11-DEC-16
Phosphorus (P)-Total		28900	28500		mg/kg	1.1	40	11-DEC-16
Potassium (K)-Total		14000	14300		mg/kg	2.2	40	11-DEC-16
Rubidium (Rb)-Total		50.0	51.9		mg/kg	3.6	40	11-DEC-16
Selenium (Se)-Total		0.810	0.881		mg/kg	8.4	40	11-DEC-16
Sodium (Na)-Total		5360	5420		mg/kg	1.2	40	11-DEC-16
Strontium (Sr)-Total		21.3	21.0		mg/kg	1.5	60	11-DEC-16
Tellurium (Te)-Total		<0.020	<0.020	RPD-NA	mg/kg	N/A	40	11-DEC-16
Thallium (Tl)-Total		<0.0020	<0.0020	RPD-NA	mg/kg	N/A	40	11-DEC-16
Tin (Sn)-Total		0.18	0.20		mg/kg	9.0	40	11-DEC-16
Uranium (U)-Total		0.0038	0.0043		mg/kg	13	40	11-DEC-16
Vanadium (V)-Total		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	11-DEC-16
Zinc (Zn)-Total		86.2	93.3		mg/kg	7.9	40	11-DEC-16
Zirconium (Zr)-Total		<0.20	<0.20	RPD-NA	mg/kg	N/A	40	11-DEC-16
WG2448806-2 DUP		**L1842843-51**						

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3615366								
WG2448806-2 DUP		**L1842843-51**						
Aluminum (Al)-Total		6.6	6.1		mg/kg	7.1	40	11-DEC-16
Antimony (Sb)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	11-DEC-16
Arsenic (As)-Total		<0.020	<0.020	RPD-NA	mg/kg	N/A	40	11-DEC-16
Barium (Ba)-Total		1.71	1.67		mg/kg	2.2	40	11-DEC-16
Beryllium (Be)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	11-DEC-16
Bismuth (Bi)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	11-DEC-16
Boron (B)-Total		9.0	9.4		mg/kg	4.2	40	11-DEC-16
Cadmium (Cd)-Total		0.0487	0.0470		mg/kg	3.5	40	11-DEC-16
Calcium (Ca)-Total		452	451		mg/kg	0.3	60	11-DEC-16
Cesium (Cs)-Total		0.0110	0.0116		mg/kg	5.2	40	11-DEC-16
Chromium (Cr)-Total		0.181	0.172		mg/kg	5.0	40	11-DEC-16
Cobalt (Co)-Total		0.028	0.028		mg/kg	1.1	40	11-DEC-16
Copper (Cu)-Total		4.14	3.87		mg/kg	6.7	40	11-DEC-16
Iron (Fe)-Total		24.7	24.3		mg/kg	1.7	40	11-DEC-16
Lead (Pb)-Total		<0.020	<0.020	RPD-NA	mg/kg	N/A	40	11-DEC-16
Lithium (Li)-Total		<0.50	<0.50	RPD-NA	mg/kg	N/A	40	11-DEC-16
Magnesium (Mg)-Total		1560	1440		mg/kg	8.1	40	11-DEC-16
Manganese (Mn)-Total		22.9	21.7		mg/kg	5.7	40	11-DEC-16
Molybdenum (Mo)-Total		1.35	1.32		mg/kg	2.0	40	11-DEC-16
Nickel (Ni)-Total		0.98	1.04		mg/kg	5.4	40	11-DEC-16
Phosphorus (P)-Total		3940	3610		mg/kg	8.9	40	11-DEC-16
Potassium (K)-Total		5200	4720		mg/kg	9.9	40	11-DEC-16
Rubidium (Rb)-Total		5.85	5.68		mg/kg	3.0	40	11-DEC-16
Selenium (Se)-Total		0.181	0.190		mg/kg	5.3	40	11-DEC-16
Sodium (Na)-Total		2890	2760		mg/kg	4.6	40	11-DEC-16
Strontium (Sr)-Total		4.10	4.19		mg/kg	2.0	60	11-DEC-16
Tellurium (Te)-Total		<0.020	<0.020	RPD-NA	mg/kg	N/A	40	11-DEC-16
Thallium (Tl)-Total		<0.0020	<0.0020	RPD-NA	mg/kg	N/A	40	11-DEC-16
Tin (Sn)-Total		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	11-DEC-16
Uranium (U)-Total		<0.0020	<0.0020	RPD-NA	mg/kg	N/A	40	11-DEC-16
Vanadium (V)-Total		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	11-DEC-16
Zinc (Zn)-Total		24.1	22.2		mg/kg	8.3	40	11-DEC-16
Zirconium (Zr)-Total		<0.20	<0.20	RPD-NA	mg/kg	N/A	40	11-DEC-16
WG2448071-4 LCS								

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3615366								
WG2448071-4 LCS								
Aluminum (Al)-Total			99.7		%		70-130	11-DEC-16
Antimony (Sb)-Total			97.9		%		70-130	11-DEC-16
Arsenic (As)-Total			97.8		%		70-130	11-DEC-16
Barium (Ba)-Total			96.8		%		70-130	11-DEC-16
Beryllium (Be)-Total			92.5		%		70-130	11-DEC-16
Bismuth (Bi)-Total			96.5		%		70-130	11-DEC-16
Boron (B)-Total			88.7		%		70-130	11-DEC-16
Cadmium (Cd)-Total			96.8		%		70-130	11-DEC-16
Calcium (Ca)-Total			95.8		%		70-130	11-DEC-16
Cesium (Cs)-Total			92.8		%		70-130	11-DEC-16
Chromium (Cr)-Total			97.5		%		70-130	11-DEC-16
Cobalt (Co)-Total			98.8		%		70-130	11-DEC-16
Copper (Cu)-Total			96.7		%		70-130	11-DEC-16
Iron (Fe)-Total			98.0		%		70-130	11-DEC-16
Lead (Pb)-Total			96.9		%		70-130	11-DEC-16
Lithium (Li)-Total			101.9		%		70-130	11-DEC-16
Magnesium (Mg)-Total			97.9		%		70-130	11-DEC-16
Manganese (Mn)-Total			100.1		%		70-130	11-DEC-16
Molybdenum (Mo)-Total			96.1		%		70-130	11-DEC-16
Nickel (Ni)-Total			97.4		%		70-130	11-DEC-16
Phosphorus (P)-Total			122.0		%		70-130	11-DEC-16
Potassium (K)-Total			99.4		%		70-130	11-DEC-16
Rubidium (Rb)-Total			98.5		%		70-130	11-DEC-16
Selenium (Se)-Total			97.1		%		70-130	11-DEC-16
Sodium (Na)-Total			98.7		%		70-130	11-DEC-16
Strontium (Sr)-Total			103.1		%		70-130	11-DEC-16
Tellurium (Te)-Total			90.9		%		70-130	11-DEC-16
Thallium (Tl)-Total			95.4		%		70-130	11-DEC-16
Tin (Sn)-Total			94.8		%		70-130	11-DEC-16
Uranium (U)-Total			97.4		%		70-130	11-DEC-16
Vanadium (V)-Total			99.5		%		70-130	11-DEC-16
Zinc (Zn)-Total			93.0		%		70-130	11-DEC-16
Zirconium (Zr)-Total			86.5		%		70-130	11-DEC-16
WG2448806-4 LCS								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3615366								
WG2448806-4 LCS								
Aluminum (Al)-Total			103.1		%		70-130	11-DEC-16
Antimony (Sb)-Total			95.6		%		70-130	11-DEC-16
Arsenic (As)-Total			103.9		%		70-130	11-DEC-16
Barium (Ba)-Total			100.7		%		70-130	11-DEC-16
Beryllium (Be)-Total			91.7		%		70-130	11-DEC-16
Bismuth (Bi)-Total			95.5		%		70-130	11-DEC-16
Boron (B)-Total			89.3		%		70-130	11-DEC-16
Cadmium (Cd)-Total			97.9		%		70-130	11-DEC-16
Calcium (Ca)-Total			94.0		%		70-130	11-DEC-16
Cesium (Cs)-Total			91.5		%		70-130	11-DEC-16
Chromium (Cr)-Total			103.5		%		70-130	11-DEC-16
Cobalt (Co)-Total			103.0		%		70-130	11-DEC-16
Copper (Cu)-Total			100.6		%		70-130	11-DEC-16
Iron (Fe)-Total			100.2		%		70-130	11-DEC-16
Lead (Pb)-Total			96.6		%		70-130	11-DEC-16
Lithium (Li)-Total			98.6		%		70-130	11-DEC-16
Magnesium (Mg)-Total			105.6		%		70-130	11-DEC-16
Manganese (Mn)-Total			106.2		%		70-130	11-DEC-16
Molybdenum (Mo)-Total			94.1		%		70-130	11-DEC-16
Nickel (Ni)-Total			101.7		%		70-130	11-DEC-16
Phosphorus (P)-Total			113.2		%		70-130	11-DEC-16
Potassium (K)-Total			106.2		%		70-130	11-DEC-16
Rubidium (Rb)-Total			102.5		%		70-130	11-DEC-16
Selenium (Se)-Total			97.8		%		70-130	11-DEC-16
Sodium (Na)-Total			103.4		%		70-130	11-DEC-16
Strontium (Sr)-Total			101.1		%		70-130	11-DEC-16
Tellurium (Te)-Total			90.4		%		70-130	11-DEC-16
Thallium (Tl)-Total			94.4		%		70-130	11-DEC-16
Tin (Sn)-Total			93.9		%		70-130	11-DEC-16
Uranium (U)-Total			96.0		%		70-130	11-DEC-16
Vanadium (V)-Total			104.6		%		70-130	11-DEC-16
Zinc (Zn)-Total			95.9		%		70-130	11-DEC-16
Zirconium (Zr)-Total			85.6		%		70-130	11-DEC-16
WG2448071-1 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3615366								
WG2448071-1 MB								
Aluminum (Al)-Total			<2.0		mg/kg		2	11-DEC-16
Arsenic (As)-Total			<0.020		mg/kg		0.02	11-DEC-16
Barium (Ba)-Total			<0.050		mg/kg		0.05	11-DEC-16
Beryllium (Be)-Total			<0.010		mg/kg		0.01	11-DEC-16
Bismuth (Bi)-Total			<0.010		mg/kg		0.01	11-DEC-16
Boron (B)-Total			<1.0		mg/kg		1	11-DEC-16
Cadmium (Cd)-Total			<0.0050		mg/kg		0.005	11-DEC-16
Calcium (Ca)-Total			<20		mg/kg		20	11-DEC-16
Cesium (Cs)-Total			<0.0050		mg/kg		0.005	11-DEC-16
Chromium (Cr)-Total			<0.050		mg/kg		0.05	11-DEC-16
Cobalt (Co)-Total			<0.020		mg/kg		0.02	11-DEC-16
Copper (Cu)-Total			<0.10		mg/kg		0.1	11-DEC-16
Iron (Fe)-Total			<3.0		mg/kg		3	11-DEC-16
Lead (Pb)-Total			<0.020		mg/kg		0.02	11-DEC-16
Lithium (Li)-Total			<0.50		mg/kg		0.5	11-DEC-16
Magnesium (Mg)-Total			<2.0		mg/kg		2	11-DEC-16
Manganese (Mn)-Total			<0.050		mg/kg		0.05	11-DEC-16
Molybdenum (Mo)-Total			<0.020		mg/kg		0.02	11-DEC-16
Nickel (Ni)-Total			<0.20		mg/kg		0.2	11-DEC-16
Phosphorus (P)-Total			<10		mg/kg		10	11-DEC-16
Potassium (K)-Total			<20		mg/kg		20	11-DEC-16
Rubidium (Rb)-Total			<0.050		mg/kg		0.05	11-DEC-16
Selenium (Se)-Total			<0.050		mg/kg		0.05	11-DEC-16
Sodium (Na)-Total			<20		mg/kg		20	11-DEC-16
Strontium (Sr)-Total			<0.050		mg/kg		0.05	11-DEC-16
Tellurium (Te)-Total			<0.020		mg/kg		0.02	11-DEC-16
Thallium (Tl)-Total			<0.0020		mg/kg		0.002	11-DEC-16
Tin (Sn)-Total			<0.10		mg/kg		0.1	11-DEC-16
Uranium (U)-Total			<0.0020		mg/kg		0.002	11-DEC-16
Vanadium (V)-Total			<0.10		mg/kg		0.1	11-DEC-16
Zinc (Zn)-Total			<0.50		mg/kg		0.5	11-DEC-16
Zirconium (Zr)-Total			<0.20		mg/kg		0.2	11-DEC-16
WG2448806-1 MB								
Aluminum (Al)-Total			<2.0		mg/kg		2	11-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3615366								
WG2448806-1 MB								
Antimony (Sb)-Total			<0.010		mg/kg		0.01	11-DEC-16
Arsenic (As)-Total			<0.020		mg/kg		0.02	11-DEC-16
Barium (Ba)-Total			<0.050		mg/kg		0.05	11-DEC-16
Beryllium (Be)-Total			<0.010		mg/kg		0.01	11-DEC-16
Bismuth (Bi)-Total			<0.010		mg/kg		0.01	11-DEC-16
Boron (B)-Total			<1.0		mg/kg		1	11-DEC-16
Cadmium (Cd)-Total			<0.0050		mg/kg		0.005	11-DEC-16
Calcium (Ca)-Total			<20		mg/kg		20	11-DEC-16
Cesium (Cs)-Total			<0.0050		mg/kg		0.005	11-DEC-16
Chromium (Cr)-Total			<0.050		mg/kg		0.05	11-DEC-16
Cobalt (Co)-Total			<0.020		mg/kg		0.02	11-DEC-16
Copper (Cu)-Total			<0.10		mg/kg		0.1	11-DEC-16
Iron (Fe)-Total			<3.0		mg/kg		3	11-DEC-16
Lead (Pb)-Total			<0.020		mg/kg		0.02	11-DEC-16
Lithium (Li)-Total			<0.50		mg/kg		0.5	11-DEC-16
Magnesium (Mg)-Total			<2.0		mg/kg		2	11-DEC-16
Molybdenum (Mo)-Total			<0.020		mg/kg		0.02	11-DEC-16
Nickel (Ni)-Total			<0.20		mg/kg		0.2	11-DEC-16
Phosphorus (P)-Total			<10		mg/kg		10	11-DEC-16
Potassium (K)-Total			<20		mg/kg		20	11-DEC-16
Rubidium (Rb)-Total			<0.050		mg/kg		0.05	11-DEC-16
Selenium (Se)-Total			<0.050		mg/kg		0.05	11-DEC-16
Sodium (Na)-Total			<20		mg/kg		20	11-DEC-16
Strontium (Sr)-Total			<0.050		mg/kg		0.05	11-DEC-16
Tellurium (Te)-Total			<0.020		mg/kg		0.02	11-DEC-16
Thallium (Tl)-Total			<0.0020		mg/kg		0.002	11-DEC-16
Tin (Sn)-Total			<0.10		mg/kg		0.1	11-DEC-16
Uranium (U)-Total			<0.0020		mg/kg		0.002	11-DEC-16
Vanadium (V)-Total			<0.10		mg/kg		0.1	11-DEC-16
Zinc (Zn)-Total			<0.50		mg/kg		0.5	11-DEC-16
Zirconium (Zr)-Total			<0.20		mg/kg		0.2	11-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3615468								
WG2447279-2 DUP		**L1842843-12**						
Aluminum (Al)-Total		56.8	56.7		mg/kg	0.1	40	09-DEC-16
Antimony (Sb)-Total		0.128	0.136		mg/kg	6.1	40	09-DEC-16
Arsenic (As)-Total		5.24	5.53		mg/kg	5.4	40	09-DEC-16
Barium (Ba)-Total		8.16	9.41		mg/kg	14	40	09-DEC-16
Beryllium (Be)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	09-DEC-16
Bismuth (Bi)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	09-DEC-16
Boron (B)-Total		2.6	2.6		mg/kg	1.3	40	09-DEC-16
Cadmium (Cd)-Total		0.0748	0.0786		mg/kg	5.0	40	09-DEC-16
Calcium (Ca)-Total		34700	43500		mg/kg	22	60	09-DEC-16
Cesium (Cs)-Total		0.696	0.694		mg/kg	0.3	40	09-DEC-16
Chromium (Cr)-Total		0.166	0.169		mg/kg	1.4	40	09-DEC-16
Cobalt (Co)-Total		0.240	0.262		mg/kg	9.0	40	09-DEC-16
Copper (Cu)-Total		8.29	8.29		mg/kg	0.0	40	09-DEC-16
Iron (Fe)-Total		307	317		mg/kg	3.4	40	09-DEC-16
Lead (Pb)-Total		0.319	0.277		mg/kg	14	40	09-DEC-16
Lithium (Li)-Total		<0.50	<0.50	RPD-NA	mg/kg	N/A	40	09-DEC-16
Magnesium (Mg)-Total		1500	1610		mg/kg	6.7	40	09-DEC-16
Manganese (Mn)-Total		10.4	11.1		mg/kg	6.0	40	09-DEC-16
Molybdenum (Mo)-Total		0.484	0.498		mg/kg	2.8	40	09-DEC-16
Nickel (Ni)-Total		0.73	0.75		mg/kg	2.7	40	09-DEC-16
Phosphorus (P)-Total		24500	28100		mg/kg	13	40	09-DEC-16
Potassium (K)-Total		11800	11600		mg/kg	0.9	40	09-DEC-16
Rubidium (Rb)-Total		46.6	47.0		mg/kg	0.8	40	09-DEC-16
Selenium (Se)-Total		0.950	0.956		mg/kg	0.7	40	09-DEC-16
Sodium (Na)-Total		4680	4840		mg/kg	3.3	40	09-DEC-16
Strontium (Sr)-Total		13.8	16.4		mg/kg	18	60	09-DEC-16
Tellurium (Te)-Total		<0.020	<0.020	RPD-NA	mg/kg	N/A	40	09-DEC-16
Thallium (Tl)-Total		0.0020	0.0020		mg/kg	0.1	40	09-DEC-16
Tin (Sn)-Total		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	09-DEC-16
Uranium (U)-Total		0.0043	0.0055		mg/kg	24	40	09-DEC-16
Vanadium (V)-Total		0.16	0.17		mg/kg	7.3	40	09-DEC-16
Zinc (Zn)-Total		101	106		mg/kg	4.2	40	09-DEC-16
Zirconium (Zr)-Total		<0.20	<0.20	RPD-NA	mg/kg	N/A	40	09-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3616994								
WG2448806-3 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.014		mg/kg		0-0.018	13-DEC-16
WG2448071-1 MB								
Antimony (Sb)-Total			<0.010		mg/kg		0.01	13-DEC-16
WG2448806-1 MB								
Manganese (Mn)-Total			<0.050		mg/kg		0.05	13-DEC-16
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3612601								
WG2446500-3 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.0091		mg/kg wwt		0-0.0177	06-DEC-16
Arsenic (As)-Total			114.7		%		70-130	06-DEC-16
Barium (Ba)-Total			118.7		%		70-130	06-DEC-16
Boron (B)-Total			100.5		%		70-130	06-DEC-16
Cadmium (Cd)-Total			116.9		%		70-130	06-DEC-16
Calcium (Ca)-Total			99.6		%		70-130	06-DEC-16
Chromium (Cr)-Total			111.5		%		70-130	06-DEC-16
Cobalt (Co)-Total			112.4		%		70-130	06-DEC-16
Copper (Cu)-Total			113.0		%		70-130	06-DEC-16
Iron (Fe)-Total			113.1		%		70-130	06-DEC-16
Lead (Pb)-Total			111.3		%		70-130	06-DEC-16
Magnesium (Mg)-Total			114.0		%		70-130	06-DEC-16
Manganese (Mn)-Total			114.5		%		70-130	06-DEC-16
Molybdenum (Mo)-Total			106.2		%		70-130	06-DEC-16
Nickel (Ni)-Total			116.4		%		70-130	06-DEC-16
Phosphorus (P)-Total			121.5		%		70-130	06-DEC-16
Potassium (K)-Total			112.2		%		70-130	06-DEC-16
Rubidium (Rb)-Total			121.3		%		70-130	06-DEC-16
Selenium (Se)-Total			112.3		%		70-130	06-DEC-16
Sodium (Na)-Total			109.0		%		70-130	06-DEC-16
Strontium (Sr)-Total			96.8		%		70-130	06-DEC-16
Uranium (U)-Total			104.0		%		70-130	06-DEC-16
Vanadium (V)-Total			128.5		%		70-130	06-DEC-16
Zinc (Zn)-Total			97.0		%		70-130	06-DEC-16
WG2446500-2 DUP		**L1842843-26**						
Aluminum (Al)-Total		64.6	66.4		mg/kg wwt	2.8	40	06-DEC-16
Antimony (Sb)-Total		0.0292	0.0271		mg/kg wwt	7.3	40	06-DEC-16

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3612601								
WG2446500-2 DUP		**L1842843-26**						
Arsenic (As)-Total		1.83	1.94		mg/kg wwt	6.1	40	06-DEC-16
Barium (Ba)-Total		1.83	2.54		mg/kg wwt	33	40	06-DEC-16
Beryllium (Be)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	06-DEC-16
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	06-DEC-16
Boron (B)-Total		0.40	0.44		mg/kg wwt	10	40	06-DEC-16
Cadmium (Cd)-Total		0.0223	0.0235		mg/kg wwt	5.4	40	06-DEC-16
Calcium (Ca)-Total		9180	13500		mg/kg wwt	38	60	06-DEC-16
Cesium (Cs)-Total		0.0107	0.0113		mg/kg wwt	5.2	40	06-DEC-16
Chromium (Cr)-Total		0.144	0.150		mg/kg wwt	4.2	40	06-DEC-16
Cobalt (Co)-Total		0.0859	0.101		mg/kg wwt	16	40	06-DEC-16
Copper (Cu)-Total		3.75	3.99		mg/kg wwt	6.4	40	06-DEC-16
Iron (Fe)-Total		158	160		mg/kg wwt	1.4	40	06-DEC-16
Lead (Pb)-Total		0.200	0.246		mg/kg wwt	21	40	06-DEC-16
Lithium (Li)-Total		<0.10	0.11	RPD-NA	mg/kg wwt	N/A	40	06-DEC-16
Magnesium (Mg)-Total		498	616		mg/kg wwt	21	40	06-DEC-16
Manganese (Mn)-Total		4.15	4.63		mg/kg wwt	11	40	06-DEC-16
Molybdenum (Mo)-Total		0.263	0.272		mg/kg wwt	3.1	40	06-DEC-16
Nickel (Ni)-Total		0.214	0.214		mg/kg wwt	0.0	40	06-DEC-16
Phosphorus (P)-Total		7920	10700		mg/kg wwt	30	40	06-DEC-16
Potassium (K)-Total		3830	3930		mg/kg wwt	2.6	40	06-DEC-16
Rubidium (Rb)-Total		3.91	4.00		mg/kg wwt	2.2	40	06-DEC-16
Selenium (Se)-Total		0.331	0.349		mg/kg wwt	5.1	40	06-DEC-16
Sodium (Na)-Total		1440	1550		mg/kg wwt	7.5	40	06-DEC-16
Strontium (Sr)-Total		2.49	3.59		mg/kg wwt	36	60	06-DEC-16
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	06-DEC-16
Thallium (Tl)-Total		0.00082	0.00100		mg/kg wwt	19	40	06-DEC-16
Tin (Sn)-Total		0.035	0.046		mg/kg wwt	27	40	06-DEC-16
Uranium (U)-Total		0.0252	0.0302		mg/kg wwt	18	40	06-DEC-16
Vanadium (V)-Total		0.203	0.194		mg/kg wwt	4.6	40	06-DEC-16
Zinc (Zn)-Total		26.3	29.7		mg/kg wwt	12	40	06-DEC-16
Zirconium (Zr)-Total		0.071	0.094		mg/kg wwt	28	40	06-DEC-16
WG2446500-4 LCS								
Aluminum (Al)-Total			107.8		%		70-130	06-DEC-16
Antimony (Sb)-Total			103.6		%		70-130	06-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3612601								
WG2446500-4 LCS								
Arsenic (As)-Total			109.1		%		70-130	06-DEC-16
Barium (Ba)-Total			100.7		%		70-130	06-DEC-16
Beryllium (Be)-Total			103.4		%		70-130	06-DEC-16
Bismuth (Bi)-Total			103.7		%		70-130	06-DEC-16
Boron (B)-Total			88.3		%		70-130	06-DEC-16
Cadmium (Cd)-Total			105.0		%		70-130	06-DEC-16
Calcium (Ca)-Total			104.1		%		70-130	06-DEC-16
Cesium (Cs)-Total			98.9		%		70-130	06-DEC-16
Chromium (Cr)-Total			105.1		%		70-130	06-DEC-16
Cobalt (Co)-Total			103.7		%		70-130	06-DEC-16
Copper (Cu)-Total			101.7		%		70-130	06-DEC-16
Iron (Fe)-Total			99.4		%		70-130	06-DEC-16
Lead (Pb)-Total			104.3		%		70-130	06-DEC-16
Lithium (Li)-Total			102.1		%		70-130	06-DEC-16
Magnesium (Mg)-Total			105.3		%		70-130	06-DEC-16
Manganese (Mn)-Total			98.3		%		70-130	06-DEC-16
Molybdenum (Mo)-Total			105.8		%		70-130	06-DEC-16
Nickel (Ni)-Total			102.5		%		70-130	06-DEC-16
Potassium (K)-Total			106.1		%		70-130	06-DEC-16
Rubidium (Rb)-Total			109.0		%		70-130	06-DEC-16
Selenium (Se)-Total			103.5		%		70-130	06-DEC-16
Sodium (Na)-Total			104.9		%		70-130	06-DEC-16
Strontium (Sr)-Total			109.5		%		70-130	06-DEC-16
Tellurium (Te)-Total			106.5		%		70-130	06-DEC-16
Thallium (Tl)-Total			101.7		%		70-130	06-DEC-16
Tin (Sn)-Total			101.4		%		70-130	06-DEC-16
Uranium (U)-Total			103.6		%		70-130	06-DEC-16
Vanadium (V)-Total			109.0		%		70-130	06-DEC-16
Zinc (Zn)-Total			92.4		%		70-130	06-DEC-16
Zirconium (Zr)-Total			95.1		%		70-130	06-DEC-16
WG2446500-1 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	06-DEC-16
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	06-DEC-16
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	06-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3612601								
WG2446500-1 MB								
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	06-DEC-16
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	06-DEC-16
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	06-DEC-16
Boron (B)-Total			<0.20		mg/kg wwt		0.2	06-DEC-16
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	06-DEC-16
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	06-DEC-16
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	06-DEC-16
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	06-DEC-16
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	06-DEC-16
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	06-DEC-16
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	06-DEC-16
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	06-DEC-16
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	06-DEC-16
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	06-DEC-16
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	06-DEC-16
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	06-DEC-16
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	06-DEC-16
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	06-DEC-16
Potassium (K)-Total			<4.0		mg/kg wwt		4	06-DEC-16
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	06-DEC-16
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	06-DEC-16
Sodium (Na)-Total			<4.0		mg/kg wwt		4	06-DEC-16
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	06-DEC-16
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	06-DEC-16
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	06-DEC-16
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	06-DEC-16
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	06-DEC-16
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	06-DEC-16
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	06-DEC-16
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	06-DEC-16
Batch R3613168								
WG2447279-3 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.0134		mg/kg wwt		0-0.0177	07-DEC-16
Arsenic (As)-Total			106.2		%		70-130	07-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3613168								
WG2447279-3 CRM		**VA-NIST-1566B**						
Barium (Ba)-Total			106.0		%		70-130	07-DEC-16
Boron (B)-Total			111.9		%		70-130	07-DEC-16
Cadmium (Cd)-Total			102.7		%		70-130	07-DEC-16
Calcium (Ca)-Total			107.4		%		70-130	07-DEC-16
Chromium (Cr)-Total			107.6		%		70-130	07-DEC-16
Cobalt (Co)-Total			110.2		%		70-130	07-DEC-16
Copper (Cu)-Total			104.4		%		70-130	07-DEC-16
Iron (Fe)-Total			112.7		%		70-130	07-DEC-16
Lead (Pb)-Total			116.8		%		70-130	07-DEC-16
Magnesium (Mg)-Total			117.1		%		70-130	07-DEC-16
Manganese (Mn)-Total			114.0		%		70-130	07-DEC-16
Molybdenum (Mo)-Total			111.7		%		70-130	07-DEC-16
Nickel (Ni)-Total			123.6		%		70-130	07-DEC-16
Phosphorus (P)-Total			130.0		%		70-130	07-DEC-16
Potassium (K)-Total			120.5		%		70-130	07-DEC-16
Rubidium (Rb)-Total			113.2		%		70-130	07-DEC-16
Selenium (Se)-Total			111.0		%		70-130	07-DEC-16
Sodium (Na)-Total			116.6		%		70-130	07-DEC-16
Strontium (Sr)-Total			100.6		%		70-130	07-DEC-16
Uranium (U)-Total			115.2		%		70-130	07-DEC-16
Vanadium (V)-Total			115.6		%		70-130	07-DEC-16
Zinc (Zn)-Total			94.8		%		70-130	07-DEC-16
WG2447279-4 LCS								
Aluminum (Al)-Total			103.2		%		70-130	07-DEC-16
Antimony (Sb)-Total			99.6		%		70-130	07-DEC-16
Arsenic (As)-Total			99.8		%		70-130	07-DEC-16
Barium (Ba)-Total			98.7		%		70-130	07-DEC-16
Beryllium (Be)-Total			108.1		%		70-130	07-DEC-16
Bismuth (Bi)-Total			102.5		%		70-130	07-DEC-16
Boron (B)-Total			94.8		%		70-130	07-DEC-16
Cadmium (Cd)-Total			95.9		%		70-130	07-DEC-16
Calcium (Ca)-Total			105.1		%		70-130	07-DEC-16
Cesium (Cs)-Total			104.7		%		70-130	07-DEC-16
Chromium (Cr)-Total			91.8		%		70-130	07-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3613168								
WG2447279-4 LCS								
Cobalt (Co)-Total			94.7		%		70-130	07-DEC-16
Copper (Cu)-Total			93.6		%		70-130	07-DEC-16
Iron (Fe)-Total			102.2		%		70-130	07-DEC-16
Lead (Pb)-Total			100.3		%		70-130	07-DEC-16
Lithium (Li)-Total			91.8		%		70-130	07-DEC-16
Magnesium (Mg)-Total			102.4		%		70-130	07-DEC-16
Manganese (Mn)-Total			95.7		%		70-130	07-DEC-16
Molybdenum (Mo)-Total			101.0		%		70-130	07-DEC-16
Nickel (Ni)-Total			95.6		%		70-130	07-DEC-16
Phosphorus (P)-Total			111.3		%		70-130	07-DEC-16
Potassium (K)-Total			101.9		%		70-130	07-DEC-16
Rubidium (Rb)-Total			100.5		%		70-130	07-DEC-16
Selenium (Se)-Total			97.0		%		70-130	07-DEC-16
Sodium (Na)-Total			105.6		%		70-130	07-DEC-16
Strontium (Sr)-Total			107.8		%		70-130	07-DEC-16
Tellurium (Te)-Total			98.2		%		70-130	07-DEC-16
Thallium (Tl)-Total			98.9		%		70-130	07-DEC-16
Tin (Sn)-Total			97.1		%		70-130	07-DEC-16
Uranium (U)-Total			110.5		%		70-130	07-DEC-16
Vanadium (V)-Total			95.0		%		70-130	07-DEC-16
Zinc (Zn)-Total			89.4		%		70-130	07-DEC-16
Zirconium (Zr)-Total			98.9		%		70-130	07-DEC-16
WG2447279-1 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	07-DEC-16
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	07-DEC-16
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	07-DEC-16
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	07-DEC-16
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	07-DEC-16
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	07-DEC-16
Boron (B)-Total			<0.20		mg/kg wwt		0.2	07-DEC-16
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	07-DEC-16
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	07-DEC-16
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	07-DEC-16
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	07-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3613168								
WG2447279-1 MB								
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	07-DEC-16
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	07-DEC-16
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	07-DEC-16
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	07-DEC-16
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	07-DEC-16
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	07-DEC-16
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	07-DEC-16
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	07-DEC-16
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	07-DEC-16
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	07-DEC-16
Potassium (K)-Total			<4.0		mg/kg wwt		4	07-DEC-16
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	07-DEC-16
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	07-DEC-16
Sodium (Na)-Total			<4.0		mg/kg wwt		4	07-DEC-16
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	07-DEC-16
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	07-DEC-16
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	07-DEC-16
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	07-DEC-16
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	07-DEC-16
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	07-DEC-16
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	07-DEC-16
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	07-DEC-16
Batch R3613262								
WG2446500-4 LCS								
Phosphorus (P)-Total			103.1		%		70-130	07-DEC-16
Batch R3615366								
WG2448071-3 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.0028		mg/kg wwt		0-0.0177	11-DEC-16
Arsenic (As)-Total			112.1		%		70-130	11-DEC-16
Barium (Ba)-Total			106.1		%		70-130	11-DEC-16
Boron (B)-Total			110.5		%		70-130	11-DEC-16
Cadmium (Cd)-Total			111.6		%		70-130	11-DEC-16
Calcium (Ca)-Total			105.6		%		70-130	11-DEC-16
Chromium (Cr)-Total			109.4		%		70-130	11-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3615366								
WG2448071-3 CRM		**VA-NIST-1566B**						
Cobalt (Co)-Total			111.4		%		70-130	11-DEC-16
Copper (Cu)-Total			110.6		%		70-130	11-DEC-16
Iron (Fe)-Total			117.2		%		70-130	11-DEC-16
Lead (Pb)-Total			117.2		%		70-130	11-DEC-16
Magnesium (Mg)-Total			112.8		%		70-130	11-DEC-16
Manganese (Mn)-Total			111.7		%		70-130	11-DEC-16
Molybdenum (Mo)-Total			114.9		%		70-130	11-DEC-16
Nickel (Ni)-Total			118.7		%		70-130	11-DEC-16
Phosphorus (P)-Total			120.7		%		70-130	11-DEC-16
Potassium (K)-Total			112.2		%		70-130	11-DEC-16
Rubidium (Rb)-Total			115.3		%		70-130	11-DEC-16
Selenium (Se)-Total			113.4		%		70-130	11-DEC-16
Sodium (Na)-Total			108.6		%		70-130	11-DEC-16
Strontium (Sr)-Total			101.5		%		70-130	11-DEC-16
Uranium (U)-Total			108.5		%		70-130	11-DEC-16
Vanadium (V)-Total			115.1		%		70-130	11-DEC-16
Zinc (Zn)-Total			104.7		%		70-130	11-DEC-16
WG2448806-3 CRM		**VA-NIST-1566B**						
Arsenic (As)-Total			109.8		%		70-130	11-DEC-16
Barium (Ba)-Total			109.7		%		70-130	11-DEC-16
Boron (B)-Total			105.6		%		70-130	11-DEC-16
Cadmium (Cd)-Total			94.1		%		70-130	11-DEC-16
Calcium (Ca)-Total			100.7		%		70-130	11-DEC-16
Chromium (Cr)-Total			107.8		%		70-130	11-DEC-16
Cobalt (Co)-Total			110.2		%		70-130	11-DEC-16
Copper (Cu)-Total			111.3		%		70-130	11-DEC-16
Iron (Fe)-Total			109.8		%		70-130	11-DEC-16
Lead (Pb)-Total			108.3		%		70-130	11-DEC-16
Magnesium (Mg)-Total			112.6		%		70-130	11-DEC-16
Manganese (Mn)-Total			112.9		%		70-130	11-DEC-16
Molybdenum (Mo)-Total			107.7		%		70-130	11-DEC-16
Nickel (Ni)-Total			124.4		%		70-130	11-DEC-16
Phosphorus (P)-Total			122.8		%		70-130	11-DEC-16
Potassium (K)-Total			112.4		%		70-130	11-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3615366								
WG2448806-3 CRM		**VA-NIST-1566B**						
Rubidium (Rb)-Total			114.5		%		70-130	11-DEC-16
Selenium (Se)-Total			106.9		%		70-130	11-DEC-16
Sodium (Na)-Total			108.6		%		70-130	11-DEC-16
Strontium (Sr)-Total			97.2		%		70-130	11-DEC-16
Uranium (U)-Total			104.8		%		70-130	11-DEC-16
Vanadium (V)-Total			116.8		%		70-130	11-DEC-16
Zinc (Zn)-Total			104.5		%		70-130	11-DEC-16
WG2448071-2 DUP		**L1842843-20**						
Aluminum (Al)-Total		6.95	8.56		mg/kg wwt	21	40	11-DEC-16
Antimony (Sb)-Total		0.0210	0.0278		mg/kg wwt	28	40	11-DEC-16
Arsenic (As)-Total		2.02	2.15		mg/kg wwt	6.0	40	11-DEC-16
Barium (Ba)-Total		2.89	3.17		mg/kg wwt	9.2	40	11-DEC-16
Beryllium (Be)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	11-DEC-16
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	11-DEC-16
Boron (B)-Total		0.88	1.05		mg/kg wwt	18	40	11-DEC-16
Cadmium (Cd)-Total		0.0567	0.0610		mg/kg wwt	7.5	40	11-DEC-16
Calcium (Ca)-Total		8470	8290		mg/kg wwt	2.1	60	11-DEC-16
Cesium (Cs)-Total		0.536	0.565		mg/kg wwt	5.3	40	11-DEC-16
Chromium (Cr)-Total		0.019	0.027		mg/kg wwt	34	40	11-DEC-16
Cobalt (Co)-Total		0.0581	0.0652		mg/kg wwt	11	40	11-DEC-16
Copper (Cu)-Total		2.31	2.45		mg/kg wwt	5.8	40	11-DEC-16
Iron (Fe)-Total		66.5	71.4		mg/kg wwt	7.0	40	11-DEC-16
Lead (Pb)-Total		0.0706	0.0857		mg/kg wwt	19	40	11-DEC-16
Lithium (Li)-Total		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	40	11-DEC-16
Magnesium (Mg)-Total		448	471		mg/kg wwt	5.0	40	11-DEC-16
Manganese (Mn)-Total		3.88	4.15		mg/kg wwt	6.7	40	11-DEC-16
Molybdenum (Mo)-Total		0.128	0.141		mg/kg wwt	10	40	11-DEC-16
Nickel (Ni)-Total		0.151	0.202		mg/kg wwt	29	40	11-DEC-16
Phosphorus (P)-Total		7580	7500		mg/kg wwt	1.1	40	11-DEC-16
Potassium (K)-Total		3670	3750		mg/kg wwt	2.2	40	11-DEC-16
Rubidium (Rb)-Total		13.1	13.6		mg/kg wwt	3.6	40	11-DEC-16
Selenium (Se)-Total		0.213	0.232		mg/kg wwt	8.4	40	11-DEC-16
Sodium (Na)-Total		1410	1420		mg/kg wwt	1.2	40	11-DEC-16
Strontium (Sr)-Total		5.59	5.50		mg/kg wwt	1.5	60	11-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3615366								
WG2448071-2 DUP		**L1842843-20**						
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	11-DEC-16
Thallium (Tl)-Total		<0.00040	0.00042	RPD-NA	mg/kg wwt	N/A	40	11-DEC-16
Tin (Sn)-Total		0.048	0.053		mg/kg wwt	9.0	40	11-DEC-16
Uranium (U)-Total		0.00099	0.00113		mg/kg wwt	13	40	11-DEC-16
Vanadium (V)-Total		<0.020	0.022	RPD-NA	mg/kg wwt	N/A	40	11-DEC-16
Zinc (Zn)-Total		22.7	24.5		mg/kg wwt	7.9	40	11-DEC-16
Zirconium (Zr)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	11-DEC-16
WG2448806-2 DUP		**L1842843-51**						
Aluminum (Al)-Total		6.27	5.84		mg/kg wwt	7.1	40	11-DEC-16
Antimony (Sb)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	11-DEC-16
Arsenic (As)-Total		0.0127	0.0073	J	mg/kg wwt	0.0053	0.008	11-DEC-16
Barium (Ba)-Total		1.63	1.60		mg/kg wwt	2.2	40	11-DEC-16
Beryllium (Be)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	11-DEC-16
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	11-DEC-16
Boron (B)-Total		8.59	8.95		mg/kg wwt	4.2	40	11-DEC-16
Cadmium (Cd)-Total		0.0465	0.0449		mg/kg wwt	3.5	40	11-DEC-16
Calcium (Ca)-Total		431	430		mg/kg wwt	0.3	60	11-DEC-16
Cesium (Cs)-Total		0.0105	0.0111		mg/kg wwt	5.2	40	11-DEC-16
Chromium (Cr)-Total		0.173	0.164		mg/kg wwt	5.0	40	11-DEC-16
Cobalt (Co)-Total		0.0270	0.0268		mg/kg wwt	1.1	40	11-DEC-16
Copper (Cu)-Total		3.95	3.70		mg/kg wwt	6.7	40	11-DEC-16
Iron (Fe)-Total		23.6	23.2		mg/kg wwt	1.7	40	11-DEC-16
Lead (Pb)-Total		0.0076	0.0073		mg/kg wwt	4.0	40	11-DEC-16
Lithium (Li)-Total		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	40	11-DEC-16
Magnesium (Mg)-Total		1490	1370		mg/kg wwt	8.1	40	11-DEC-16
Manganese (Mn)-Total		21.9	20.7		mg/kg wwt	5.7	40	11-DEC-16
Molybdenum (Mo)-Total		1.29	1.26		mg/kg wwt	2.0	40	11-DEC-16
Nickel (Ni)-Total		0.939	0.991		mg/kg wwt	5.4	40	11-DEC-16
Phosphorus (P)-Total		3760	3440		mg/kg wwt	8.9	40	11-DEC-16
Potassium (K)-Total		4970	4500		mg/kg wwt	9.9	40	11-DEC-16
Rubidium (Rb)-Total		5.59	5.42		mg/kg wwt	3.0	40	11-DEC-16
Selenium (Se)-Total		0.172	0.182		mg/kg wwt	5.3	40	11-DEC-16
Sodium (Na)-Total		2760	2630		mg/kg wwt	4.6	40	11-DEC-16
Strontium (Sr)-Total		3.92	4.00		mg/kg wwt	2.0	60	11-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3615366								
WG2448806-2 DUP		**L1842843-51**						
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	11-DEC-16
Thallium (Tl)-Total		<0.00040	<0.00040	RPD-NA	mg/kg wwt	N/A	40	11-DEC-16
Tin (Sn)-Total		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	40	11-DEC-16
Uranium (U)-Total		<0.00040	0.00058	RPD-NA	mg/kg wwt	N/A	40	11-DEC-16
Vanadium (V)-Total		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	40	11-DEC-16
Zinc (Zn)-Total		23.0	21.2		mg/kg wwt	8.3	40	11-DEC-16
Zirconium (Zr)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	11-DEC-16
WG2448071-4 LCS								
Aluminum (Al)-Total			99.7		%		70-130	11-DEC-16
Antimony (Sb)-Total			97.9		%		70-130	11-DEC-16
Arsenic (As)-Total			97.8		%		70-130	11-DEC-16
Barium (Ba)-Total			96.8		%		70-130	11-DEC-16
Beryllium (Be)-Total			92.5		%		70-130	11-DEC-16
Bismuth (Bi)-Total			96.5		%		70-130	11-DEC-16
Boron (B)-Total			88.7		%		70-130	11-DEC-16
Cadmium (Cd)-Total			96.8		%		70-130	11-DEC-16
Calcium (Ca)-Total			95.8		%		70-130	11-DEC-16
Cesium (Cs)-Total			92.8		%		70-130	11-DEC-16
Chromium (Cr)-Total			97.5		%		70-130	11-DEC-16
Cobalt (Co)-Total			98.8		%		70-130	11-DEC-16
Copper (Cu)-Total			96.7		%		70-130	11-DEC-16
Iron (Fe)-Total			98.0		%		70-130	11-DEC-16
Lead (Pb)-Total			96.9		%		70-130	11-DEC-16
Lithium (Li)-Total			101.9		%		70-130	11-DEC-16
Magnesium (Mg)-Total			97.9		%		70-130	11-DEC-16
Manganese (Mn)-Total			100.1		%		70-130	11-DEC-16
Molybdenum (Mo)-Total			96.1		%		70-130	11-DEC-16
Nickel (Ni)-Total			97.4		%		70-130	11-DEC-16
Phosphorus (P)-Total			122.0		%		70-130	11-DEC-16
Potassium (K)-Total			99.4		%		70-130	11-DEC-16
Rubidium (Rb)-Total			98.5		%		70-130	11-DEC-16
Selenium (Se)-Total			97.1		%		70-130	11-DEC-16
Sodium (Na)-Total			98.7		%		70-130	11-DEC-16
Strontium (Sr)-Total			103.1		%		70-130	11-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3615366								
WG2448071-4 LCS								
Tellurium (Te)-Total			90.9		%		70-130	11-DEC-16
Thallium (Tl)-Total			95.4		%		70-130	11-DEC-16
Tin (Sn)-Total			94.8		%		70-130	11-DEC-16
Uranium (U)-Total			97.4		%		70-130	11-DEC-16
Vanadium (V)-Total			99.5		%		70-130	11-DEC-16
Zinc (Zn)-Total			93.0		%		70-130	11-DEC-16
Zirconium (Zr)-Total			86.5		%		70-130	11-DEC-16
WG2448806-4 LCS								
Aluminum (Al)-Total			103.1		%		70-130	11-DEC-16
Antimony (Sb)-Total			95.6		%		70-130	11-DEC-16
Arsenic (As)-Total			103.9		%		70-130	11-DEC-16
Barium (Ba)-Total			100.7		%		70-130	11-DEC-16
Beryllium (Be)-Total			91.7		%		70-130	11-DEC-16
Bismuth (Bi)-Total			95.5		%		70-130	11-DEC-16
Boron (B)-Total			89.3		%		70-130	11-DEC-16
Cadmium (Cd)-Total			97.9		%		70-130	11-DEC-16
Calcium (Ca)-Total			94.0		%		70-130	11-DEC-16
Cesium (Cs)-Total			91.5		%		70-130	11-DEC-16
Chromium (Cr)-Total			103.5		%		70-130	11-DEC-16
Cobalt (Co)-Total			103.0		%		70-130	11-DEC-16
Copper (Cu)-Total			100.6		%		70-130	11-DEC-16
Iron (Fe)-Total			100.2		%		70-130	11-DEC-16
Lead (Pb)-Total			96.6		%		70-130	11-DEC-16
Lithium (Li)-Total			98.6		%		70-130	11-DEC-16
Magnesium (Mg)-Total			105.6		%		70-130	11-DEC-16
Manganese (Mn)-Total			106.2		%		70-130	11-DEC-16
Molybdenum (Mo)-Total			94.1		%		70-130	11-DEC-16
Nickel (Ni)-Total			101.7		%		70-130	11-DEC-16
Phosphorus (P)-Total			113.2		%		70-130	11-DEC-16
Potassium (K)-Total			106.2		%		70-130	11-DEC-16
Rubidium (Rb)-Total			102.5		%		70-130	11-DEC-16
Selenium (Se)-Total			97.8		%		70-130	11-DEC-16
Sodium (Na)-Total			103.4		%		70-130	11-DEC-16
Strontium (Sr)-Total			101.1		%		70-130	11-DEC-16

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3615366								
WG2448806-4 LCS								
Tellurium (Te)-Total			90.4		%		70-130	11-DEC-16
Thallium (Tl)-Total			94.4		%		70-130	11-DEC-16
Tin (Sn)-Total			93.9		%		70-130	11-DEC-16
Uranium (U)-Total			96.0		%		70-130	11-DEC-16
Vanadium (V)-Total			104.6		%		70-130	11-DEC-16
Zinc (Zn)-Total			95.9		%		70-130	11-DEC-16
Zirconium (Zr)-Total			85.6		%		70-130	11-DEC-16
WG2448071-1 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	11-DEC-16
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	11-DEC-16
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	11-DEC-16
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	11-DEC-16
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	11-DEC-16
Boron (B)-Total			<0.20		mg/kg wwt		0.2	11-DEC-16
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	11-DEC-16
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	11-DEC-16
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	11-DEC-16
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	11-DEC-16
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	11-DEC-16
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	11-DEC-16
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	11-DEC-16
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	11-DEC-16
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	11-DEC-16
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	11-DEC-16
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	11-DEC-16
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	11-DEC-16
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	11-DEC-16
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	11-DEC-16
Potassium (K)-Total			<4.0		mg/kg wwt		4	11-DEC-16
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	11-DEC-16
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	11-DEC-16
Sodium (Na)-Total			<4.0		mg/kg wwt		4	11-DEC-16
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	11-DEC-16
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	11-DEC-16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3615366								
WG2448071-1 MB								
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	11-DEC-16
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	11-DEC-16
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	11-DEC-16
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	11-DEC-16
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	11-DEC-16
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	11-DEC-16
WG2448806-1 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	11-DEC-16
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	11-DEC-16
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	11-DEC-16
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	11-DEC-16
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	11-DEC-16
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	11-DEC-16
Boron (B)-Total			<0.20		mg/kg wwt		0.2	11-DEC-16
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	11-DEC-16
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	11-DEC-16
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	11-DEC-16
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	11-DEC-16
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	11-DEC-16
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	11-DEC-16
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	11-DEC-16
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	11-DEC-16
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	11-DEC-16
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	11-DEC-16
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	11-DEC-16
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	11-DEC-16
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	11-DEC-16
Potassium (K)-Total			<4.0		mg/kg wwt		4	11-DEC-16
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	11-DEC-16
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	11-DEC-16
Sodium (Na)-Total			<4.0		mg/kg wwt		4	11-DEC-16
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	11-DEC-16
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	11-DEC-16
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	11-DEC-16

Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3615366								
WG2448806-1 MB								
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	11-DEC-16
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	11-DEC-16
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	11-DEC-16
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	11-DEC-16
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	11-DEC-16
Batch R3615468								
WG2447279-2 DUP		**L1842843-12**						
Aluminum (Al)-Total		16.4	16.4		mg/kg wwt	0.1	40	09-DEC-16
Antimony (Sb)-Total		0.0370	0.0393		mg/kg wwt	6.1	40	09-DEC-16
Arsenic (As)-Total		1.52	1.60		mg/kg wwt	5.4	40	09-DEC-16
Barium (Ba)-Total		2.36	2.72		mg/kg wwt	14	40	09-DEC-16
Beryllium (Be)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	09-DEC-16
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	09-DEC-16
Boron (B)-Total		0.75	0.76		mg/kg wwt	1.3	40	09-DEC-16
Cadmium (Cd)-Total		0.0216	0.0228		mg/kg wwt	5.0	40	09-DEC-16
Calcium (Ca)-Total		10100	12600		mg/kg wwt	22	60	09-DEC-16
Cesium (Cs)-Total		0.201	0.201		mg/kg wwt	0.3	40	09-DEC-16
Chromium (Cr)-Total		0.048	0.049		mg/kg wwt	1.4	40	09-DEC-16
Cobalt (Co)-Total		0.0694	0.0759		mg/kg wwt	9.0	40	09-DEC-16
Copper (Cu)-Total		2.40	2.40		mg/kg wwt	0.0	40	09-DEC-16
Iron (Fe)-Total		88.8	91.9		mg/kg wwt	3.4	40	09-DEC-16
Lead (Pb)-Total		0.0924	0.0802		mg/kg wwt	14	40	09-DEC-16
Lithium (Li)-Total		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	40	09-DEC-16
Magnesium (Mg)-Total		435	466		mg/kg wwt	6.7	40	09-DEC-16
Manganese (Mn)-Total		3.03	3.21		mg/kg wwt	6.0	40	09-DEC-16
Molybdenum (Mo)-Total		0.140	0.144		mg/kg wwt	2.8	40	09-DEC-16
Nickel (Ni)-Total		0.212	0.218		mg/kg wwt	2.7	40	09-DEC-16
Phosphorus (P)-Total		7110	8130		mg/kg wwt	13	40	09-DEC-16
Potassium (K)-Total		3400	3370		mg/kg wwt	0.9	40	09-DEC-16
Rubidium (Rb)-Total		13.5	13.6		mg/kg wwt	0.8	40	09-DEC-16
Selenium (Se)-Total		0.275	0.277		mg/kg wwt	0.7	40	09-DEC-16
Sodium (Na)-Total		1360	1400		mg/kg wwt	3.3	40	09-DEC-16
Strontium (Sr)-Total		3.98	4.75		mg/kg wwt	18	60	09-DEC-16
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	09-DEC-16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3615468								
WG2447279-2 DUP		**L1842843-12**						
Thallium (Tl)-Total		0.00059	0.00059		mg/kg wwt	0.1	40	09-DEC-16
Tin (Sn)-Total		<0.020	0.026	RPD-NA	mg/kg wwt	N/A	40	09-DEC-16
Uranium (U)-Total		0.00125	0.00159		mg/kg wwt	24	40	09-DEC-16
Vanadium (V)-Total		0.047	0.050		mg/kg wwt	7.3	40	09-DEC-16
Zinc (Zn)-Total		29.3	30.6		mg/kg wwt	4.2	40	09-DEC-16
Zirconium (Zr)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	09-DEC-16
Batch R3616994								
WG2448806-3 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.0143		mg/kg wwt		0-0.0177	13-DEC-16
WG2448071-1 MB								
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	13-DEC-16
WG2448806-1 MB								
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	13-DEC-16
MOISTURE-TISS-VA	**Tissue**							
Batch R3612201								
WG2446501-3 DUP		**L1842843-25**						
% Moisture		69.2	69.6		%	0.5	20	06-DEC-16
WG2446501-2 LCS								
% Moisture			100.2		%		90-110	06-DEC-16
WG2446501-1 MB								
% Moisture			<0.50		%		0.5	06-DEC-16
Batch R3612958								
WG2447278-3 DUP		**L1842843-10**						
% Moisture		72.2	70.4		%	2.5	20	07-DEC-16
WG2447278-2 LCS								
% Moisture			103.1		%		90-110	07-DEC-16
WG2447278-1 MB								
% Moisture			<0.50		%		0.5	07-DEC-16
Batch R3616053								
WG2450734-1 DUP		**L1842843-8**						
% Moisture		65.2	67.1		%	2.9	20	09-DEC-16
Batch R3616065								
WG2448802-3 DUP		**L1842843-51**						
% Moisture		4.54	4.75		%	4.5	20	08-DEC-16
WG2448802-6 DUP		**L1842843-44**						
% Moisture		70.5	70.3		%	0.3	20	08-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-TISS-VA	**Tissue**							
Batch R3616065								
WG2448802-2 LCS								
% Moisture			100.4		%		90-110	08-DEC-16
WG2448802-5 LCS								
% Moisture			100.3		%		90-110	08-DEC-16
WG2448802-1 MB								
% Moisture			<0.50		%		0.5	08-DEC-16
WG2448802-4 MB								
% Moisture			<0.50		%		0.5	08-DEC-16

Quality Control Report

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Burnaby Laboratory
8081 Lougheed Hi ghway
Burnaby, BC
V5A 1W9
Phone: (604) 235-4188
After hours: (604) 220-4188
Contact: Amber Springer

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

DATE:	October 13, 2016
LAB WORK ORDER #	

REPORT TO:	
COMPANY: Golder Associates Ltd.	
CONTACT: Steven Fiddler	
ADDRESS: 16820 107 Avenue, Edmonton, Alberta	
T5P 4C3	
PHONE: (780) 930-5478	FAX: (780)-483-1574
INVOICE TO:	SAME Y / N
COMPANY: Golder Associates Ltd.	
CONTACT: Steven Fiddler	
ADDRESS: 16820 107 Avenue, Edmonton, Alberta	
T5P 4C3	
PHONE: (780) 930-5478	FAX: (780) 483-1574

REPORT DISTRIBUTION: **ALL FINAL RESULTS WILL BE EMAILED**

EMAIL 1: Steven_Fiddler@Golder.com

EMAIL 2: lcesh@golder.com

SELECT: pdf X digital X MDD/EDD X

INDICATE BOTTLES: FILTERED/PRESERVED (F /P)

JOB # **13-1377-0044-23000-23003**

QUOTE BY EMAIL,

SERVICE REQUESTED	
X	REGULAR SERVICE (DEFAULT)
	RUSH SERVICE
	EMERGENCY SERVICE

ANALYSIS REQUEST

Golder SAMPLE ID number	SAMPLED BY / DATE / TIME	SAMPLE TYPE	SAMPLE WEIGHT (g)	% Moisture	Total metals in tissues (including silver, mercury and tin)	HAZARDOUS ? (Y/N)	NUMBER OF CONTAINERS	HIGHLY CONTAMINATED ? (Y/N)	LAB SAMPLE #
16-Giant-DM-34	DPEN/7Sep16	small mammal	18.1	x	x	N	1	Y	
16-Giant-DM-01	DPEN/7Sep16	small mammal	12.3	x	x	N	1	Y	
16-Giant-RV-02	DPEN/7Sep16	small mammal	23.5	x	x	N	1	Y	
16-Giant-DM-03	DPEN/7Sep16	small mammal	19.4	x	x	N	1	Y	
16-Giant-RV-04	DPEN/7Sep16	small mammal	15.2	x	x	N	1	Y	
16-Giant-RV-05	DPEN/7Sep16	small mammal	17.1	x	x	N	1	Y	
16-Giant-SH-06	DPEN/7Sep16	small mammal	4.2	x	x	N	1	Y	
16-Giant-RV-07	DPEN/7Sep16	small mammal	16.2	x	x	N	1	Y	
16-Giant-RV-08	DPEN/7Sep16	small mammal	16.6	x	x	N	1	Y	
16_Giant-DM-09	DPEN/7Sep16	small mammal	15.3	x	x	N	1	Y	
16-Giant-DM-10	DPEN/7Sep16	small mammal	16.6	x	x	N	1	Y	
16-Giant-RV-11	DPEN/7Sep16	small mammal	8.9	x	x	N	1	Y	
16-Giant-DM-12	DPEN/7Sep16	small mammal	13.5	x	x	N	1	Y	
16-Giant-DM-13	DPEN/7Sep16	small mammal	12.5	x	x	N	1	Y	
16-Giant-DM-14	DPEN/7Sep16	small mammal	12.7	x	x	N	1	Y	
16-Giant-DM-15	DPEN/7Sep16	small mammal	12.5	x	x	N	1	Y	
16-Giant-DM-16	DPEN/7Sep16	small mammal	13.7	x	x	N	1	Y	
16-Giant-DM-28	DPKB/8Sep16	small mammal	19.1	x	x	N	1	Y	
16-Giant-DM-29	DPKB/8Sep16	small mammal	18.1	x	x	N	1	Y	
16-Giant-DM-30	DPKB/8Sep16	small mammal	19.2	x	x	N	1	Y	
16-Giant-DM-31	DPKB/8Sep16	small mammal	19.2	x	x	N	1	Y	

L1842843-COFC

GOLDER ASSOCIATES LTD
ATTN: Steven Fiddler
16820 107 Ave NW
EDMONTON AB T5P 4C3

Date Received: 13-OCT-16
Report Date: 28-OCT-16 11:18 (MT)
Version: FINAL

Client Phone: 780-483-3499

Certificate of Analysis

Lab Work Order #: L1842861

Project P.O. #: NOT SUBMITTED
Job Reference: 13-1377-0044-23000-23003
C of C Numbers:
Legal Site Desc:

Jessica Spira, Env. Tech. DIPL
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-1 16-GIANT-S-01							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0352		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580938
Metals in Soil by CRC ICPMS							
Aluminum (Al)	8860		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Antimony (Sb)	4.53		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Arsenic (As)	104		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Barium (Ba)	55.2		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Beryllium (Be)	0.18		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cadmium (Cd)	0.116		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581474
Calcium (Ca)	5150		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Chromium (Cr)	27.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cobalt (Co)	4.38		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Copper (Cu)	13.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Iron (Fe)	15100		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lead (Pb)	5.57		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lithium (Li)	15.4		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Magnesium (Mg)	4700		20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Manganese (Mn)	110		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Molybdenum (Mo)	1.02		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Nickel (Ni)	14.2		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Phosphorus (P)	255		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Potassium (K)	750		100	mg/kg	22-OCT-16	22-OCT-16	R3581474
Selenium (Se)	0.23		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Silver (Ag)	<0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Sodium (Na)	79		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Strontium (Sr)	22.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Thallium (Tl)	0.067		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Titanium (Ti)	269		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Uranium (U)	0.774		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Vanadium (V)	27.0		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zinc (Zn)	19.4		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zirconium (Zr)	1.5		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
L1842861-2 16-GIANT-S-02							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.156	DLM	0.010	mg/kg	26-OCT-16	27-OCT-16	R3581483
Metals in Soil by CRC ICPMS							
Aluminum (Al)	4570	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Antimony (Sb)	31.7	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Arsenic (As)	204	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Barium (Ba)	145	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Beryllium (Be)	<0.20	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Boron (B)	<10	DLM	10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Bismuth (Bi)	<0.40	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Cadmium (Cd)	0.468	DLM	0.040	mg/kg	26-OCT-16	27-OCT-16	R3581644
Calcium (Ca)	27900	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Chromium (Cr)	8.5	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Cobalt (Co)	8.49	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-2 16-GIANT-S-02							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Copper (Cu)	17.6	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Iron (Fe)	5330	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Lead (Pb)	12.6	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Lithium (Li)	<4.0	DLM	4.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Magnesium (Mg)	4630	DLM	40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Manganese (Mn)	982	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Molybdenum (Mo)	1.05	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Nickel (Ni)	13.8	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Phosphorus (P)	970	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Potassium (K)	760	DLM	200	mg/kg	26-OCT-16	27-OCT-16	R3581644
Selenium (Se)	<0.40	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Silver (Ag)	<0.20	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Sodium (Na)	210	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Strontium (Sr)	108	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Thallium (Tl)	<0.10	DLM	0.10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Tin (Sn)	<2.0	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Titanium (Ti)	79.5	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Uranium (U)	1.22	DLM	0.10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Vanadium (V)	11.6	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Zinc (Zn)	40.8	DLM	4.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Zirconium (Zr)	<2.0	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
L1842861-3 16-GIANT-S-03A							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.119		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580938
Metals in Soil by CRC ICPMS							
Aluminum (Al)	1050		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Antimony (Sb)	19.5		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Arsenic (As)	213		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Barium (Ba)	49.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Beryllium (Be)	<0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Boron (B)	7.8		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cadmium (Cd)	0.244		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581474
Calcium (Ca)	17700		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Chromium (Cr)	2.54		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cobalt (Co)	0.98		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Copper (Cu)	8.09		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Iron (Fe)	2110		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lead (Pb)	2.99		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lithium (Li)	<2.0		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Magnesium (Mg)	2550		20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Manganese (Mn)	23.6		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Molybdenum (Mo)	1.58		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Nickel (Ni)	4.21		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Phosphorus (P)	466		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Potassium (K)	400		100	mg/kg	22-OCT-16	22-OCT-16	R3581474
Selenium (Se)	0.53		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Silver (Ag)	<0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Sodium (Na)	169		50	mg/kg	22-OCT-16	22-OCT-16	R3581474

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-3 16-GIANT-S-03A							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Strontium (Sr)	61.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Thallium (Tl)	<0.050		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Titanium (Ti)	19.2		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Uranium (U)	1.39		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Vanadium (V)	4.28		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zinc (Zn)	14.9		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zirconium (Zr)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
L1842861-4 16-GIANT-S-03B							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.166		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580938
Metals in Soil by CRC ICPMS							
Aluminum (Al)	5670		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Antimony (Sb)	44.5		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Arsenic (As)	151		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Barium (Ba)	112		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Beryllium (Be)	0.25		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Boron (B)	9.7		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cadmium (Cd)	0.359		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581474
Calcium (Ca)	18600		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Chromium (Cr)	12.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cobalt (Co)	6.03		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Copper (Cu)	19.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Iron (Fe)	8300		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lead (Pb)	18.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lithium (Li)	7.8		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Magnesium (Mg)	5480		20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Manganese (Mn)	326		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Molybdenum (Mo)	1.48		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Nickel (Ni)	14.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Phosphorus (P)	1030		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Potassium (K)	2140		100	mg/kg	22-OCT-16	22-OCT-16	R3581474
Selenium (Se)	0.21		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Silver (Ag)	0.18		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Sodium (Na)	261		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Strontium (Sr)	74.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Thallium (Tl)	0.055		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Tin (Sn)	1.1		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Titanium (Ti)	129		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Uranium (U)	1.62		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Vanadium (V)	16.4		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zinc (Zn)	35.8		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zirconium (Zr)	3.5		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
L1842861-5 16-GIANT-S-03B-DUP							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Miscellaneous Parameters							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-5 16-GIANT-S-03B-DUP							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Mercury (Hg)	0.152		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580938
Metals in Soil by CRC ICPMS							
Aluminum (Al)	5510		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Antimony (Sb)	41.1		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Arsenic (As)	136		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Barium (Ba)	103		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Beryllium (Be)	0.23		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Boron (B)	9.9		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cadmium (Cd)	0.328		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581474
Calcium (Ca)	18900		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Chromium (Cr)	12.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cobalt (Co)	5.35		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Copper (Cu)	18.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Iron (Fe)	7820		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lead (Pb)	41.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lithium (Li)	7.5		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Magnesium (Mg)	5240		20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Manganese (Mn)	284		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Molybdenum (Mo)	1.48		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Nickel (Ni)	13.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Phosphorus (P)	912		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Potassium (K)	2080		100	mg/kg	22-OCT-16	22-OCT-16	R3581474
Selenium (Se)	0.22		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Silver (Ag)	0.18		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Sodium (Na)	263		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Strontium (Sr)	73.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Thallium (Tl)	0.055		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Tin (Sn)	39.8		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Titanium (Ti)	121		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Uranium (U)	1.54		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Vanadium (V)	15.1		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zinc (Zn)	35.7		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zirconium (Zr)	3.5		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
L1842861-6 16-GIANT-S-04							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.142	DLM	0.010	mg/kg	26-OCT-16	27-OCT-16	R3581483
Metals in Soil by CRC ICPMS							
Aluminum (Al)	3540	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Antimony (Sb)	26.8	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Arsenic (As)	137	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Barium (Ba)	137	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Beryllium (Be)	<0.20	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Boron (B)	11	DLM	10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Bismuth (Bi)	<0.40	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Cadmium (Cd)	0.226	DLM	0.040	mg/kg	26-OCT-16	27-OCT-16	R3581644
Calcium (Ca)	25700	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Chromium (Cr)	10.1	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Cobalt (Co)	5.78	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Copper (Cu)	19.9	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-6 16-GIANT-S-04							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Iron (Fe)	7400	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Lead (Pb)	20.1	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Lithium (Li)	<4.0	DLM	4.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Magnesium (Mg)	3650	DLM	40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Manganese (Mn)	341	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Molybdenum (Mo)	0.30	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Nickel (Ni)	9.5	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Phosphorus (P)	870	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Potassium (K)	1120	DLM	200	mg/kg	26-OCT-16	27-OCT-16	R3581644
Selenium (Se)	<0.40	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Silver (Ag)	<0.20	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Sodium (Na)	<100	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Strontium (Sr)	22.9	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Thallium (Tl)	<0.10	DLM	0.10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Tin (Sn)	2.1	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Titanium (Ti)	136	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Uranium (U)	0.37	DLM	0.10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Vanadium (V)	11.9	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Zinc (Zn)	73.3	DLM	4.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Zirconium (Zr)	<2.0	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
L1842861-7 16-GIANT-S-05							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.309		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580938
Metals in Soil by CRC ICPMS							
Aluminum (Al)	6760		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Antimony (Sb)	92.0		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Arsenic (As)	419		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Barium (Ba)	127		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Beryllium (Be)	0.39		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Boron (B)	6.7		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cadmium (Cd)	0.422		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581474
Calcium (Ca)	18700		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Chromium (Cr)	12.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cobalt (Co)	5.94		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Copper (Cu)	25.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Iron (Fe)	10500		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lead (Pb)	43.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lithium (Li)	5.1		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Magnesium (Mg)	3950		20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Manganese (Mn)	333		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Molybdenum (Mo)	0.91		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Nickel (Ni)	18.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Phosphorus (P)	815		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Potassium (K)	1230		100	mg/kg	22-OCT-16	22-OCT-16	R3581474
Selenium (Se)	0.31		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Silver (Ag)	0.31		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Sodium (Na)	297		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Strontium (Sr)	52.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-7 16-GIANT-S-05							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Thallium (Tl)	0.051		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Tin (Sn)	1.2		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Titanium (Ti)	106		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Uranium (U)	1.23		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Vanadium (V)	18.8		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zinc (Zn)	48.2		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zirconium (Zr)	2.7		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
L1842861-8 16-GIANT-S-06							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.204		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580938
Metals in Soil by CRC ICPMS							
Aluminum (Al)	10900		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Antimony (Sb)	72.9		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Arsenic (As)	533	DLHC	0.25	mg/kg	22-OCT-16	22-OCT-16	R3581474
Barium (Ba)	140		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Beryllium (Be)	0.51		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Boron (B)	7.6		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cadmium (Cd)	0.619		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581474
Calcium (Ca)	16300		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Chromium (Cr)	18.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cobalt (Co)	11.9		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Copper (Cu)	28.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Iron (Fe)	15700		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lead (Pb)	39.8		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lithium (Li)	12.3		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Magnesium (Mg)	5340		20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Manganese (Mn)	704		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Molybdenum (Mo)	0.63		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Nickel (Ni)	21.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Phosphorus (P)	937		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Potassium (K)	2190		100	mg/kg	22-OCT-16	22-OCT-16	R3581474
Selenium (Se)	0.33		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Silver (Ag)	0.28		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Sodium (Na)	339		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Strontium (Sr)	49.8		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Thallium (Tl)	0.081		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Titanium (Ti)	145		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Uranium (U)	2.05		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Vanadium (V)	24.4		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zinc (Zn)	76.3		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zirconium (Zr)	2.2		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
L1842861-9 16-GIANT-S-07							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0623		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580938
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-9 16-GIANT-S-07							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	12000		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Antimony (Sb)	13.5		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Arsenic (As)	371		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Barium (Ba)	137		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Beryllium (Be)	0.49		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Boron (B)	5.5		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Bismuth (Bi)	0.24		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cadmium (Cd)	0.307		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581474
Calcium (Ca)	8070		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Chromium (Cr)	22.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cobalt (Co)	7.84		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Copper (Cu)	20.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Iron (Fe)	16200		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lead (Pb)	12.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lithium (Li)	23.4		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Magnesium (Mg)	4310		20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Manganese (Mn)	375		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Molybdenum (Mo)	0.92		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Nickel (Ni)	17.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Phosphorus (P)	503		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Potassium (K)	1310		100	mg/kg	22-OCT-16	22-OCT-16	R3581474
Selenium (Se)	0.32		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Silver (Ag)	0.18		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Sodium (Na)	184		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Strontium (Sr)	38.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Thallium (Tl)	0.085		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Titanium (Ti)	288		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Uranium (U)	11.9		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Vanadium (V)	29.8		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zinc (Zn)	57.3		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zirconium (Zr)	2.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
L1842861-10 16-GIANT-S-08							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.366		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580938
Metals in Soil by CRC ICPMS							
Aluminum (Al)	3660		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Antimony (Sb)	65.4		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Arsenic (As)	311		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Barium (Ba)	112		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Beryllium (Be)	0.16		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Boron (B)	11.5		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cadmium (Cd)	0.524		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581474
Calcium (Ca)	25100		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Chromium (Cr)	7.13		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cobalt (Co)	9.14		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Copper (Cu)	30.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Iron (Fe)	6420		50	mg/kg	22-OCT-16	22-OCT-16	R3581474

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-10 16-GIANT-S-08							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Lead (Pb)	27.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lithium (Li)	3.1		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Magnesium (Mg)	3840		20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Manganese (Mn)	631		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Molybdenum (Mo)	3.69		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Nickel (Ni)	11.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Phosphorus (P)	793		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Potassium (K)	790		100	mg/kg	22-OCT-16	22-OCT-16	R3581474
Selenium (Se)	0.49		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Silver (Ag)	0.28		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Sodium (Na)	257		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Strontium (Sr)	92.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Thallium (Tl)	<0.050		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Tin (Sn)	3.9		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Titanium (Ti)	54.8		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Uranium (U)	3.35		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Vanadium (V)	16.0		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zinc (Zn)	61.3		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zirconium (Zr)	1.1		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
L1842861-11 16-GIANT-S-09							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0757		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580938
Metals in Soil by CRC ICPMS							
Aluminum (Al)	10400		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Antimony (Sb)	28.1		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Arsenic (As)	499	DLHC	0.25	mg/kg	22-OCT-16	22-OCT-16	R3581474
Barium (Ba)	117		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Beryllium (Be)	0.30		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cadmium (Cd)	0.215		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581474
Calcium (Ca)	3100		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Chromium (Cr)	22.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cobalt (Co)	7.61		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Copper (Cu)	13.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Iron (Fe)	15600		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lead (Pb)	10.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lithium (Li)	12.1		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Magnesium (Mg)	3410		20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Manganese (Mn)	1240		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Molybdenum (Mo)	1.11		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Nickel (Ni)	15.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Phosphorus (P)	264		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Potassium (K)	520		100	mg/kg	22-OCT-16	22-OCT-16	R3581474
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Silver (Ag)	0.20		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Sodium (Na)	106		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Strontium (Sr)	14.2		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Thallium (Tl)	0.111		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-11 16-GIANT-S-09							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Titanium (Ti)	301		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Uranium (U)	1.54		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Vanadium (V)	30.9		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zinc (Zn)	28.3		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zirconium (Zr)	1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
L1842861-12 16-GIANT-S-10							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0857		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580938
Metals in Soil by CRC ICPMS							
Aluminum (Al)	8420		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Antimony (Sb)	14.7		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Arsenic (As)	362		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Barium (Ba)	65.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Beryllium (Be)	0.28		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cadmium (Cd)	0.088		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581474
Calcium (Ca)	7240		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Chromium (Cr)	22.2		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cobalt (Co)	5.05		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Copper (Cu)	12.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Iron (Fe)	12200		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lead (Pb)	10.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lithium (Li)	18.3		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Magnesium (Mg)	4190		20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Manganese (Mn)	858		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Molybdenum (Mo)	0.42		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Nickel (Ni)	12.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Phosphorus (P)	401		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Potassium (K)	700		100	mg/kg	22-OCT-16	22-OCT-16	R3581474
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Silver (Ag)	0.11		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Sodium (Na)	133		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Strontium (Sr)	19.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Thallium (Tl)	0.070		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Titanium (Ti)	263		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Uranium (U)	4.57		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Vanadium (V)	20.3		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zinc (Zn)	30.6		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zirconium (Zr)	1.1		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
L1842861-13 16-GIANT-S-11							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.167		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580938
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-13 16-GIANT-S-11							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	7470		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Antimony (Sb)	88.2		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Arsenic (As)	658	DLHC	0.25	mg/kg	22-OCT-16	22-OCT-16	R3581474
Barium (Ba)	95.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Beryllium (Be)	0.25		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cadmium (Cd)	0.303		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581474
Calcium (Ca)	8270		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Chromium (Cr)	18.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cobalt (Co)	5.89		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Copper (Cu)	14.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Iron (Fe)	10900		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lead (Pb)	25.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lithium (Li)	15.8		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Magnesium (Mg)	3790		20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Manganese (Mn)	1060		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Molybdenum (Mo)	0.78		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Nickel (Ni)	13.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Phosphorus (P)	415		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Potassium (K)	750		100	mg/kg	22-OCT-16	22-OCT-16	R3581474
Selenium (Se)	0.23		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Silver (Ag)	0.24		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Sodium (Na)	103		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Strontium (Sr)	36.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Thallium (Tl)	0.078		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Tin (Sn)	1.2		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Titanium (Ti)	189		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Uranium (U)	5.84		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Vanadium (V)	17.3		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zinc (Zn)	51.2		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zirconium (Zr)	1.5		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
L1842861-14 16-GIANT-S-12							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0717		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580938
Metals in Soil by CRC ICPMS							
Aluminum (Al)	9160		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Antimony (Sb)	28.2		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Arsenic (As)	484		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Barium (Ba)	56.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Beryllium (Be)	0.31		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cadmium (Cd)	0.067		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581474
Calcium (Ca)	3420		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Chromium (Cr)	23.2		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cobalt (Co)	5.37		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Copper (Cu)	9.14		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Iron (Fe)	12300		50	mg/kg	22-OCT-16	22-OCT-16	R3581474

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-14 16-GIANT-S-12							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Lead (Pb)	12.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lithium (Li)	19.7		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Magnesium (Mg)	3860		20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Manganese (Mn)	549		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Molybdenum (Mo)	0.89		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Nickel (Ni)	12.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Phosphorus (P)	306		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Potassium (K)	690		100	mg/kg	22-OCT-16	22-OCT-16	R3581474
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Silver (Ag)	0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Sodium (Na)	112		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Strontium (Sr)	16.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Thallium (Tl)	0.076		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Titanium (Ti)	245		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Uranium (U)	5.51		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Vanadium (V)	21.8		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zinc (Zn)	26.4		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zirconium (Zr)	1.3		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
L1842861-15 16-GIANT-S-13							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.079	DLM	0.010	mg/kg	26-OCT-16	27-OCT-16	R3581483
Metals in Soil by CRC ICPMS							
Aluminum (Al)	1660	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Antimony (Sb)	7.39	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Arsenic (As)	71.1	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Barium (Ba)	112	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Beryllium (Be)	<0.20	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Boron (B)	<10	DLM	10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Bismuth (Bi)	<0.40	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Cadmium (Cd)	0.401	DLM	0.040	mg/kg	26-OCT-16	27-OCT-16	R3581644
Calcium (Ca)	10900	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Chromium (Cr)	2.7	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Cobalt (Co)	1.02	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Copper (Cu)	16.2	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Iron (Fe)	1690	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Lead (Pb)	2.5	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Lithium (Li)	<4.0	DLM	4.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Magnesium (Mg)	2650	DLM	40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Manganese (Mn)	26.3	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Molybdenum (Mo)	1.54	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Nickel (Ni)	6.3	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Phosphorus (P)	630	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Potassium (K)	980	DLM	200	mg/kg	26-OCT-16	27-OCT-16	R3581644
Selenium (Se)	<0.40	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Silver (Ag)	<0.20	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Sodium (Na)	140	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Strontium (Sr)	92.1	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Thallium (Tl)	<0.10	DLM	0.10	mg/kg	26-OCT-16	27-OCT-16	R3581644

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-15 16-GIANT-S-13							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Tin (Sn)	<2.0	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Titanium (Ti)	40.1	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Uranium (U)	5.97	DLM	0.10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Vanadium (V)	4.05	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Zinc (Zn)	45.6	DLM	4.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Zirconium (Zr)	<2.0	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
L1842861-16 16-GIANT-S-14							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.073	DLM	0.010	mg/kg	26-OCT-16	27-OCT-16	R3581483
Metals in Soil by CRC ICPMS							
Aluminum (Al)	2900	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Antimony (Sb)	10.7	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Arsenic (As)	38.2	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Barium (Ba)	59.6	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Beryllium (Be)	<0.20	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Boron (B)	15	DLM	10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Bismuth (Bi)	<0.40	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Cadmium (Cd)	0.136	DLM	0.040	mg/kg	26-OCT-16	27-OCT-16	R3581644
Calcium (Ca)	28200	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Chromium (Cr)	4.0	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Cobalt (Co)	0.91	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Copper (Cu)	16.5	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Iron (Fe)	2400	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Lead (Pb)	2.3	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Lithium (Li)	<4.0	DLM	4.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Magnesium (Mg)	3060	DLM	40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Manganese (Mn)	9.0	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Molybdenum (Mo)	24.3	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Nickel (Ni)	4.3	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Phosphorus (P)	990	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Potassium (K)	480	DLM	200	mg/kg	26-OCT-16	27-OCT-16	R3581644
Selenium (Se)	0.59	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Silver (Ag)	<0.20	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Sodium (Na)	250	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Strontium (Sr)	177	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Thallium (Tl)	<0.10	DLM	0.10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Tin (Sn)	<2.0	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Titanium (Ti)	60.9	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Uranium (U)	15.5	DLM	0.10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Vanadium (V)	6.47	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Zinc (Zn)	6.7	DLM	4.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Zirconium (Zr)	3.9	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
L1842861-17 16-GIANT-S-15							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.118		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580938
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-17 16-GIANT-S-15							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	6090		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Antimony (Sb)	14.5		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Arsenic (As)	108		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Barium (Ba)	119		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Beryllium (Be)	0.30		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Boron (B)	8.9		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cadmium (Cd)	0.281		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581474
Calcium (Ca)	27800		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Chromium (Cr)	10.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cobalt (Co)	5.61		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Copper (Cu)	19.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Iron (Fe)	7120		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lead (Pb)	5.32		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lithium (Li)	4.5		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Magnesium (Mg)	4060		20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Manganese (Mn)	209		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Molybdenum (Mo)	0.44		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Nickel (Ni)	14.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Phosphorus (P)	897		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Potassium (K)	840		100	mg/kg	22-OCT-16	22-OCT-16	R3581474
Selenium (Se)	0.75		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Silver (Ag)	0.11		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Sodium (Na)	222		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Strontium (Sr)	108		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Thallium (Tl)	<0.050		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Titanium (Ti)	83.6		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Uranium (U)	2.29		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Vanadium (V)	11.6		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zinc (Zn)	23.4		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zirconium (Zr)	3.7		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
L1842861-18 16-GIANT-S-16							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.127		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580938
Metals in Soil by CRC ICPMS							
Aluminum (Al)	702		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Antimony (Sb)	30.1		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Arsenic (As)	195		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Barium (Ba)	50.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Beryllium (Be)	<0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Boron (B)	17.8		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cadmium (Cd)	0.146		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581474
Calcium (Ca)	22400		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Chromium (Cr)	1.39		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cobalt (Co)	1.02		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Copper (Cu)	7.75		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Iron (Fe)	1360		50	mg/kg	22-OCT-16	22-OCT-16	R3581474

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-18 16-GIANT-S-16							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Lead (Pb)	5.10		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lithium (Li)	<2.0		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Magnesium (Mg)	2230		20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Manganese (Mn)	108		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Molybdenum (Mo)	1.32		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Nickel (Ni)	2.92		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Phosphorus (P)	563		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Potassium (K)	250		100	mg/kg	22-OCT-16	22-OCT-16	R3581474
Selenium (Se)	0.26		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Silver (Ag)	<0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Sodium (Na)	166		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Strontium (Sr)	59.2		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Thallium (Tl)	<0.050		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Tin (Sn)	1.4		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Titanium (Ti)	9.4		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Uranium (U)	0.238		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Vanadium (V)	2.61		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zinc (Zn)	37.0		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zirconium (Zr)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
L1842861-19 16-GIANT-S-17							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.106		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580938
Metals in Soil by CRC ICPMS							
Aluminum (Al)	4400		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Antimony (Sb)	12.3		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Arsenic (As)	115		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Barium (Ba)	57.2		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Beryllium (Be)	0.14		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cadmium (Cd)	0.141		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581474
Calcium (Ca)	6740		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Chromium (Cr)	12.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cobalt (Co)	3.67		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Copper (Cu)	11.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Iron (Fe)	6420		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lead (Pb)	5.71		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lithium (Li)	6.8		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Magnesium (Mg)	2770		20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Manganese (Mn)	79.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Molybdenum (Mo)	0.85		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Nickel (Ni)	9.87		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Phosphorus (P)	509		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Potassium (K)	920		100	mg/kg	22-OCT-16	22-OCT-16	R3581474
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Silver (Ag)	<0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Sodium (Na)	79		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Strontium (Sr)	22.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Thallium (Tl)	<0.050		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-19 16-GIANT-S-17							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Titanium (Ti)	145		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Uranium (U)	0.477		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Vanadium (V)	11.4		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zinc (Zn)	17.3		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zirconium (Zr)	1.3		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
L1842861-20 16-GIANT-S-18							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0097		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580938
Metals in Soil by CRC ICPMS							
Aluminum (Al)	8310		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Antimony (Sb)	2.17		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Arsenic (As)	75.0		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Barium (Ba)	15.8		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Beryllium (Be)	0.23		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cadmium (Cd)	<0.020		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581474
Calcium (Ca)	360		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Chromium (Cr)	24.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Cobalt (Co)	5.91		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Copper (Cu)	6.73		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Iron (Fe)	12200		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lead (Pb)	3.33		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Lithium (Li)	19.3		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Magnesium (Mg)	2880		20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Manganese (Mn)	63.6		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Molybdenum (Mo)	0.51		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Nickel (Ni)	13.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Phosphorus (P)	104		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Potassium (K)	300		100	mg/kg	22-OCT-16	22-OCT-16	R3581474
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Silver (Ag)	<0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581474
Sodium (Na)	<50		50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Strontium (Sr)	2.11		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581474
Thallium (Tl)	<0.050		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Titanium (Ti)	284		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Uranium (U)	0.508		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581474
Vanadium (V)	24.8		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zinc (Zn)	16.6		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
Zirconium (Zr)	1.8		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581474
L1842861-21 16-GIANT-S-19							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0076		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580949
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-21 16-GIANT-S-19							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	11000		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Antimony (Sb)	1.53		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Arsenic (As)	71.9		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Barium (Ba)	63.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Beryllium (Be)	0.36		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Bismuth (Bi)	0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cadmium (Cd)	0.032		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581505
Calcium (Ca)	2330		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Chromium (Cr)	31.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cobalt (Co)	6.15		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Copper (Cu)	14.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Iron (Fe)	14500		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lead (Pb)	5.20		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lithium (Li)	22.7		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Magnesium (Mg)	4870		20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Manganese (Mn)	128		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Molybdenum (Mo)	0.26		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Nickel (Ni)	16.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Phosphorus (P)	433		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Potassium (K)	890		100	mg/kg	22-OCT-16	22-OCT-16	R3581505
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Silver (Ag)	<0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Sodium (Na)	158		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Strontium (Sr)	8.82		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Thallium (Tl)	0.093		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Titanium (Ti)	458		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Uranium (U)	1.57		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Vanadium (V)	29.3		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zinc (Zn)	28.8		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zirconium (Zr)	6.9		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
L1842861-22 16-GIANT-S-20							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.074	DLM	0.010	mg/kg	26-OCT-16	27-OCT-16	R3581483
Metals in Soil by CRC ICPMS							
Aluminum (Al)	2650	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Antimony (Sb)	6.16	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Arsenic (As)	27.8	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Barium (Ba)	31.1	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Beryllium (Be)	<0.20	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Boron (B)	15	DLM	10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Bismuth (Bi)	<0.40	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Cadmium (Cd)	0.532	DLM	0.040	mg/kg	26-OCT-16	27-OCT-16	R3581644
Calcium (Ca)	44200	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Chromium (Cr)	4.5	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Cobalt (Co)	9.22	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Copper (Cu)	135	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Iron (Fe)	2610	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-22 16-GIANT-S-20							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Lead (Pb)	1.7	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Lithium (Li)	<4.0	DLM	4.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Magnesium (Mg)	2150	DLM	40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Manganese (Mn)	384	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Molybdenum (Mo)	0.48	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Nickel (Ni)	29.3	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Phosphorus (P)	730	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Potassium (K)	470	DLM	200	mg/kg	26-OCT-16	27-OCT-16	R3581644
Selenium (Se)	3.24	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Silver (Ag)	<0.20	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Sodium (Na)	<100	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Strontium (Sr)	44.6	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Thallium (Tl)	<0.10	DLM	0.10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Tin (Sn)	<2.0	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Titanium (Ti)	27.5	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Uranium (U)	0.92	DLM	0.10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Vanadium (V)	5.43	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Zinc (Zn)	42.6	DLM	4.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Zirconium (Zr)	<2.0	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
L1842861-23 16-GIANT-S-21							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0329		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580949
Metals in Soil by CRC ICPMS							
Aluminum (Al)	9990		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Antimony (Sb)	6.22		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Arsenic (As)	511		0.25	mg/kg	22-OCT-16	22-OCT-16	R3581505
Barium (Ba)	149		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Beryllium (Be)	0.30		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cadmium (Cd)	0.074		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581505
Calcium (Ca)	5040		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Chromium (Cr)	27.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cobalt (Co)	7.44		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Copper (Cu)	9.56		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Iron (Fe)	20700		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lead (Pb)	7.45		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lithium (Li)	19.4		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Magnesium (Mg)	6320		20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Manganese (Mn)	4240	DLHC	2.5	mg/kg	22-OCT-16	22-OCT-16	R3581505
Molybdenum (Mo)	1.04		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Nickel (Ni)	15.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Phosphorus (P)	384		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Potassium (K)	660		100	mg/kg	22-OCT-16	22-OCT-16	R3581505
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Silver (Ag)	<0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Sodium (Na)	114		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Strontium (Sr)	24.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Thallium (Tl)	0.076		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-23 16-GIANT-S-21							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Tin (Sn)	2.3		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Titanium (Ti)	266		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Uranium (U)	5.87		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Vanadium (V)	30.1		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zinc (Zn)	37.6		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zirconium (Zr)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
L1842861-24 16-GIANT-S-22							
Sampled By: CLIENT on 07-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.217		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580949
Metals in Soil by CRC ICPMS							
Aluminum (Al)	6510		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Antimony (Sb)	38.1		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Arsenic (As)	396		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Barium (Ba)	91.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Beryllium (Be)	0.31		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Boron (B)	11.1		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cadmium (Cd)	0.260		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581505
Calcium (Ca)	28500		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Chromium (Cr)	14.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cobalt (Co)	4.38		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Copper (Cu)	23.8		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Iron (Fe)	8900		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lead (Pb)	12.8		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lithium (Li)	9.2		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Magnesium (Mg)	3520		20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Manganese (Mn)	386		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Molybdenum (Mo)	0.99		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Nickel (Ni)	12.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Phosphorus (P)	908		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Potassium (K)	650		100	mg/kg	22-OCT-16	22-OCT-16	R3581505
Selenium (Se)	0.81		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Silver (Ag)	0.19		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Sodium (Na)	115		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Strontium (Sr)	65.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Thallium (Tl)	0.061		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Titanium (Ti)	129		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Uranium (U)	10.5		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Vanadium (V)	13.9		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zinc (Zn)	20.4		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zirconium (Zr)	2.5		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
L1842861-25 16-GIANT-S-23							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0376		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580949
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-25 16-GIANT-S-23							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	19500		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Antimony (Sb)	8.36		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Arsenic (As)	107		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Barium (Ba)	166		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Beryllium (Be)	0.87		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Boron (B)	10.8		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Bismuth (Bi)	0.29		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cadmium (Cd)	0.064		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581505
Calcium (Ca)	5030		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Chromium (Cr)	40.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cobalt (Co)	10.2		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Copper (Cu)	23.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Iron (Fe)	25100		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lead (Pb)	11.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lithium (Li)	36.2		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Magnesium (Mg)	8630		20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Manganese (Mn)	277		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Molybdenum (Mo)	0.51		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Nickel (Ni)	26.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Phosphorus (P)	404		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Potassium (K)	4240		100	mg/kg	22-OCT-16	22-OCT-16	R3581505
Selenium (Se)	0.22		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Silver (Ag)	0.12		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Sodium (Na)	420		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Strontium (Sr)	39.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Thallium (Tl)	0.235		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Tin (Sn)	1.2		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Titanium (Ti)	667		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Uranium (U)	3.36		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Vanadium (V)	46.1		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zinc (Zn)	48.8		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zirconium (Zr)	23.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
L1842861-26 16-GIANT-S-24							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.228		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580949
Metals in Soil by CRC ICPMS							
Aluminum (Al)	12700		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Antimony (Sb)	60.3		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Arsenic (As)	793	DLHC	0.25	mg/kg	22-OCT-16	22-OCT-16	R3581505
Barium (Ba)	80.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Beryllium (Be)	0.43		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Bismuth (Bi)	0.23		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cadmium (Cd)	0.139		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581505
Calcium (Ca)	4250		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Chromium (Cr)	37.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cobalt (Co)	8.39		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Copper (Cu)	21.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Iron (Fe)	18800		50	mg/kg	22-OCT-16	22-OCT-16	R3581505

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-26 16-GIANT-S-24							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Lead (Pb)	19.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lithium (Li)	21.3		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Magnesium (Mg)	5640		20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Manganese (Mn)	157		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Molybdenum (Mo)	0.90		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Nickel (Ni)	23.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Phosphorus (P)	321		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Potassium (K)	1240		100	mg/kg	22-OCT-16	22-OCT-16	R3581505
Selenium (Se)	0.29		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Silver (Ag)	0.26		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Sodium (Na)	177		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Strontium (Sr)	15.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Thallium (Tl)	0.100		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Titanium (Ti)	374		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Uranium (U)	3.11		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Vanadium (V)	33.5		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zinc (Zn)	36.5		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zirconium (Zr)	2.5		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
L1842861-27 16-GIANT-S-25							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0917		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580949
Metals in Soil by CRC ICPMS							
Aluminum (Al)	11700		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Antimony (Sb)	17.3		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Arsenic (As)	669	DLHC	0.25	mg/kg	22-OCT-16	22-OCT-16	R3581505
Barium (Ba)	46.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Beryllium (Be)	0.30		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cadmium (Cd)	0.266		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581505
Calcium (Ca)	3540		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Chromium (Cr)	24.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cobalt (Co)	6.62		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Copper (Cu)	13.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Iron (Fe)	17700		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lead (Pb)	8.65		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lithium (Li)	19.3		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Magnesium (Mg)	4470		20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Manganese (Mn)	138		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Molybdenum (Mo)	0.58		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Nickel (Ni)	15.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Phosphorus (P)	185		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Potassium (K)	590		100	mg/kg	22-OCT-16	22-OCT-16	R3581505
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Silver (Ag)	<0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Sodium (Na)	86		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Strontium (Sr)	9.98		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Thallium (Tl)	0.101		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-27 16-GIANT-S-25							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Tin (Sn)	1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Titanium (Ti)	229		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Uranium (U)	0.965		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Vanadium (V)	41.7		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zinc (Zn)	33.5		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zirconium (Zr)	1.7		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
L1842861-28 16-GIANT-S-26							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.133	DLM	0.010	mg/kg	26-OCT-16	27-OCT-16	R3581483
Metals in Soil by CRC ICPMS							
Aluminum (Al)	5440	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Antimony (Sb)	38.1	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Arsenic (As)	198	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Barium (Ba)	140	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Beryllium (Be)	<0.20	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Boron (B)	<10	DLM	10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Bismuth (Bi)	<0.40	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Cadmium (Cd)	0.561	DLM	0.040	mg/kg	26-OCT-16	27-OCT-16	R3581644
Calcium (Ca)	43600	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Chromium (Cr)	10.5	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Cobalt (Co)	4.35	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Copper (Cu)	37.0	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Iron (Fe)	5130	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Lead (Pb)	6.8	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Lithium (Li)	4.3	DLM	4.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Magnesium (Mg)	3980	DLM	40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Manganese (Mn)	416	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Molybdenum (Mo)	0.61	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Nickel (Ni)	16.4	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Phosphorus (P)	710	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Potassium (K)	300	DLM	200	mg/kg	26-OCT-16	27-OCT-16	R3581644
Selenium (Se)	1.22	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Silver (Ag)	<0.20	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Sodium (Na)	<100	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Strontium (Sr)	56.1	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Thallium (Tl)	<0.10	DLM	0.10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Tin (Sn)	<2.0	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Titanium (Ti)	83.3	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Uranium (U)	3.88	DLM	0.10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Vanadium (V)	11.2	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Zinc (Zn)	91.6	DLM	4.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Zirconium (Zr)	<2.0	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
L1842861-29 16-GIANT-S-27							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0144		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580949
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-29 16-GIANT-S-27							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	14900		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Antimony (Sb)	1.94		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Arsenic (As)	72.0		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Barium (Ba)	95.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Beryllium (Be)	0.51		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Boron (B)	5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Bismuth (Bi)	0.29		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cadmium (Cd)	0.034		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581505
Calcium (Ca)	5840		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Chromium (Cr)	43.2		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cobalt (Co)	8.35		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Copper (Cu)	26.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Iron (Fe)	19400		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lead (Pb)	5.66		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lithium (Li)	33.8		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Magnesium (Mg)	6770		20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Manganese (Mn)	195		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Molybdenum (Mo)	0.56		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Nickel (Ni)	26.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Phosphorus (P)	558		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Potassium (K)	1500		100	mg/kg	22-OCT-16	22-OCT-16	R3581505
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Silver (Ag)	<0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Sodium (Na)	237		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Strontium (Sr)	17.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Thallium (Tl)	0.170		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Titanium (Ti)	585		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Uranium (U)	2.66		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Vanadium (V)	38.6		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zinc (Zn)	33.6		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zirconium (Zr)	12.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
L1842861-30 16-GIANT-S-28							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0191		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580949
Metals in Soil by CRC ICPMS							
Aluminum (Al)	14100		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Antimony (Sb)	10.1		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Arsenic (As)	327		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Barium (Ba)	80.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Beryllium (Be)	0.39		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cadmium (Cd)	0.053		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581505
Calcium (Ca)	6250		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Chromium (Cr)	41.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cobalt (Co)	9.08		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Copper (Cu)	14.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Iron (Fe)	18200		50	mg/kg	22-OCT-16	22-OCT-16	R3581505

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-30 16-GIANT-S-28							
Sampled By: CLIENT on 08-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Lead (Pb)	7.22		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lithium (Li)	28.1		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Magnesium (Mg)	6590		20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Manganese (Mn)	264		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Molybdenum (Mo)	0.52		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Nickel (Ni)	21.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Phosphorus (P)	316		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Potassium (K)	1050		100	mg/kg	22-OCT-16	22-OCT-16	R3581505
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Silver (Ag)	<0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Sodium (Na)	211		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Strontium (Sr)	14.8		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Thallium (Tl)	0.102		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Tin (Sn)	1.1		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Titanium (Ti)	497		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Uranium (U)	3.67		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Vanadium (V)	34.5		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zinc (Zn)	38.6		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zirconium (Zr)	3.7		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
L1842861-31 16-GIANT-S-40							
Sampled By: CLIENT on 09-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0734		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580949
Metals in Soil by CRC ICPMS							
Aluminum (Al)	13100		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Antimony (Sb)	14.7		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Arsenic (As)	328		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Barium (Ba)	75.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Beryllium (Be)	0.24		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cadmium (Cd)	0.219		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581505
Calcium (Ca)	5450		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Chromium (Cr)	38.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cobalt (Co)	19.9		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Copper (Cu)	19.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Iron (Fe)	24200		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lead (Pb)	19.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lithium (Li)	26.7		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Magnesium (Mg)	7670		20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Manganese (Mn)	568		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Molybdenum (Mo)	0.60		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Nickel (Ni)	31.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Phosphorus (P)	353		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Potassium (K)	610		100	mg/kg	22-OCT-16	22-OCT-16	R3581505
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Silver (Ag)	0.13		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Sodium (Na)	62		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Strontium (Sr)	14.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Thallium (Tl)	0.088		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-31 16-GIANT-S-40							
Sampled By: CLIENT on 09-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Tin (Sn)	1.3		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Titanium (Ti)	284		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Uranium (U)	0.457		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Vanadium (V)	45.0		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zinc (Zn)	64.6		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zirconium (Zr)	1.3		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
L1842861-32 16-GIANT-S-41							
Sampled By: CLIENT on 09-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.262	DLM	0.010	mg/kg	26-OCT-16	27-OCT-16	R3581483
Metals in Soil by CRC ICPMS							
Aluminum (Al)	8010	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Antimony (Sb)	75.0	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Arsenic (As)	623	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Barium (Ba)	183	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Beryllium (Be)	<0.20	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Boron (B)	<10	DLM	10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Bismuth (Bi)	<0.40	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Cadmium (Cd)	0.557	DLM	0.040	mg/kg	26-OCT-16	27-OCT-16	R3581644
Calcium (Ca)	13400	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Chromium (Cr)	23.0	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Cobalt (Co)	26.3	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Copper (Cu)	36.3	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Iron (Fe)	12100	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Lead (Pb)	61.3	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Lithium (Li)	8.1	DLM	4.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Magnesium (Mg)	5230	DLM	40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Manganese (Mn)	1340	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Molybdenum (Mo)	0.47	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Nickel (Ni)	28.9	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Phosphorus (P)	920	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Potassium (K)	810	DLM	200	mg/kg	26-OCT-16	27-OCT-16	R3581644
Selenium (Se)	<0.40	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Silver (Ag)	0.28	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Sodium (Na)	140	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Strontium (Sr)	34.8	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Thallium (Tl)	<0.10	DLM	0.10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Tin (Sn)	2.7	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Titanium (Ti)	189	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Uranium (U)	0.44	DLM	0.10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Vanadium (V)	29.4	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Zinc (Zn)	66.1	DLM	4.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Zirconium (Zr)	<2.0	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
L1842861-33 16-GIANT-S-41-DUP							
Sampled By: CLIENT on 09-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.281	DLM	0.010	mg/kg	26-OCT-16	27-OCT-16	R3581483
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-33 16-GIANT-S-41-DUP							
Sampled By: CLIENT on 09-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	8490	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Antimony (Sb)	62.6	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Arsenic (As)	547	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Barium (Ba)	140	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Beryllium (Be)	<0.20	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Boron (B)	<10	DLM	10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Bismuth (Bi)	<0.40	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Cadmium (Cd)	0.482	DLM	0.040	mg/kg	26-OCT-16	27-OCT-16	R3581644
Calcium (Ca)	12900	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Chromium (Cr)	23.7	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Cobalt (Co)	22.6	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Copper (Cu)	33.3	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Iron (Fe)	12900	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Lead (Pb)	60.9	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Lithium (Li)	8.9	DLM	4.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Magnesium (Mg)	5530	DLM	40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Manganese (Mn)	1090	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Molybdenum (Mo)	0.50	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Nickel (Ni)	27.1	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Phosphorus (P)	920	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Potassium (K)	770	DLM	200	mg/kg	26-OCT-16	27-OCT-16	R3581644
Selenium (Se)	<0.40	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Silver (Ag)	0.31	DLM	0.20	mg/kg	26-OCT-16	27-OCT-16	R3581644
Sodium (Na)	130	DLM	100	mg/kg	26-OCT-16	27-OCT-16	R3581644
Strontium (Sr)	33.6	DLM	1.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Thallium (Tl)	<0.10	DLM	0.10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Tin (Sn)	<2.0	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Titanium (Ti)	135	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Uranium (U)	0.43	DLM	0.10	mg/kg	26-OCT-16	27-OCT-16	R3581644
Vanadium (V)	29.2	DLM	0.40	mg/kg	26-OCT-16	27-OCT-16	R3581644
Zinc (Zn)	64.4	DLM	4.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
Zirconium (Zr)	<2.0	DLM	2.0	mg/kg	26-OCT-16	27-OCT-16	R3581644
L1842861-34 16-GIANT-S-42							
Sampled By: CLIENT on 09-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0618		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580949
Metals in Soil by CRC ICPMS							
Aluminum (Al)	14000		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Antimony (Sb)	9.28		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Arsenic (As)	327		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Barium (Ba)	71.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Beryllium (Be)	0.29		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Boron (B)	5.2		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Bismuth (Bi)	0.37		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cadmium (Cd)	0.214		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581505
Calcium (Ca)	9030		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Chromium (Cr)	44.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cobalt (Co)	21.3		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Copper (Cu)	20.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Iron (Fe)	22400		50	mg/kg	22-OCT-16	22-OCT-16	R3581505

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-34 16-GIANT-S-42							
Sampled By: CLIENT on 09-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Lead (Pb)	28.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lithium (Li)	40.7		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Magnesium (Mg)	6910		20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Manganese (Mn)	1080		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Molybdenum (Mo)	1.06		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Nickel (Ni)	24.2		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Phosphorus (P)	448		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Potassium (K)	1340		100	mg/kg	22-OCT-16	22-OCT-16	R3581505
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Silver (Ag)	0.12		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Sodium (Na)	129		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Strontium (Sr)	19.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Thallium (Tl)	0.130		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Titanium (Ti)	510		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Uranium (U)	0.746		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Vanadium (V)	45.5		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zinc (Zn)	125		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zirconium (Zr)	1.4		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
L1842861-35 16-GIANT-S-43							
Sampled By: CLIENT on 09-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.118		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580949
Metals in Soil by CRC ICPMS							
Aluminum (Al)	10100		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Antimony (Sb)	17.5		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Arsenic (As)	347		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Barium (Ba)	74.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Beryllium (Be)	0.21		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Bismuth (Bi)	0.25		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cadmium (Cd)	0.356		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581505
Calcium (Ca)	11500		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Chromium (Cr)	30.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cobalt (Co)	16.5		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Copper (Cu)	25.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Iron (Fe)	18700		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lead (Pb)	47.2		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lithium (Li)	24.3		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Magnesium (Mg)	6430		20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Manganese (Mn)	1490		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Molybdenum (Mo)	0.73		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Nickel (Ni)	23.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Phosphorus (P)	409		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Potassium (K)	1010		100	mg/kg	22-OCT-16	22-OCT-16	R3581505
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Silver (Ag)	0.26		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Sodium (Na)	123		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Strontium (Sr)	22.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Thallium (Tl)	0.092		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-35 16-GIANT-S-43							
Sampled By: CLIENT on 09-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Titanium (Ti)	375		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Uranium (U)	0.601		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Vanadium (V)	39.6		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zinc (Zn)	116		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zirconium (Zr)	1.8		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
L1842861-36 16-GIANT-S-44							
Sampled By: CLIENT on 09-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.131		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580949
Metals in Soil by CRC ICPMS							
Aluminum (Al)	3140		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Antimony (Sb)	10.3		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Arsenic (As)	84.7		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Barium (Ba)	25.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Beryllium (Be)	<0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Boron (B)	8.5		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cadmium (Cd)	0.408		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581505
Calcium (Ca)	16500		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Chromium (Cr)	10.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cobalt (Co)	4.00		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Copper (Cu)	22.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Iron (Fe)	5890		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lead (Pb)	20.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lithium (Li)	4.4		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Magnesium (Mg)	3060		20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Manganese (Mn)	117		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Molybdenum (Mo)	1.33		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Nickel (Ni)	9.75		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Phosphorus (P)	840		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Potassium (K)	1220		100	mg/kg	22-OCT-16	22-OCT-16	R3581505
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Silver (Ag)	0.14		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Sodium (Na)	115		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Strontium (Sr)	27.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Thallium (Tl)	<0.050		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Titanium (Ti)	67.8		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Uranium (U)	0.311		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Vanadium (V)	15.9		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zinc (Zn)	67.2		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zirconium (Zr)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
L1842861-37 16-GIANT-S-45							
Sampled By: CLIENT on 09-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0857		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580949
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-37 16-GIANT-S-45							
Sampled By: CLIENT on 09-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	6730		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Antimony (Sb)	21.7		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Arsenic (As)	60.9		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Barium (Ba)	83.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Beryllium (Be)	0.29		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Boron (B)	8.3		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cadmium (Cd)	0.487		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581505
Calcium (Ca)	25300		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Chromium (Cr)	15.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cobalt (Co)	3.65		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Copper (Cu)	31.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Iron (Fe)	8560		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lead (Pb)	28.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lithium (Li)	8.9		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Magnesium (Mg)	3500		20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Manganese (Mn)	116		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Molybdenum (Mo)	0.76		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Nickel (Ni)	13.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Phosphorus (P)	819		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Potassium (K)	800		100	mg/kg	22-OCT-16	22-OCT-16	R3581505
Selenium (Se)	0.41		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Silver (Ag)	0.18		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Sodium (Na)	239		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Strontium (Sr)	45.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Thallium (Tl)	0.076		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Tin (Sn)	2.8		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Titanium (Ti)	119		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Uranium (U)	1.47		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Vanadium (V)	20.4		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zinc (Zn)	25.6		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zirconium (Zr)	2.8		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
L1842861-38 16-GIANT-S-46							
Sampled By: CLIENT on 09-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	1.30	DLHC	0.025	mg/kg	22-OCT-16	25-OCT-16	R3580949
Metals in Soil by CRC ICPMS							
Aluminum (Al)	4020		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Antimony (Sb)	9.47		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Arsenic (As)	65.8		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Barium (Ba)	89.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Beryllium (Be)	0.17		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Boron (B)	6.2		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cadmium (Cd)	0.420		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581505
Calcium (Ca)	25200		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Chromium (Cr)	16.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cobalt (Co)	5.43		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Copper (Cu)	22.8		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Iron (Fe)	7120		50	mg/kg	22-OCT-16	22-OCT-16	R3581505

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-38 16-GIANT-S-46							
Sampled By: CLIENT on 09-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Lead (Pb)	12.2		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lithium (Li)	3.3		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Magnesium (Mg)	3050		20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Manganese (Mn)	271		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Molybdenum (Mo)	0.93		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Nickel (Ni)	13.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Phosphorus (P)	886		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Potassium (K)	400		100	mg/kg	22-OCT-16	22-OCT-16	R3581505
Selenium (Se)	0.74		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Silver (Ag)	0.11		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Sodium (Na)	71		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Strontium (Sr)	77.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Thallium (Tl)	<0.050		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Titanium (Ti)	76.1		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Uranium (U)	3.79		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Vanadium (V)	13.9		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zinc (Zn)	32.0		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zirconium (Zr)	1.5		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
L1842861-39 16-GIANT-S-47							
Sampled By: CLIENT on 09-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0728		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580949
Metals in Soil by CRC ICPMS							
Aluminum (Al)	12200		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Antimony (Sb)	20.2		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Arsenic (As)	480	DLHC	0.25	mg/kg	22-OCT-16	22-OCT-16	R3581505
Barium (Ba)	102		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Beryllium (Be)	0.24		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Bismuth (Bi)	0.39		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cadmium (Cd)	0.335		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581505
Calcium (Ca)	7980		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Chromium (Cr)	41.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cobalt (Co)	16.0		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Copper (Cu)	47.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Iron (Fe)	25100		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lead (Pb)	148		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lithium (Li)	23.1		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Magnesium (Mg)	8980		20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Manganese (Mn)	341		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Molybdenum (Mo)	0.75		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Nickel (Ni)	30.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Phosphorus (P)	512		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Potassium (K)	650		100	mg/kg	22-OCT-16	22-OCT-16	R3581505
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Silver (Ag)	0.25		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Sodium (Na)	84		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Strontium (Sr)	9.62		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Thallium (Tl)	0.080		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-39 16-GIANT-S-47							
Sampled By: CLIENT on 09-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Tin (Sn)	2.2		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Titanium (Ti)	306		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Uranium (U)	1.30		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Vanadium (V)	51.8		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zinc (Zn)	148		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zirconium (Zr)	1.2		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
L1842861-40 16-GIANT-S-48							
Sampled By: CLIENT on 09-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.124		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580949
Metals in Soil by CRC ICPMS							
Aluminum (Al)	12200		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Antimony (Sb)	15.0		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Arsenic (As)	283		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Barium (Ba)	72.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Beryllium (Be)	0.25		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Boron (B)	8.1		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cadmium (Cd)	0.545		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581505
Calcium (Ca)	10500		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Chromium (Cr)	45.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Cobalt (Co)	25.5		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Copper (Cu)	75.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Iron (Fe)	21500		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lead (Pb)	39.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Lithium (Li)	17.5		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Magnesium (Mg)	8240		20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Manganese (Mn)	517		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Molybdenum (Mo)	0.44		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Nickel (Ni)	30.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Phosphorus (P)	618		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Potassium (K)	760		100	mg/kg	22-OCT-16	22-OCT-16	R3581505
Selenium (Se)	0.42		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Silver (Ag)	0.24		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581505
Sodium (Na)	82		50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Strontium (Sr)	16.2		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581505
Thallium (Tl)	0.058		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Titanium (Ti)	164		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Uranium (U)	1.42		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581505
Vanadium (V)	43.2		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zinc (Zn)	197		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
Zirconium (Zr)	1.3		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581505
L1842861-41 16-GIANT-S-49							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0102		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580955
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-41 16-GIANT-S-49							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	20700		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Antimony (Sb)	1.43		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Arsenic (As)	18.3		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Barium (Ba)	188		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Beryllium (Be)	0.84		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Boron (B)	11.9		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Bismuth (Bi)	0.38		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cadmium (Cd)	0.193		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581584
Calcium (Ca)	8090		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Chromium (Cr)	52.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cobalt (Co)	12.6		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Copper (Cu)	30.8		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Iron (Fe)	28900		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lead (Pb)	9.75		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lithium (Li)	45.2		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Magnesium (Mg)	11900		20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Manganese (Mn)	425		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Molybdenum (Mo)	0.55		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Nickel (Ni)	33.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Phosphorus (P)	582		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Potassium (K)	5200		100	mg/kg	22-OCT-16	22-OCT-16	R3581584
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Silver (Ag)	0.12		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Sodium (Na)	590		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Strontium (Sr)	36.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Thallium (Tl)	0.274		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Tin (Sn)	1.1		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Titanium (Ti)	863		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Uranium (U)	2.13		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Vanadium (V)	54.4		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zinc (Zn)	63.9		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zirconium (Zr)	23.1		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
L1842861-42 16-GIANT-S-50B							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0173		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580955
Metals in Soil by CRC ICPMS							
Aluminum (Al)	19900		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Antimony (Sb)	2.79		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Arsenic (As)	58.6		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Barium (Ba)	174		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Beryllium (Be)	0.93		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Boron (B)	14.8		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Bismuth (Bi)	0.31		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cadmium (Cd)	0.105		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581584
Calcium (Ca)	5910		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Chromium (Cr)	43.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cobalt (Co)	10.7		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Copper (Cu)	23.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Iron (Fe)	26700		50	mg/kg	22-OCT-16	22-OCT-16	R3581584

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-42 16-GIANT-S-50B							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Lead (Pb)	12.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lithium (Li)	38.8		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Magnesium (Mg)	9540		20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Manganese (Mn)	356		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Molybdenum (Mo)	0.45		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Nickel (Ni)	28.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Phosphorus (P)	478		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Potassium (K)	5050		100	mg/kg	22-OCT-16	22-OCT-16	R3581584
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Silver (Ag)	0.16		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Sodium (Na)	528		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Strontium (Sr)	48.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Thallium (Tl)	0.257		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Tin (Sn)	1.8		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Titanium (Ti)	744		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Uranium (U)	1.89		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Vanadium (V)	47.4		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zinc (Zn)	58.5		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zirconium (Zr)	24.9		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
L1842861-43 16-GIANT-S-50A							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0288		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580955
Metals in Soil by CRC ICPMS							
Aluminum (Al)	22800		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Antimony (Sb)	9.09		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Arsenic (As)	292		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Barium (Ba)	182		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Beryllium (Be)	0.92		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Boron (B)	9.5		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Bismuth (Bi)	0.33		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cadmium (Cd)	0.197		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581584
Calcium (Ca)	12200		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Chromium (Cr)	47.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cobalt (Co)	12.2		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Copper (Cu)	25.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Iron (Fe)	26600		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lead (Pb)	10.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lithium (Li)	36.1		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Magnesium (Mg)	8070		20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Manganese (Mn)	312		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Molybdenum (Mo)	0.40		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Nickel (Ni)	28.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Phosphorus (P)	232		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Potassium (K)	2100		100	mg/kg	22-OCT-16	22-OCT-16	R3581584
Selenium (Se)	0.34		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Silver (Ag)	<0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Sodium (Na)	343		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Strontium (Sr)	30.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Thallium (Tl)	0.170		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-43 16-GIANT-S-50A							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Tin (Sn)	1.1		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Titanium (Ti)	566		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Uranium (U)	1.54		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Vanadium (V)	50.4		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zinc (Zn)	46.7		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zirconium (Zr)	12.3		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
L1842861-44 16-GIANT-S-51							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.180		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580955
Metals in Soil by CRC ICPMS							
Aluminum (Al)	23500		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Antimony (Sb)	42.9		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Arsenic (As)	1500	DLHC	0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Barium (Ba)	189		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Beryllium (Be)	0.92		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Boron (B)	7.6		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Bismuth (Bi)	0.30		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cadmium (Cd)	0.679		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581584
Calcium (Ca)	15300		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Chromium (Cr)	44.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cobalt (Co)	17.6		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Copper (Cu)	58.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Iron (Fe)	29800		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lead (Pb)	36.8		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lithium (Li)	27.8		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Magnesium (Mg)	9890		20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Manganese (Mn)	855		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Molybdenum (Mo)	0.53		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Nickel (Ni)	43.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Phosphorus (P)	831		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Potassium (K)	2620		100	mg/kg	22-OCT-16	22-OCT-16	R3581584
Selenium (Se)	0.36		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Silver (Ag)	0.47		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Sodium (Na)	223		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Strontium (Sr)	33.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Thallium (Tl)	0.161		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Tin (Sn)	1.2		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Titanium (Ti)	376		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Uranium (U)	4.61		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Vanadium (V)	46.7		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zinc (Zn)	86.1		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zirconium (Zr)	4.1		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
L1842861-45 16-GIANT-S-51-DUP							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.262		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580955
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-45 16-GIANT-S-51-DUP							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	23400		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Antimony (Sb)	48.7		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Arsenic (As)	1480	DLHC	0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Barium (Ba)	189		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Beryllium (Be)	0.89		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Boron (B)	7.8		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Bismuth (Bi)	0.29		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cadmium (Cd)	0.745		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581584
Calcium (Ca)	15300		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Chromium (Cr)	43.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cobalt (Co)	17.0		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Copper (Cu)	57.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Iron (Fe)	28700		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lead (Pb)	38.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lithium (Li)	26.3		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Magnesium (Mg)	9520		20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Manganese (Mn)	886		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Molybdenum (Mo)	0.53		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Nickel (Ni)	42.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Phosphorus (P)	852		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Potassium (K)	2540		100	mg/kg	22-OCT-16	22-OCT-16	R3581584
Selenium (Se)	0.39		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Silver (Ag)	0.56		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Sodium (Na)	215		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Strontium (Sr)	33.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Thallium (Tl)	0.166		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Tin (Sn)	1.1		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Titanium (Ti)	376		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Uranium (U)	4.53		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Vanadium (V)	46.0		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zinc (Zn)	87.9		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zirconium (Zr)	3.2		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
L1842861-46 16-GIANT-S-52							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.121		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580955
Metals in Soil by CRC ICPMS							
Aluminum (Al)	14300		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Antimony (Sb)	39.2		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Arsenic (As)	839	DLHC	0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Barium (Ba)	94.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Beryllium (Be)	0.33		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cadmium (Cd)	0.205		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581584
Calcium (Ca)	6340		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Chromium (Cr)	38.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cobalt (Co)	12.3		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Copper (Cu)	20.8		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Iron (Fe)	23100		50	mg/kg	22-OCT-16	22-OCT-16	R3581584

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-46 16-GIANT-S-52							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Lead (Pb)	19.2		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lithium (Li)	22.6		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Magnesium (Mg)	7050		20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Manganese (Mn)	493		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Molybdenum (Mo)	0.40		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Nickel (Ni)	26.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Phosphorus (P)	308		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Potassium (K)	650		100	mg/kg	22-OCT-16	22-OCT-16	R3581584
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Silver (Ag)	0.18		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Sodium (Na)	71		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Strontium (Sr)	11.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Thallium (Tl)	0.073		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Titanium (Ti)	284		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Uranium (U)	0.650		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Vanadium (V)	42.4		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zinc (Zn)	67.4		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zirconium (Zr)	2.1		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
L1842861-47 16-GIANT-S-53							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.244		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580955
Metals in Soil by CRC ICPMS							
Aluminum (Al)	17300		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Antimony (Sb)	50.0		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Arsenic (As)	1120	DLHC	0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Barium (Ba)	71.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Beryllium (Be)	0.31		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cadmium (Cd)	0.784		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581584
Calcium (Ca)	10500		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Chromium (Cr)	40.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cobalt (Co)	37.0		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Copper (Cu)	40.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Iron (Fe)	27800		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lead (Pb)	67.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lithium (Li)	29.8		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Magnesium (Mg)	9850		20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Manganese (Mn)	966		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Molybdenum (Mo)	0.38		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Nickel (Ni)	37.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Phosphorus (P)	348		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Potassium (K)	730		100	mg/kg	22-OCT-16	22-OCT-16	R3581584
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Silver (Ag)	0.31		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Sodium (Na)	66		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Strontium (Sr)	18.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Thallium (Tl)	0.113		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-47 16-GIANT-S-53							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Titanium (Ti)	358		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Uranium (U)	0.709		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Vanadium (V)	51.1		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zinc (Zn)	304		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zirconium (Zr)	1.7		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
L1842861-48 16-GIANT-S-53-DUP							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.306		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580955
Metals in Soil by CRC ICPMS							
Aluminum (Al)	15700		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Antimony (Sb)	58.2		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Arsenic (As)	1260	DLHC	0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Barium (Ba)	75.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Beryllium (Be)	0.29		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Boron (B)	5.5		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cadmium (Cd)	0.954		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581584
Calcium (Ca)	13000		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Chromium (Cr)	37.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cobalt (Co)	36.6		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Copper (Cu)	42.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Iron (Fe)	26000		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lead (Pb)	69.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lithium (Li)	25.6		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Magnesium (Mg)	8960		20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Manganese (Mn)	1000		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Molybdenum (Mo)	0.40		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Nickel (Ni)	37.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Phosphorus (P)	414		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Potassium (K)	720		100	mg/kg	22-OCT-16	22-OCT-16	R3581584
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Silver (Ag)	0.32		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Sodium (Na)	67		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Strontium (Sr)	20.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Thallium (Tl)	0.109		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Tin (Sn)	1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Titanium (Ti)	319		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Uranium (U)	0.716		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Vanadium (V)	45.6		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zinc (Zn)	284		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zirconium (Zr)	1.5		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
L1842861-49 16-GIANT-S-54							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0467		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580955
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-49 16-GIANT-S-54							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	16500		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Antimony (Sb)	13.8		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Arsenic (As)	525	DLHC	0.25	mg/kg	22-OCT-16	22-OCT-16	R3581584
Barium (Ba)	94.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Beryllium (Be)	0.49		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Bismuth (Bi)	0.21		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cadmium (Cd)	0.190		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581584
Calcium (Ca)	6630		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Chromium (Cr)	45.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cobalt (Co)	17.3		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Copper (Cu)	24.8		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Iron (Fe)	22300		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lead (Pb)	10.2		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lithium (Li)	22.9		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Magnesium (Mg)	6810		20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Manganese (Mn)	596		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Molybdenum (Mo)	0.36		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Nickel (Ni)	28.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Phosphorus (P)	331		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Potassium (K)	960		100	mg/kg	22-OCT-16	22-OCT-16	R3581584
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Silver (Ag)	0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Sodium (Na)	168		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Strontium (Sr)	19.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Thallium (Tl)	0.124		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Tin (Sn)	1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Titanium (Ti)	494		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Uranium (U)	2.00		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Vanadium (V)	44.8		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zinc (Zn)	49.4		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zirconium (Zr)	2.5		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
L1842861-50 16-GIANT-S-55							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0381		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580955
Metals in Soil by CRC ICPMS							
Aluminum (Al)	15100		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Antimony (Sb)	9.19		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Arsenic (As)	240		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Barium (Ba)	62.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Beryllium (Be)	0.37		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Bismuth (Bi)	0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cadmium (Cd)	0.085		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581584
Calcium (Ca)	4000		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Chromium (Cr)	46.2		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cobalt (Co)	12.2		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Copper (Cu)	16.8		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Iron (Fe)	23300		50	mg/kg	22-OCT-16	22-OCT-16	R3581584

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-50 16-GIANT-S-55							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Lead (Pb)	10.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lithium (Li)	32.7		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Magnesium (Mg)	8030		20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Manganese (Mn)	293		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Molybdenum (Mo)	0.48		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Nickel (Ni)	27.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Phosphorus (P)	244		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Potassium (K)	1520		100	mg/kg	22-OCT-16	22-OCT-16	R3581584
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Silver (Ag)	<0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Sodium (Na)	151		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Strontium (Sr)	11.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Thallium (Tl)	0.099		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Titanium (Ti)	460		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Uranium (U)	4.68		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Vanadium (V)	47.5		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zinc (Zn)	38.1		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zirconium (Zr)	3.6		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
L1842861-51 16-GIANT-S-56							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.115		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580955
Metals in Soil by CRC ICPMS							
Aluminum (Al)	17800		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Antimony (Sb)	28.9		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Arsenic (As)	604	DLHC	0.25	mg/kg	22-OCT-16	22-OCT-16	R3581584
Barium (Ba)	85.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Beryllium (Be)	0.49		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Bismuth (Bi)	0.23		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cadmium (Cd)	0.203		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581584
Calcium (Ca)	6660		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Chromium (Cr)	37.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cobalt (Co)	8.82		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Copper (Cu)	21.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Iron (Fe)	21400		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lead (Pb)	15.8		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lithium (Li)	26.7		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Magnesium (Mg)	6170		20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Manganese (Mn)	181		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Molybdenum (Mo)	0.38		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Nickel (Ni)	23.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Phosphorus (P)	360		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Potassium (K)	1180		100	mg/kg	22-OCT-16	22-OCT-16	R3581584
Selenium (Se)	0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Silver (Ag)	<0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Sodium (Na)	128		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Strontium (Sr)	18.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Thallium (Tl)	0.140		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-51 16-GIANT-S-56							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Titanium (Ti)	406		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Uranium (U)	1.72		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Vanadium (V)	39.6		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zinc (Zn)	42.2		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zirconium (Zr)	2.4		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
L1842861-52 16-GIANT-S-57							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	<0.0050		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580955
Metals in Soil by CRC ICPMS							
Aluminum (Al)	6290		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Antimony (Sb)	0.94		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Arsenic (As)	50.7		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Barium (Ba)	20.2		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Beryllium (Be)	0.15		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cadmium (Cd)	<0.020		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581584
Calcium (Ca)	519		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Chromium (Cr)	20.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cobalt (Co)	4.37		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Copper (Cu)	2.46		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Iron (Fe)	11800		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lead (Pb)	3.11		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lithium (Li)	20.0		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Magnesium (Mg)	3050		20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Manganese (Mn)	96.1		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Molybdenum (Mo)	0.57		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Nickel (Ni)	9.42		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Phosphorus (P)	<50		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Potassium (K)	260		100	mg/kg	22-OCT-16	22-OCT-16	R3581584
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Silver (Ag)	<0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Sodium (Na)	<50		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Strontium (Sr)	2.21		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Thallium (Tl)	<0.050		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Titanium (Ti)	274		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Uranium (U)	0.417		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Vanadium (V)	29.4		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zinc (Zn)	13.9		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zirconium (Zr)	2.2		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
L1842861-53 16-GIANT-S-58							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0263		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580955
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-53 16-GIANT-S-58							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	14200		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Antimony (Sb)	14.7		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Arsenic (As)	254		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Barium (Ba)	32.2		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Beryllium (Be)	0.23		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cadmium (Cd)	0.153		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581584
Calcium (Ca)	3130		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Chromium (Cr)	39.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cobalt (Co)	10.2		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Copper (Cu)	16.2		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Iron (Fe)	21200		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lead (Pb)	11.8		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lithium (Li)	29.5		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Magnesium (Mg)	5370		20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Manganese (Mn)	130		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Molybdenum (Mo)	0.49		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Nickel (Ni)	23.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Phosphorus (P)	147		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Potassium (K)	420		100	mg/kg	22-OCT-16	22-OCT-16	R3581584
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Silver (Ag)	<0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Sodium (Na)	58		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Strontium (Sr)	6.16		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Thallium (Tl)	0.131		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Titanium (Ti)	380		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Uranium (U)	0.677		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Vanadium (V)	45.4		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zinc (Zn)	65.0		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zirconium (Zr)	3.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
L1842861-54 16-GIANT-S-59							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0267		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580955
Metals in Soil by CRC ICPMS							
Aluminum (Al)	19600		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Antimony (Sb)	1.29		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Arsenic (As)	123		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Barium (Ba)	153		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Beryllium (Be)	0.74		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Boron (B)	8.4		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Bismuth (Bi)	0.30		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cadmium (Cd)	0.107		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581584
Calcium (Ca)	5250		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Chromium (Cr)	47.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cobalt (Co)	10.2		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Copper (Cu)	23.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Iron (Fe)	25300		50	mg/kg	22-OCT-16	22-OCT-16	R3581584

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-54 16-GIANT-S-59							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Lead (Pb)	8.67		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lithium (Li)	36.0		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Magnesium (Mg)	8420		20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Manganese (Mn)	265		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Molybdenum (Mo)	0.33		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Nickel (Ni)	28.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Phosphorus (P)	289		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Potassium (K)	3110		100	mg/kg	22-OCT-16	22-OCT-16	R3581584
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Silver (Ag)	<0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Sodium (Na)	341		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Strontium (Sr)	31.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Thallium (Tl)	0.205		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Tin (Sn)	1.1		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Titanium (Ti)	645		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Uranium (U)	2.67		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Vanadium (V)	47.8		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zinc (Zn)	55.0		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zirconium (Zr)	6.4		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
L1842861-55 16-GIANT-S-60							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0884		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580955
Metals in Soil by CRC ICPMS							
Aluminum (Al)	10800		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Antimony (Sb)	30.7		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Arsenic (As)	366		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Barium (Ba)	126		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Beryllium (Be)	0.23		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cadmium (Cd)	0.789		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581584
Calcium (Ca)	8680		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Chromium (Cr)	25.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cobalt (Co)	11.9		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Copper (Cu)	20.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Iron (Fe)	15600		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lead (Pb)	16.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lithium (Li)	18.7		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Magnesium (Mg)	5250		20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Manganese (Mn)	1300		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Molybdenum (Mo)	0.34		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Nickel (Ni)	20.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Phosphorus (P)	262		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Potassium (K)	330		100	mg/kg	22-OCT-16	22-OCT-16	R3581584
Selenium (Se)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Silver (Ag)	0.18		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Sodium (Na)	53		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Strontium (Sr)	12.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Thallium (Tl)	0.103		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-55 16-GIANT-S-60							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Tin (Sn)	1.1		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Titanium (Ti)	245		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Uranium (U)	0.357		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Vanadium (V)	29.8		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zinc (Zn)	87.0		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zirconium (Zr)	1.1		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
L1842861-56 16-GIANT-S-61							
Sampled By: CLIENT on 10-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.153		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580955
Metals in Soil by CRC ICPMS							
Aluminum (Al)	2530		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Antimony (Sb)	27.5		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Arsenic (As)	184		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Barium (Ba)	21.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Beryllium (Be)	<0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Boron (B)	12.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cadmium (Cd)	0.457		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581584
Calcium (Ca)	20200		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Chromium (Cr)	5.81		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cobalt (Co)	4.17		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Copper (Cu)	31.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Iron (Fe)	4650		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lead (Pb)	14.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lithium (Li)	2.2		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Magnesium (Mg)	1990		20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Manganese (Mn)	293		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Molybdenum (Mo)	0.60		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Nickel (Ni)	7.89		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Phosphorus (P)	646		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Potassium (K)	620		100	mg/kg	22-OCT-16	22-OCT-16	R3581584
Selenium (Se)	0.25		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Silver (Ag)	0.13		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Sodium (Na)	<50		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Strontium (Sr)	24.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Thallium (Tl)	<0.050		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Titanium (Ti)	43.1		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Uranium (U)	0.402		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Vanadium (V)	8.93		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zinc (Zn)	17.6		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zirconium (Zr)	1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
L1842861-57 16-GIANT-S-70							
Sampled By: CLIENT on 11-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.130		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580955
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-57 16-GIANT-S-70							
Sampled By: CLIENT on 11-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	10600		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Antimony (Sb)	170		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Arsenic (As)	2080	DLHC	0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Barium (Ba)	48.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Beryllium (Be)	0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Boron (B)	9.1		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Bismuth (Bi)	0.26		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cadmium (Cd)	1.16		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581584
Calcium (Ca)	34900		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Chromium (Cr)	28.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cobalt (Co)	22.5		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Copper (Cu)	70.3		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Iron (Fe)	39100		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lead (Pb)	131		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lithium (Li)	16.6		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Magnesium (Mg)	15400		20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Manganese (Mn)	993		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Molybdenum (Mo)	0.54		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Nickel (Ni)	47.1		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Phosphorus (P)	600		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Potassium (K)	670		100	mg/kg	22-OCT-16	22-OCT-16	R3581584
Selenium (Se)	0.23		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Silver (Ag)	0.89		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Sodium (Na)	<50		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Strontium (Sr)	32.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Thallium (Tl)	0.056		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Titanium (Ti)	72.1		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Uranium (U)	0.119		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Vanadium (V)	38.8		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zinc (Zn)	258		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zirconium (Zr)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
L1842861-58 16-GIANT-S-71							
Sampled By: CLIENT on 11-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.152		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580955
Metals in Soil by CRC ICPMS							
Aluminum (Al)	4680		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Antimony (Sb)	91.3		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Arsenic (As)	785	DLHC	0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Barium (Ba)	45.8		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Beryllium (Be)	<0.10		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Boron (B)	9.7		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Bismuth (Bi)	<0.20		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cadmium (Cd)	0.485		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581584
Calcium (Ca)	27100		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Chromium (Cr)	13.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cobalt (Co)	10.7		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Copper (Cu)	81.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Iron (Fe)	18100		50	mg/kg	22-OCT-16	22-OCT-16	R3581584

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-58 16-GIANT-S-71							
Sampled By: CLIENT on 11-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Lead (Pb)	67.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lithium (Li)	7.2		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Magnesium (Mg)	5940		20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Manganese (Mn)	519		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Molybdenum (Mo)	0.87		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Nickel (Ni)	25.7		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Phosphorus (P)	744		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Potassium (K)	590		100	mg/kg	22-OCT-16	22-OCT-16	R3581584
Selenium (Se)	0.32		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Silver (Ag)	0.54		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Sodium (Na)	<50		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Strontium (Sr)	67.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Thallium (Tl)	<0.050		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Tin (Sn)	1.9		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Titanium (Ti)	47.1		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Uranium (U)	0.148		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Vanadium (V)	20.4		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zinc (Zn)	116		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zirconium (Zr)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
L1842861-59 16-GIANT-S-73							
Sampled By: CLIENT on 11-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.382		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580955
Metals in Soil by CRC ICPMS							
Aluminum (Al)	7240		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Antimony (Sb)	138		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Arsenic (As)	1780	DLHC	0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Barium (Ba)	99.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Beryllium (Be)	0.15		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Bismuth (Bi)	0.21		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cadmium (Cd)	1.09		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581584
Calcium (Ca)	24300		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Chromium (Cr)	19.5		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cobalt (Co)	19.0		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Copper (Cu)	135		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Iron (Fe)	25700		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lead (Pb)	108		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lithium (Li)	10.4		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Magnesium (Mg)	8480		20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Manganese (Mn)	1210		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Molybdenum (Mo)	0.49		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Nickel (Ni)	40.8		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Phosphorus (P)	792		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Potassium (K)	550		100	mg/kg	22-OCT-16	22-OCT-16	R3581584
Selenium (Se)	0.37		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Silver (Ag)	0.67		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Sodium (Na)	<50		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Strontium (Sr)	28.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Thallium (Tl)	0.066		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-59 16-GIANT-S-73							
Sampled By: CLIENT on 11-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Titanium (Ti)	63.3		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Uranium (U)	0.268		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Vanadium (V)	25.1		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zinc (Zn)	169		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zirconium (Zr)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
L1842861-60 16-GIANT-S-74							
Sampled By: CLIENT on 11-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.409		0.0050	mg/kg	22-OCT-16	25-OCT-16	R3580955
Metals in Soil by CRC ICPMS							
Aluminum (Al)	9590		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Antimony (Sb)	111		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Arsenic (As)	1360	DLHC	0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Barium (Ba)	133		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Beryllium (Be)	0.14		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Boron (B)	<5.0		5.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Bismuth (Bi)	0.21		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cadmium (Cd)	1.27		0.020	mg/kg	22-OCT-16	22-OCT-16	R3581584
Calcium (Ca)	14200		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Chromium (Cr)	23.9		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Cobalt (Co)	20.7		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Copper (Cu)	65.6		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Iron (Fe)	28200		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lead (Pb)	93.0		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Lithium (Li)	8.2		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Magnesium (Mg)	5870		20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Manganese (Mn)	890		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Molybdenum (Mo)	0.50		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Nickel (Ni)	34.8		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Phosphorus (P)	811		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Potassium (K)	660		100	mg/kg	22-OCT-16	22-OCT-16	R3581584
Selenium (Se)	0.40		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Silver (Ag)	0.76		0.10	mg/kg	22-OCT-16	22-OCT-16	R3581584
Sodium (Na)	<50		50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Strontium (Sr)	17.4		0.50	mg/kg	22-OCT-16	22-OCT-16	R3581584
Thallium (Tl)	0.054		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Tin (Sn)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Titanium (Ti)	191		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Uranium (U)	0.341		0.050	mg/kg	22-OCT-16	22-OCT-16	R3581584
Vanadium (V)	33.4		0.20	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zinc (Zn)	181		2.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
Zirconium (Zr)	<1.0		1.0	mg/kg	22-OCT-16	22-OCT-16	R3581584
L1842861-61 16-GIANT-S-75							
Sampled By: CLIENT on 11-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.118		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581475
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-61 16-GIANT-S-75							
Sampled By: CLIENT on 11-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	13700		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Antimony (Sb)	20.0		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Arsenic (As)	453		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Barium (Ba)	209		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Beryllium (Be)	0.53		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Boron (B)	<5.0		5.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cadmium (Cd)	1.10		0.020	mg/kg	25-OCT-16	25-OCT-16	R3581640
Calcium (Ca)	10900		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Chromium (Cr)	25.5		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cobalt (Co)	25.2		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Copper (Cu)	54.2		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Iron (Fe)	26300		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lead (Pb)	12.8		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lithium (Li)	8.2		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Magnesium (Mg)	3350		20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Manganese (Mn)	1230		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Molybdenum (Mo)	0.31		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Nickel (Ni)	23.9		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Phosphorus (P)	508		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Potassium (K)	300		100	mg/kg	25-OCT-16	25-OCT-16	R3581640
Selenium (Se)	0.23		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Silver (Ag)	0.14		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Sodium (Na)	115		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Strontium (Sr)	20.5		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Thallium (Tl)	0.077		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Titanium (Ti)	640		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Uranium (U)	0.492		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Vanadium (V)	50.4		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zinc (Zn)	192		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zirconium (Zr)	1.1		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
L1842861-62 16-GIANT-S-76							
Sampled By: CLIENT on 11-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0403		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581475
Metals in Soil by CRC ICPMS							
Aluminum (Al)	10800		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Antimony (Sb)	5.31		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Arsenic (As)	118		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Barium (Ba)	94.3		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Beryllium (Be)	0.35		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Boron (B)	<5.0		5.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cadmium (Cd)	0.187		0.020	mg/kg	25-OCT-16	25-OCT-16	R3581640
Calcium (Ca)	4120		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Chromium (Cr)	25.6		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cobalt (Co)	7.32		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Copper (Cu)	10.1		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Iron (Fe)	17200		50	mg/kg	25-OCT-16	25-OCT-16	R3581640

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-62 16-GIANT-S-76							
Sampled By: CLIENT on 11-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Lead (Pb)	6.63		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lithium (Li)	20.5		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Magnesium (Mg)	4910		20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Manganese (Mn)	346		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Molybdenum (Mo)	1.24		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Nickel (Ni)	15.0		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Phosphorus (P)	212		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Potassium (K)	1610		100	mg/kg	25-OCT-16	25-OCT-16	R3581640
Selenium (Se)	0.20		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Silver (Ag)	<0.10		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Sodium (Na)	163		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Strontium (Sr)	18.1		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Thallium (Tl)	0.086		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Titanium (Ti)	405		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Uranium (U)	1.82		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Vanadium (V)	33.2		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zinc (Zn)	30.7		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zirconium (Zr)	3.1		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
L1842861-63 16-GIANT-S-77							
Sampled By: CLIENT on 11-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0323		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581475
Metals in Soil by CRC ICPMS							
Aluminum (Al)	13100		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Antimony (Sb)	5.30		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Arsenic (As)	111		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Barium (Ba)	24.1		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Beryllium (Be)	0.27		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Boron (B)	<5.0		5.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Bismuth (Bi)	0.21		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cadmium (Cd)	0.079		0.020	mg/kg	25-OCT-16	25-OCT-16	R3581640
Calcium (Ca)	1280		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Chromium (Cr)	33.7		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cobalt (Co)	7.23		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Copper (Cu)	16.9		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Iron (Fe)	20300		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lead (Pb)	7.79		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lithium (Li)	23.7		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Magnesium (Mg)	4980		20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Manganese (Mn)	117		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Molybdenum (Mo)	0.65		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Nickel (Ni)	17.1		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Phosphorus (P)	215		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Potassium (K)	460		100	mg/kg	25-OCT-16	25-OCT-16	R3581640
Selenium (Se)	<0.20		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Silver (Ag)	<0.10		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Sodium (Na)	88		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Strontium (Sr)	4.71		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Thallium (Tl)	0.078		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-63 16-GIANT-S-77							
Sampled By: CLIENT on 11-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Titanium (Ti)	401		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Uranium (U)	0.547		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Vanadium (V)	39.8		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zinc (Zn)	26.5		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zirconium (Zr)	2.7		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
L1842861-64 16-GIANT-S-78							
Sampled By: CLIENT on 11-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0283		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581475
Metals in Soil by CRC ICPMS							
Aluminum (Al)	19400		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Antimony (Sb)	1.77		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Arsenic (As)	69.4		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Barium (Ba)	55.3		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Beryllium (Be)	0.51		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Boron (B)	<5.0		5.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Bismuth (Bi)	0.25		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cadmium (Cd)	0.089		0.020	mg/kg	25-OCT-16	25-OCT-16	R3581640
Calcium (Ca)	1610		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Chromium (Cr)	36.7		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cobalt (Co)	8.16		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Copper (Cu)	20.8		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Iron (Fe)	21500		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lead (Pb)	6.44		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lithium (Li)	30.1		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Magnesium (Mg)	5550		20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Manganese (Mn)	137		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Molybdenum (Mo)	0.37		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Nickel (Ni)	19.4		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Phosphorus (P)	153		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Potassium (K)	640		100	mg/kg	25-OCT-16	25-OCT-16	R3581640
Selenium (Se)	<0.20		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Silver (Ag)	<0.10		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Sodium (Na)	121		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Strontium (Sr)	7.08		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Thallium (Tl)	0.126		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Titanium (Ti)	441		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Uranium (U)	0.841		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Vanadium (V)	44.4		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zinc (Zn)	28.8		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zirconium (Zr)	5.4		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
L1842861-65 16-GIANT-S-79							
Sampled By: CLIENT on 11-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.0349		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581475
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-65 16-GIANT-S-79							
Sampled By: CLIENT on 11-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	21200		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Antimony (Sb)	2.87		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Arsenic (As)	50.8		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Barium (Ba)	192		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Beryllium (Be)	0.84		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Boron (B)	9.4		5.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Bismuth (Bi)	0.27		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cadmium (Cd)	0.097		0.020	mg/kg	25-OCT-16	25-OCT-16	R3581640
Calcium (Ca)	6040		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Chromium (Cr)	43.5		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cobalt (Co)	11.6		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Copper (Cu)	23.0		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Iron (Fe)	25600		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lead (Pb)	10.9		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lithium (Li)	33.8		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Magnesium (Mg)	8710		20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Manganese (Mn)	393		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Molybdenum (Mo)	0.38		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Nickel (Ni)	26.7		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Phosphorus (P)	467		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Potassium (K)	3850		100	mg/kg	25-OCT-16	25-OCT-16	R3581640
Selenium (Se)	<0.20		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Silver (Ag)	<0.10		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Sodium (Na)	304		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Strontium (Sr)	36.9		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Thallium (Tl)	0.205		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Tin (Sn)	1.3		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Titanium (Ti)	718		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Uranium (U)	3.14		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Vanadium (V)	47.9		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zinc (Zn)	52.5		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zirconium (Zr)	9.6		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
L1842861-66 16-GIANT-S-80							
Sampled By: CLIENT on 11-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.212		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581475
Metals in Soil by CRC ICPMS							
Aluminum (Al)	10400		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Antimony (Sb)	57.6		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Arsenic (As)	742	DLHC	0.25	mg/kg	25-OCT-16	25-OCT-16	R3581640
Barium (Ba)	66.4		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Beryllium (Be)	0.16		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Boron (B)	<5.0		5.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cadmium (Cd)	1.06		0.020	mg/kg	25-OCT-16	25-OCT-16	R3581640
Calcium (Ca)	10500		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Chromium (Cr)	22.1		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cobalt (Co)	10.2		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Copper (Cu)	32.8		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Iron (Fe)	20000		50	mg/kg	25-OCT-16	25-OCT-16	R3581640

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-66 16-GIANT-S-80							
Sampled By: CLIENT on 11-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Lead (Pb)	96.7		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lithium (Li)	8.2		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Magnesium (Mg)	5450		20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Manganese (Mn)	213		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Molybdenum (Mo)	0.57		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Nickel (Ni)	21.3		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Phosphorus (P)	767		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Potassium (K)	1150		100	mg/kg	25-OCT-16	25-OCT-16	R3581640
Selenium (Se)	0.30		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Silver (Ag)	0.37		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Sodium (Na)	100		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Strontium (Sr)	19.7		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Thallium (Tl)	0.057		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Tin (Sn)	1.8		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Titanium (Ti)	576		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Uranium (U)	0.631		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Vanadium (V)	35.2		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zinc (Zn)	59.5		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zirconium (Zr)	2.4		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
L1842861-67 16-GIANT-S-81							
Sampled By: CLIENT on 11-SEP-16							
Matrix: soil							
Miscellaneous Parameters							
Mercury (Hg)	0.251		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581475
Metals in Soil by CRC ICPMS							
Aluminum (Al)	6630		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Antimony (Sb)	45.1		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Arsenic (As)	404		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Barium (Ba)	189		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Beryllium (Be)	0.14		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Boron (B)	7.2		5.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cadmium (Cd)	0.455		0.020	mg/kg	25-OCT-16	25-OCT-16	R3581640
Calcium (Ca)	17600		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Chromium (Cr)	15.4		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cobalt (Co)	10.6		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Copper (Cu)	38.3		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Iron (Fe)	12400		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lead (Pb)	35.4		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lithium (Li)	6.9		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Magnesium (Mg)	4690		20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Manganese (Mn)	1430		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Molybdenum (Mo)	0.41		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Nickel (Ni)	17.6		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Phosphorus (P)	746		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Potassium (K)	1240		100	mg/kg	25-OCT-16	25-OCT-16	R3581640
Selenium (Se)	0.26		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Silver (Ag)	0.22		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Sodium (Na)	81		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Strontium (Sr)	47.4		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Thallium (Tl)	0.061		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1842861-67 16-GIANT-S-81							
Sampled By: CLIENT on 11-SEP-16							
Matrix: soil							
Metals in Soil by CRC ICPMS							
Tin (Sn)	6.0		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Titanium (Ti)	135		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Uranium (U)	0.350		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Vanadium (V)	21.1		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zinc (Zn)	116		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zirconium (Zr)	<1.0		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-200.2-CVAF-SK	Soil	Mercury in Soil by CVAFS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAFS.

ALS Test Code	Matrix	Test Description	Method Reference**
MET-200.2-CCMS-SK	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CRC ICPMS.

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. This method does not dissolve all silicate materials and may result in a partial extraction. depending on the sample matrix, for some metals, including, but not limited to Al, Ba, Be, Cr, Sr, Ti, Tl, and V.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
SK	ALS ENVIRONMENTAL - SASKATOON, SASKATCHEWAN, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: GOLDER ASSOCIATES LTD
16820 107 Ave NW
EDMONTON AB T5P 4C3
Contact: Steven Fiddler

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-200.2-CVAF-SK	**Soil**							
Batch R3580938								
WG2416171-3 CRM		**TILL-1**						
Mercury (Hg)			94.2		%		70-130	25-OCT-16
WG2416171-4 LCS								
Mercury (Hg)			97.2		%		70-130	25-OCT-16
WG2416171-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	25-OCT-16
Batch R3580949								
WG2416177-3 CRM		**TILL-1**						
Mercury (Hg)			97.3		%		70-130	25-OCT-16
WG2416177-4 LCS								
Mercury (Hg)			90.5		%		70-130	25-OCT-16
WG2416177-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	25-OCT-16
Batch R3580955								
WG2416181-3 CRM		**TILL-1**						
Mercury (Hg)			96.1		%		70-130	25-OCT-16
WG2416181-2 DUP		**L1842861-47**						
Mercury (Hg)		0.244	0.266		mg/kg	8.5	40	25-OCT-16
WG2416181-4 LCS								
Mercury (Hg)			93.2		%		70-130	25-OCT-16
WG2416181-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	25-OCT-16
Batch R3581475								
WG2416183-3 CRM		**TILL-1**						
Mercury (Hg)			107.4		%		70-130	27-OCT-16
WG2416183-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	27-OCT-16
Batch R3581483								
WG2416826-3 CRM		**TILL-1**						
Mercury (Hg)			107.6		%		70-130	27-OCT-16
WG2416826-2 DUP		**L1842861-28**						
Mercury (Hg)		0.133	0.127		mg/kg	4.3	40	27-OCT-16
WG2416826-4 LCS								
Mercury (Hg)			96.2		%		70-130	27-OCT-16
WG2416826-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	27-OCT-16
MET-200.2-CCMS-SK	**Soil**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch R3581474								
WG2416171-3 CRM		**TILL-1**						
Aluminum (Al)			89.6		%		70-130	22-OCT-16
Antimony (Sb)			98.8		%		70-130	22-OCT-16
Arsenic (As)			104.6		%		70-130	22-OCT-16
Barium (Ba)			89.6		%		70-130	22-OCT-16
Beryllium (Be)			86.1		%		70-130	22-OCT-16
Bismuth (Bi)			94.4		%		70-130	22-OCT-16
Cadmium (Cd)			85.7		%		70-130	22-OCT-16
Calcium (Ca)			100.0		%		70-130	22-OCT-16
Chromium (Cr)			100.8		%		70-130	22-OCT-16
Cobalt (Co)			96.9		%		70-130	22-OCT-16
Copper (Cu)			97.0		%		70-130	22-OCT-16
Iron (Fe)			98.0		%		70-130	22-OCT-16
Lead (Pb)			90.9		%		70-130	22-OCT-16
Lithium (Li)			87.0		%		70-130	22-OCT-16
Magnesium (Mg)			97.7		%		70-130	22-OCT-16
Manganese (Mn)			95.9		%		70-130	22-OCT-16
Molybdenum (Mo)			82.2		%		70-130	22-OCT-16
Nickel (Ni)			99.7		%		70-130	22-OCT-16
Phosphorus (P)			100.0		%		70-130	22-OCT-16
Potassium (K)			110.8		%		70-130	22-OCT-16
Selenium (Se)			98.6		%		70-130	22-OCT-16
Silver (Ag)			102.8		%		70-130	22-OCT-16
Sodium (Na)			126.0		%		70-130	22-OCT-16
Strontium (Sr)			96.7		%		70-130	22-OCT-16
Thallium (Tl)			93.3		%		70-130	22-OCT-16
Tin (Sn)			90.2		%		70-130	22-OCT-16
Titanium (Ti)			96.5		%		70-130	22-OCT-16
Uranium (U)			104.4		%		70-130	22-OCT-16
Vanadium (V)			104.8		%		70-130	22-OCT-16
Zinc (Zn)			95.3		%		70-130	22-OCT-16
WG2416171-4 LCS								
Aluminum (Al)			92.5		%		80-120	22-OCT-16
Antimony (Sb)			103.4		%		80-120	22-OCT-16
Arsenic (As)			99.8		%		80-120	22-OCT-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch R3581474								
WG2416171-4 LCS								
Barium (Ba)			89.0		%		80-120	22-OCT-16
Beryllium (Be)			91.2		%		80-120	22-OCT-16
Boron (B)			85.3		%		80-120	22-OCT-16
Bismuth (Bi)			98.5		%		80-120	22-OCT-16
Cadmium (Cd)			97.3		%		80-120	22-OCT-16
Calcium (Ca)			94.3		%		80-120	22-OCT-16
Chromium (Cr)			93.9		%		80-120	22-OCT-16
Cobalt (Co)			92.1		%		80-120	22-OCT-16
Copper (Cu)			93.9		%		80-120	22-OCT-16
Iron (Fe)			104.1		%		80-120	22-OCT-16
Lead (Pb)			97.7		%		80-120	22-OCT-16
Lithium (Li)			91.5		%		80-120	22-OCT-16
Magnesium (Mg)			93.7		%		80-120	22-OCT-16
Manganese (Mn)			96.0		%		80-120	22-OCT-16
Molybdenum (Mo)			94.8		%		80-120	22-OCT-16
Nickel (Ni)			95.1		%		80-120	22-OCT-16
Phosphorus (P)			100.7		%		80-120	22-OCT-16
Potassium (K)			97.5		%		80-120	22-OCT-16
Selenium (Se)			98.9		%		80-120	22-OCT-16
Silver (Ag)			96.0		%		80-120	22-OCT-16
Sodium (Na)			99.0		%		80-120	22-OCT-16
Strontium (Sr)			93.6		%		80-120	22-OCT-16
Thallium (Tl)			94.0		%		80-120	22-OCT-16
Tin (Sn)			98.6		%		80-120	22-OCT-16
Titanium (Ti)			94.4		%		80-120	22-OCT-16
Uranium (U)			100.4		%		80-120	22-OCT-16
Vanadium (V)			97.6		%		80-120	22-OCT-16
Zinc (Zn)			87.9		%		80-120	22-OCT-16
Zirconium (Zr)			97.2		%		80-120	22-OCT-16
WG2416171-1 MB								
Aluminum (Al)			<50		mg/kg		50	22-OCT-16
Antimony (Sb)			<0.10		mg/kg		0.1	22-OCT-16
Arsenic (As)			<0.10		mg/kg		0.1	22-OCT-16
Barium (Ba)			<0.50		mg/kg		0.5	22-OCT-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch R3581474								
WG2416171-1 MB								
Beryllium (Be)			<0.10		mg/kg		0.1	22-OCT-16
Boron (B)			<5.0		mg/kg		5	22-OCT-16
Bismuth (Bi)			<0.20		mg/kg		0.2	22-OCT-16
Cadmium (Cd)			<0.020		mg/kg		0.02	22-OCT-16
Calcium (Ca)			<50		mg/kg		50	22-OCT-16
Chromium (Cr)			<0.50		mg/kg		0.5	22-OCT-16
Cobalt (Co)			<0.10		mg/kg		0.1	22-OCT-16
Copper (Cu)			<0.50		mg/kg		0.5	22-OCT-16
Iron (Fe)			<50		mg/kg		50	22-OCT-16
Lead (Pb)			<0.50		mg/kg		0.5	22-OCT-16
Lithium (Li)			<2.0		mg/kg		2	22-OCT-16
Magnesium (Mg)			<20		mg/kg		20	22-OCT-16
Manganese (Mn)			<1.0		mg/kg		1	22-OCT-16
Molybdenum (Mo)			<0.10		mg/kg		0.1	22-OCT-16
Nickel (Ni)			<0.50		mg/kg		0.5	22-OCT-16
Phosphorus (P)			<50		mg/kg		50	22-OCT-16
Potassium (K)			<100		mg/kg		100	22-OCT-16
Selenium (Se)			<0.20		mg/kg		0.2	22-OCT-16
Silver (Ag)			<0.10		mg/kg		0.1	22-OCT-16
Sodium (Na)			<50		mg/kg		50	22-OCT-16
Strontium (Sr)			<0.50		mg/kg		0.5	22-OCT-16
Thallium (Tl)			<0.050		mg/kg		0.05	22-OCT-16
Tin (Sn)			<1.0		mg/kg		1	22-OCT-16
Titanium (Ti)			<1.0		mg/kg		1	22-OCT-16
Uranium (U)			<0.050		mg/kg		0.05	22-OCT-16
Vanadium (V)			<0.20		mg/kg		0.2	22-OCT-16
Zinc (Zn)			<2.0		mg/kg		2	22-OCT-16
Zirconium (Zr)			<1.0		mg/kg		1	22-OCT-16
Batch R3581505								
WG2416177-3 CRM		**TILL-1**						
Aluminum (Al)			87.0		%		70-130	22-OCT-16
Antimony (Sb)			95.7		%		70-130	22-OCT-16
Arsenic (As)			101.2		%		70-130	22-OCT-16
Barium (Ba)			90.8		%		70-130	22-OCT-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch R3581505								
WG2416177-3 CRM		**TILL-1**						
Beryllium (Be)			87.2		%		70-130	22-OCT-16
Bismuth (Bi)			87.6		%		70-130	22-OCT-16
Cadmium (Cd)			82.0		%		70-130	22-OCT-16
Calcium (Ca)			96.5		%		70-130	22-OCT-16
Chromium (Cr)			94.5		%		70-130	22-OCT-16
Cobalt (Co)			92.2		%		70-130	22-OCT-16
Copper (Cu)			92.7		%		70-130	22-OCT-16
Iron (Fe)			91.8		%		70-130	22-OCT-16
Lead (Pb)			91.1		%		70-130	22-OCT-16
Lithium (Li)			92.3		%		70-130	22-OCT-16
Magnesium (Mg)			96.9		%		70-130	22-OCT-16
Manganese (Mn)			91.2		%		70-130	22-OCT-16
Molybdenum (Mo)			81.7		%		70-130	22-OCT-16
Nickel (Ni)			95.7		%		70-130	22-OCT-16
Phosphorus (P)			94.0		%		70-130	22-OCT-16
Potassium (K)			98.3		%		70-130	22-OCT-16
Selenium (Se)			86.4		%		70-130	22-OCT-16
Silver (Ag)			98.6		%		70-130	22-OCT-16
Sodium (Na)			104.1		%		70-130	22-OCT-16
Strontium (Sr)			95.6		%		70-130	22-OCT-16
Thallium (Tl)			83.6		%		70-130	22-OCT-16
Tin (Sn)			84.9		%		70-130	22-OCT-16
Titanium (Ti)			79.3		%		70-130	22-OCT-16
Uranium (U)			101.3		%		70-130	22-OCT-16
Vanadium (V)			96.6		%		70-130	22-OCT-16
Zinc (Zn)			91.1		%		70-130	22-OCT-16
WG2416177-4 LCS								
Aluminum (Al)			92.2		%		80-120	22-OCT-16
Antimony (Sb)			100.0		%		80-120	22-OCT-16
Arsenic (As)			95.4		%		80-120	22-OCT-16
Barium (Ba)			86.8		%		80-120	22-OCT-16
Beryllium (Be)			97.1		%		80-120	22-OCT-16
Boron (B)			90.1		%		80-120	22-OCT-16
Bismuth (Bi)			94.0		%		80-120	22-OCT-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch R3581505								
WG2416177-4 LCS								
Cadmium (Cd)			94.8		%		80-120	22-OCT-16
Calcium (Ca)			97.4		%		80-120	22-OCT-16
Chromium (Cr)			92.8		%		80-120	22-OCT-16
Cobalt (Co)			92.8		%		80-120	22-OCT-16
Copper (Cu)			93.5		%		80-120	22-OCT-16
Iron (Fe)			102.9		%		80-120	22-OCT-16
Lead (Pb)			96.6		%		80-120	22-OCT-16
Lithium (Li)			101.2		%		80-120	22-OCT-16
Magnesium (Mg)			98.6		%		80-120	22-OCT-16
Manganese (Mn)			94.5		%		80-120	22-OCT-16
Molybdenum (Mo)			97.3		%		80-120	22-OCT-16
Nickel (Ni)			94.2		%		80-120	22-OCT-16
Phosphorus (P)			97.0		%		80-120	22-OCT-16
Potassium (K)			97.0		%		80-120	22-OCT-16
Selenium (Se)			95.6		%		80-120	22-OCT-16
Silver (Ag)			95.9		%		80-120	22-OCT-16
Sodium (Na)			98.8		%		80-120	22-OCT-16
Strontium (Sr)			94.5		%		80-120	22-OCT-16
Thallium (Tl)			95.0		%		80-120	22-OCT-16
Tin (Sn)			94.0		%		80-120	22-OCT-16
Titanium (Ti)			88.6		%		80-120	22-OCT-16
Uranium (U)			100.1		%		80-120	22-OCT-16
Vanadium (V)			95.7		%		80-120	22-OCT-16
Zinc (Zn)			87.0		%		80-120	22-OCT-16
Zirconium (Zr)			98.5		%		80-120	22-OCT-16
WG2416177-1 MB								
Aluminum (Al)			<50		mg/kg		50	22-OCT-16
Antimony (Sb)			<0.10		mg/kg		0.1	22-OCT-16
Arsenic (As)			<0.10		mg/kg		0.1	22-OCT-16
Barium (Ba)			<0.50		mg/kg		0.5	22-OCT-16
Beryllium (Be)			<0.10		mg/kg		0.1	22-OCT-16
Boron (B)			<5.0		mg/kg		5	22-OCT-16
Bismuth (Bi)			<0.20		mg/kg		0.2	22-OCT-16
Cadmium (Cd)			<0.020		mg/kg		0.02	22-OCT-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch R3581505								
WG2416177-1 MB								
Calcium (Ca)			<50		mg/kg		50	22-OCT-16
Chromium (Cr)			<0.50		mg/kg		0.5	22-OCT-16
Cobalt (Co)			<0.10		mg/kg		0.1	22-OCT-16
Copper (Cu)			<0.50		mg/kg		0.5	22-OCT-16
Iron (Fe)			<50		mg/kg		50	22-OCT-16
Lead (Pb)			<0.50		mg/kg		0.5	22-OCT-16
Lithium (Li)			<2.0		mg/kg		2	22-OCT-16
Magnesium (Mg)			<20		mg/kg		20	22-OCT-16
Manganese (Mn)			<1.0		mg/kg		1	22-OCT-16
Molybdenum (Mo)			<0.10		mg/kg		0.1	22-OCT-16
Nickel (Ni)			<0.50		mg/kg		0.5	22-OCT-16
Phosphorus (P)			<50		mg/kg		50	22-OCT-16
Potassium (K)			<100		mg/kg		100	22-OCT-16
Selenium (Se)			<0.20		mg/kg		0.2	22-OCT-16
Silver (Ag)			<0.10		mg/kg		0.1	22-OCT-16
Sodium (Na)			<50		mg/kg		50	22-OCT-16
Strontium (Sr)			<0.50		mg/kg		0.5	22-OCT-16
Thallium (Tl)			<0.050		mg/kg		0.05	22-OCT-16
Tin (Sn)			<1.0		mg/kg		1	22-OCT-16
Titanium (Ti)			<1.0		mg/kg		1	22-OCT-16
Uranium (U)			<0.050		mg/kg		0.05	22-OCT-16
Vanadium (V)			<0.20		mg/kg		0.2	22-OCT-16
Zinc (Zn)			<2.0		mg/kg		2	22-OCT-16
Zirconium (Zr)			<1.0		mg/kg		1	22-OCT-16
Batch R3581584								
WG2416181-3 CRM		**TILL-1**						
Aluminum (Al)			85.7		%		70-130	22-OCT-16
Antimony (Sb)			96.7		%		70-130	22-OCT-16
Arsenic (As)			111.8		%		70-130	22-OCT-16
Barium (Ba)			84.8		%		70-130	22-OCT-16
Beryllium (Be)			93.7		%		70-130	22-OCT-16
Bismuth (Bi)			97.6		%		70-130	22-OCT-16
Cadmium (Cd)			84.1		%		70-130	22-OCT-16
Calcium (Ca)			101.9		%		70-130	22-OCT-16

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch R3581584								
WG2416181-3 CRM		**TILL-1**						
Chromium (Cr)			94.1		%		70-130	22-OCT-16
Cobalt (Co)			91.3		%		70-130	22-OCT-16
Copper (Cu)			89.7		%		70-130	22-OCT-16
Iron (Fe)			90.8		%		70-130	22-OCT-16
Lead (Pb)			96.6		%		70-130	22-OCT-16
Lithium (Li)			98.7		%		70-130	22-OCT-16
Magnesium (Mg)			95.5		%		70-130	22-OCT-16
Manganese (Mn)			86.6		%		70-130	22-OCT-16
Molybdenum (Mo)			86.2		%		70-130	22-OCT-16
Nickel (Ni)			93.9		%		70-130	22-OCT-16
Phosphorus (P)			92.0		%		70-130	22-OCT-16
Potassium (K)			102.6		%		70-130	22-OCT-16
Selenium (Se)			85.5		%		70-130	22-OCT-16
Silver (Ag)			107.6		%		70-130	22-OCT-16
Sodium (Na)			100.3		%		70-130	22-OCT-16
Strontium (Sr)			101.1		%		70-130	22-OCT-16
Thallium (Tl)			93.5		%		70-130	22-OCT-16
Tin (Sn)			86.6		%		70-130	22-OCT-16
Titanium (Ti)			81.9		%		70-130	22-OCT-16
Uranium (U)			106.7		%		70-130	22-OCT-16
Vanadium (V)			96.4		%		70-130	22-OCT-16
Zinc (Zn)			89.3		%		70-130	22-OCT-16
WG2416181-2 DUP		**L1842861-47**						
Aluminum (Al)		17300	17900		mg/kg	3.4	40	22-OCT-16
Antimony (Sb)		50.0	53.5		mg/kg	6.8	30	22-OCT-16
Arsenic (As)		1120	1270		mg/kg	13	30	22-OCT-16
Barium (Ba)		71.3	77.2		mg/kg	8.0	40	22-OCT-16
Beryllium (Be)		0.31	0.32		mg/kg	3.7	30	22-OCT-16
Boron (B)		<5.0	5.2	RPD-NA	mg/kg	N/A	25	22-OCT-16
Bismuth (Bi)		<0.20	<0.20	RPD-NA	mg/kg	N/A	30	22-OCT-16
Cadmium (Cd)		0.784	0.891		mg/kg	13	30	22-OCT-16
Calcium (Ca)		10500	11500		mg/kg	9.7	30	22-OCT-16
Chromium (Cr)		40.6	43.1		mg/kg	6.0	30	22-OCT-16
Cobalt (Co)		37.0	38.7		mg/kg	4.3	30	22-OCT-16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch R3581584								
WG2416181-2 DUP		**L1842861-47**						
Copper (Cu)		40.0	44.0		mg/kg	9.3	30	22-OCT-16
Iron (Fe)		27800	28300		mg/kg	1.5	30	22-OCT-16
Lead (Pb)		67.4	71.0		mg/kg	5.3	40	22-OCT-16
Lithium (Li)		29.8	29.2		mg/kg	2.0	30	22-OCT-16
Magnesium (Mg)		9850	10300		mg/kg	4.6	30	22-OCT-16
Manganese (Mn)		966	1030		mg/kg	6.2	30	22-OCT-16
Molybdenum (Mo)		0.38	0.43		mg/kg	14	40	22-OCT-16
Nickel (Ni)		37.5	40.5		mg/kg	7.6	30	22-OCT-16
Phosphorus (P)		348	399		mg/kg	14	30	22-OCT-16
Potassium (K)		730	750		mg/kg	3.4	40	22-OCT-16
Selenium (Se)		<0.20	<0.20	RPD-NA	mg/kg	N/A	30	22-OCT-16
Silver (Ag)		0.31	0.32		mg/kg	3.0	40	22-OCT-16
Sodium (Na)		66	77		mg/kg	16	40	22-OCT-16
Strontium (Sr)		18.4	19.7		mg/kg	6.9	40	22-OCT-16
Thallium (Tl)		0.113	0.124		mg/kg	8.8	30	22-OCT-16
Tin (Sn)		<1.0	1.0	RPD-NA	mg/kg	N/A	40	22-OCT-16
Titanium (Ti)		358	361		mg/kg	0.7	40	22-OCT-16
Uranium (U)		0.709	0.782		mg/kg	9.9	30	22-OCT-16
Vanadium (V)		51.1	53.9		mg/kg	5.3	30	22-OCT-16
Zinc (Zn)		304	331		mg/kg	8.6	30	22-OCT-16
Zirconium (Zr)		1.7	1.6		mg/kg	5.7	25	22-OCT-16
WG2416181-4 LCS								
Aluminum (Al)			92.5		%		80-120	22-OCT-16
Antimony (Sb)			98.6		%		80-120	22-OCT-16
Arsenic (As)			92.5		%		80-120	22-OCT-16
Barium (Ba)			88.9		%		80-120	22-OCT-16
Beryllium (Be)			95.0		%		80-120	22-OCT-16
Boron (B)			88.6		%		80-120	22-OCT-16
Bismuth (Bi)			97.2		%		80-120	22-OCT-16
Cadmium (Cd)			92.3		%		80-120	22-OCT-16
Calcium (Ca)			94.4		%		80-120	22-OCT-16
Chromium (Cr)			90.0		%		80-120	22-OCT-16
Cobalt (Co)			90.2		%		80-120	22-OCT-16
Copper (Cu)			91.2		%		80-120	22-OCT-16

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch R3581584								
WG2416181-4 LCS								
Iron (Fe)			105.7		%		80-120	22-OCT-16
Lead (Pb)			97.3		%		80-120	22-OCT-16
Lithium (Li)			97.1		%		80-120	22-OCT-16
Magnesium (Mg)			92.3		%		80-120	22-OCT-16
Manganese (Mn)			91.9		%		80-120	22-OCT-16
Molybdenum (Mo)			93.4		%		80-120	22-OCT-16
Nickel (Ni)			91.9		%		80-120	22-OCT-16
Phosphorus (P)			96.9		%		80-120	22-OCT-16
Potassium (K)			93.6		%		80-120	22-OCT-16
Selenium (Se)			94.7		%		80-120	22-OCT-16
Silver (Ag)			96.3		%		80-120	22-OCT-16
Sodium (Na)			97.2		%		80-120	22-OCT-16
Strontium (Sr)			93.9		%		80-120	22-OCT-16
Thallium (Tl)			92.6		%		80-120	22-OCT-16
Tin (Sn)			90.3		%		80-120	22-OCT-16
Titanium (Ti)			86.2		%		80-120	22-OCT-16
Uranium (U)			102.7		%		80-120	22-OCT-16
Vanadium (V)			94.1		%		80-120	22-OCT-16
Zinc (Zn)			86.2		%		80-120	22-OCT-16
Zirconium (Zr)			93.8		%		80-120	22-OCT-16
WG2416181-1 MB								
Aluminum (Al)			<50		mg/kg		50	22-OCT-16
Antimony (Sb)			<0.10		mg/kg		0.1	22-OCT-16
Arsenic (As)			<0.10		mg/kg		0.1	22-OCT-16
Barium (Ba)			<0.50		mg/kg		0.5	22-OCT-16
Beryllium (Be)			<0.10		mg/kg		0.1	22-OCT-16
Boron (B)			<5.0		mg/kg		5	22-OCT-16
Bismuth (Bi)			<0.20		mg/kg		0.2	22-OCT-16
Cadmium (Cd)			<0.020		mg/kg		0.02	22-OCT-16
Calcium (Ca)			<50		mg/kg		50	22-OCT-16
Chromium (Cr)			<0.50		mg/kg		0.5	22-OCT-16
Cobalt (Co)			<0.10		mg/kg		0.1	22-OCT-16
Copper (Cu)			<0.50		mg/kg		0.5	22-OCT-16
Iron (Fe)			<50		mg/kg		50	22-OCT-16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch R3581584								
WG2416181-1 MB								
Lead (Pb)			<0.50		mg/kg		0.5	22-OCT-16
Lithium (Li)			<2.0		mg/kg		2	22-OCT-16
Magnesium (Mg)			<20		mg/kg		20	22-OCT-16
Manganese (Mn)			<1.0		mg/kg		1	22-OCT-16
Molybdenum (Mo)			<0.10		mg/kg		0.1	22-OCT-16
Nickel (Ni)			<0.50		mg/kg		0.5	22-OCT-16
Phosphorus (P)			<50		mg/kg		50	22-OCT-16
Potassium (K)			<100		mg/kg		100	22-OCT-16
Selenium (Se)			<0.20		mg/kg		0.2	22-OCT-16
Silver (Ag)			<0.10		mg/kg		0.1	22-OCT-16
Sodium (Na)			<50		mg/kg		50	22-OCT-16
Strontium (Sr)			<0.50		mg/kg		0.5	22-OCT-16
Thallium (Tl)			<0.050		mg/kg		0.05	22-OCT-16
Tin (Sn)			<1.0		mg/kg		1	22-OCT-16
Titanium (Ti)			<1.0		mg/kg		1	22-OCT-16
Uranium (U)			<0.050		mg/kg		0.05	22-OCT-16
Vanadium (V)			<0.20		mg/kg		0.2	22-OCT-16
Zinc (Zn)			<2.0		mg/kg		2	22-OCT-16
Zirconium (Zr)			<1.0		mg/kg		1	22-OCT-16
Batch R3581640								
WG2416183-3 CRM		**TILL-1**						
Aluminum (Al)			101.6		%		70-130	25-OCT-16
Antimony (Sb)			93.2		%		70-130	25-OCT-16
Arsenic (As)			108.5		%		70-130	25-OCT-16
Barium (Ba)			106.8		%		70-130	25-OCT-16
Beryllium (Be)			94.6		%		70-130	25-OCT-16
Bismuth (Bi)			98.6		%		70-130	25-OCT-16
Cadmium (Cd)			93.6		%		70-130	25-OCT-16
Calcium (Ca)			105.5		%		70-130	25-OCT-16
Chromium (Cr)			112.3		%		70-130	25-OCT-16
Cobalt (Co)			105.3		%		70-130	25-OCT-16
Copper (Cu)			103.0		%		70-130	25-OCT-16
Iron (Fe)			102.6		%		70-130	25-OCT-16
Lead (Pb)			93.0		%		70-130	25-OCT-16

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch R3581640								
WG2416183-3 CRM		**TILL-1**						
Lithium (Li)			101.6		%		70-130	25-OCT-16
Magnesium (Mg)			106.6		%		70-130	25-OCT-16
Manganese (Mn)			102.2		%		70-130	25-OCT-16
Molybdenum (Mo)			90.1		%		70-130	25-OCT-16
Nickel (Ni)			107.4		%		70-130	25-OCT-16
Phosphorus (P)			108.5		%		70-130	25-OCT-16
Potassium (K)			107.2		%		70-130	25-OCT-16
Selenium (Se)			101.3		%		70-130	25-OCT-16
Silver (Ag)			100.3		%		70-130	25-OCT-16
Sodium (Na)			117.2		%		70-130	25-OCT-16
Strontium (Sr)			100.2		%		70-130	25-OCT-16
Thallium (Tl)			93.2		%		70-130	25-OCT-16
Tin (Sn)			80.1		%		70-130	25-OCT-16
Titanium (Ti)			99.4		%		70-130	25-OCT-16
Uranium (U)			105.2		%		70-130	25-OCT-16
Vanadium (V)			109.3		%		70-130	25-OCT-16
Zinc (Zn)			102.9		%		70-130	25-OCT-16
WG2416183-1 MB								
Aluminum (Al)			<50		mg/kg		50	25-OCT-16
Antimony (Sb)			<0.10		mg/kg		0.1	25-OCT-16
Arsenic (As)			<0.10		mg/kg		0.1	25-OCT-16
Barium (Ba)			<0.50		mg/kg		0.5	25-OCT-16
Beryllium (Be)			<0.10		mg/kg		0.1	25-OCT-16
Boron (B)			<5.0		mg/kg		5	25-OCT-16
Bismuth (Bi)			<0.20		mg/kg		0.2	25-OCT-16
Cadmium (Cd)			<0.020		mg/kg		0.02	25-OCT-16
Calcium (Ca)			<50		mg/kg		50	25-OCT-16
Chromium (Cr)			<0.50		mg/kg		0.5	25-OCT-16
Cobalt (Co)			<0.10		mg/kg		0.1	25-OCT-16
Copper (Cu)			<0.50		mg/kg		0.5	25-OCT-16
Iron (Fe)			<50		mg/kg		50	25-OCT-16
Lead (Pb)			<0.50		mg/kg		0.5	25-OCT-16
Lithium (Li)			<2.0		mg/kg		2	25-OCT-16
Magnesium (Mg)			<20		mg/kg		20	25-OCT-16

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch R3581640								
WG2416183-1 MB								
Manganese (Mn)			<1.0		mg/kg		1	25-OCT-16
Molybdenum (Mo)			<0.10		mg/kg		0.1	25-OCT-16
Nickel (Ni)			<0.50		mg/kg		0.5	25-OCT-16
Phosphorus (P)			<50		mg/kg		50	25-OCT-16
Potassium (K)			<100		mg/kg		100	25-OCT-16
Selenium (Se)			<0.20		mg/kg		0.2	25-OCT-16
Silver (Ag)			<0.10		mg/kg		0.1	25-OCT-16
Sodium (Na)			<50		mg/kg		50	25-OCT-16
Strontium (Sr)			<0.50		mg/kg		0.5	25-OCT-16
Thallium (Tl)			<0.050		mg/kg		0.05	25-OCT-16
Tin (Sn)			<1.0		mg/kg		1	25-OCT-16
Titanium (Ti)			<1.0		mg/kg		1	25-OCT-16
Uranium (U)			<0.050		mg/kg		0.05	25-OCT-16
Vanadium (V)			<0.20		mg/kg		0.2	25-OCT-16
Zinc (Zn)			<2.0		mg/kg		2	25-OCT-16
Zirconium (Zr)			<1.0		mg/kg		1	25-OCT-16
Batch R3581644								
WG2416826-3 CRM		**TILL-1**						
Aluminum (Al)			111.5		%		70-130	27-OCT-16
Antimony (Sb)			105.7		%		70-130	27-OCT-16
Arsenic (As)			116.7		%		70-130	27-OCT-16
Barium (Ba)			115.8		%		70-130	27-OCT-16
Beryllium (Be)			98.7		%		70-130	27-OCT-16
Bismuth (Bi)			101.7		%		70-130	27-OCT-16
Cadmium (Cd)			103.5		%		70-130	27-OCT-16
Calcium (Ca)			115.6		%		70-130	27-OCT-16
Chromium (Cr)			117.7		%		70-130	27-OCT-16
Cobalt (Co)			112.1		%		70-130	27-OCT-16
Copper (Cu)			109.0		%		70-130	27-OCT-16
Iron (Fe)			99.3		%		70-130	27-OCT-16
Lead (Pb)			102.4		%		70-130	27-OCT-16
Lithium (Li)			119.9		%		70-130	27-OCT-16
Magnesium (Mg)			112.4		%		70-130	27-OCT-16
Manganese (Mn)			109.8		%		70-130	27-OCT-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch R3581644								
WG2416826-3 CRM		**TILL-1**						
Molybdenum (Mo)			100.3		%		70-130	27-OCT-16
Nickel (Ni)			113.2		%		70-130	27-OCT-16
Phosphorus (P)			111.6		%		70-130	27-OCT-16
Potassium (K)			122.2		%		70-130	27-OCT-16
Selenium (Se)			97.4		%		70-130	27-OCT-16
Silver (Ag)			114.3		%		70-130	27-OCT-16
Sodium (Na)			124.4		%		70-130	27-OCT-16
Strontium (Sr)			116.1		%		70-130	27-OCT-16
Thallium (Tl)			100.1		%		70-130	27-OCT-16
Tin (Sn)			100.1		%		70-130	27-OCT-16
Titanium (Ti)			118.6		%		70-130	27-OCT-16
Uranium (U)			113.2		%		70-130	27-OCT-16
Vanadium (V)			119.7		%		70-130	27-OCT-16
Zinc (Zn)			108.3		%		70-130	27-OCT-16
WG2416826-2 DUP		**L1842861-28**						
Aluminum (Al)		5440	5520		mg/kg	1.5	40	27-OCT-16
Antimony (Sb)		38.1	37.3		mg/kg	2.0	30	27-OCT-16
Arsenic (As)		198	200		mg/kg	0.9	30	27-OCT-16
Barium (Ba)		140	143		mg/kg	2.4	40	27-OCT-16
Beryllium (Be)		<0.20	0.21	RPD-NA	mg/kg	N/A	30	27-OCT-16
Boron (B)		<10	<10	RPD-NA	mg/kg	N/A	25	27-OCT-16
Bismuth (Bi)		<0.40	<0.40	RPD-NA	mg/kg	N/A	30	27-OCT-16
Cadmium (Cd)		0.561	0.563		mg/kg	0.3	30	27-OCT-16
Calcium (Ca)		43600	45900		mg/kg	5.1	30	27-OCT-16
Chromium (Cr)		10.5	11.1		mg/kg	5.1	30	27-OCT-16
Cobalt (Co)		4.35	4.32		mg/kg	0.6	30	27-OCT-16
Copper (Cu)		37.0	38.5		mg/kg	3.9	30	27-OCT-16
Iron (Fe)		5130	5240		mg/kg	2.2	30	27-OCT-16
Lead (Pb)		6.8	6.6		mg/kg	1.7	40	27-OCT-16
Lithium (Li)		4.3	4.6		mg/kg	6.5	30	27-OCT-16
Magnesium (Mg)		3980	3990		mg/kg	0.2	30	27-OCT-16
Manganese (Mn)		416	418		mg/kg	0.5	30	27-OCT-16
Molybdenum (Mo)		0.61	0.59		mg/kg	3.5	40	27-OCT-16
Nickel (Ni)		16.4	16.7		mg/kg	2.0	30	27-OCT-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch R3581644								
WG2416826-2 DUP		**L1842861-28**						
Phosphorus (P)		710	750		mg/kg	4.5	30	27-OCT-16
Potassium (K)		300	300		mg/kg	0.4	40	27-OCT-16
Selenium (Se)		1.22	1.28		mg/kg	4.4	30	27-OCT-16
Silver (Ag)		<0.20	<0.20	RPD-NA	mg/kg	N/A	40	27-OCT-16
Sodium (Na)		<100	<100	RPD-NA	mg/kg	N/A	40	27-OCT-16
Strontium (Sr)		56.1	56.2		mg/kg	0.1	40	27-OCT-16
Thallium (Tl)		<0.10	<0.10	RPD-NA	mg/kg	N/A	30	27-OCT-16
Tin (Sn)		<2.0	<2.0	RPD-NA	mg/kg	N/A	40	27-OCT-16
Titanium (Ti)		83.3	100		mg/kg	18	40	27-OCT-16
Uranium (U)		3.88	4.11		mg/kg	5.6	30	27-OCT-16
Vanadium (V)		11.2	11.2		mg/kg	0.1	30	27-OCT-16
Zinc (Zn)		91.6	92.7		mg/kg	1.2	30	27-OCT-16
Zirconium (Zr)		<2.0	<2.0	RPD-NA	mg/kg	N/A	25	27-OCT-16
WG2416826-4 LCS								
Aluminum (Al)			106.6		%		80-120	27-OCT-16
Antimony (Sb)			107.4		%		80-120	27-OCT-16
Arsenic (As)			102.9		%		80-120	27-OCT-16
Barium (Ba)			101.7		%		80-120	27-OCT-16
Beryllium (Be)			90.7		%		80-120	27-OCT-16
Boron (B)			93.8		%		80-120	27-OCT-16
Bismuth (Bi)			101.7		%		80-120	27-OCT-16
Cadmium (Cd)			102.1		%		80-120	27-OCT-16
Calcium (Ca)			95.2		%		80-120	27-OCT-16
Chromium (Cr)			100.5		%		80-120	27-OCT-16
Cobalt (Co)			100.7		%		80-120	27-OCT-16
Copper (Cu)			99.4		%		80-120	27-OCT-16
Iron (Fe)			102.7		%		80-120	27-OCT-16
Lead (Pb)			104.5		%		80-120	27-OCT-16
Lithium (Li)			99.1		%		80-120	27-OCT-16
Magnesium (Mg)			96.0		%		80-120	27-OCT-16
Manganese (Mn)			102.1		%		80-120	27-OCT-16
Molybdenum (Mo)			101.1		%		80-120	27-OCT-16
Nickel (Ni)			101.1		%		80-120	27-OCT-16
Phosphorus (P)			105.1		%		80-120	27-OCT-16

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch R3581644								
WG2416826-4 LCS								
Potassium (K)			102.4		%		80-120	27-OCT-16
Selenium (Se)			94.0		%		80-120	27-OCT-16
Silver (Ag)			107.1		%		80-120	27-OCT-16
Sodium (Na)			95.0		%		80-120	27-OCT-16
Strontium (Sr)			94.9		%		80-120	27-OCT-16
Thallium (Tl)			101.7		%		80-120	27-OCT-16
Tin (Sn)			102.1		%		80-120	27-OCT-16
Titanium (Ti)			103.9		%		80-120	27-OCT-16
Uranium (U)			104.8		%		80-120	27-OCT-16
Vanadium (V)			104.0		%		80-120	27-OCT-16
Zinc (Zn)			102.2		%		80-120	27-OCT-16
Zirconium (Zr)			97.6		%		80-120	27-OCT-16
WG2416826-1 MB								
Aluminum (Al)			<50		mg/kg		50	27-OCT-16
Antimony (Sb)			<0.10		mg/kg		0.1	27-OCT-16
Arsenic (As)			<0.10		mg/kg		0.1	27-OCT-16
Barium (Ba)			<0.50		mg/kg		0.5	27-OCT-16
Beryllium (Be)			<0.10		mg/kg		0.1	27-OCT-16
Boron (B)			<5.0		mg/kg		5	27-OCT-16
Bismuth (Bi)			<0.20		mg/kg		0.2	27-OCT-16
Cadmium (Cd)			<0.020		mg/kg		0.02	27-OCT-16
Calcium (Ca)			<50		mg/kg		50	27-OCT-16
Chromium (Cr)			<0.50		mg/kg		0.5	27-OCT-16
Cobalt (Co)			<0.10		mg/kg		0.1	27-OCT-16
Copper (Cu)			<0.50		mg/kg		0.5	27-OCT-16
Iron (Fe)			<50		mg/kg		50	27-OCT-16
Lead (Pb)			<0.50		mg/kg		0.5	27-OCT-16
Lithium (Li)			<2.0		mg/kg		2	27-OCT-16
Magnesium (Mg)			<20		mg/kg		20	27-OCT-16
Manganese (Mn)			<1.0		mg/kg		1	27-OCT-16
Molybdenum (Mo)			<0.10		mg/kg		0.1	27-OCT-16
Nickel (Ni)			<0.50		mg/kg		0.5	27-OCT-16
Phosphorus (P)			<50		mg/kg		50	27-OCT-16
Potassium (K)			<100		mg/kg		100	27-OCT-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch **R3581644**								
WG2416826-1 **MB**								
Selenium (Se)			<0.20		mg/kg		0.2	27-OCT-16
Silver (Ag)			<0.10		mg/kg		0.1	27-OCT-16
Sodium (Na)			<50		mg/kg		50	27-OCT-16
Strontium (Sr)			<0.50		mg/kg		0.5	27-OCT-16
Thallium (Tl)			<0.050		mg/kg		0.05	27-OCT-16
Tin (Sn)			<1.0		mg/kg		1	27-OCT-16
Titanium (Ti)			<1.0		mg/kg		1	27-OCT-16
Uranium (U)			<0.050		mg/kg		0.05	27-OCT-16
Vanadium (V)			<0.20		mg/kg		0.2	27-OCT-16
Zinc (Zn)			<2.0		mg/kg		2	27-OCT-16
Zirconium (Zr)			<1.0		mg/kg		1	27-OCT-16

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Metals							
Mercury in Soil by CVAFS							
	1	07-SEP-16	25-OCT-16 17:00	28	48	days	EHTR
	2	07-SEP-16	27-OCT-16 14:00	28	50	days	EHTR
	3	07-SEP-16	25-OCT-16 17:00	28	48	days	EHTR
	4	07-SEP-16	25-OCT-16 17:00	28	48	days	EHTR
	5	07-SEP-16	25-OCT-16 17:00	28	48	days	EHTR
	6	07-SEP-16	27-OCT-16 14:00	28	50	days	EHTR
	7	07-SEP-16	25-OCT-16 17:00	28	48	days	EHTR
	8	07-SEP-16	25-OCT-16 17:00	28	48	days	EHTR
	9	07-SEP-16	25-OCT-16 17:00	28	48	days	EHTR
	10	07-SEP-16	25-OCT-16 17:00	28	48	days	EHTR
	11	07-SEP-16	25-OCT-16 17:00	28	48	days	EHTR
	12	07-SEP-16	25-OCT-16 17:00	28	48	days	EHTR
	13	07-SEP-16	25-OCT-16 17:00	28	48	days	EHTR
	14	07-SEP-16	25-OCT-16 17:00	28	48	days	EHTR
	15	08-SEP-16	27-OCT-16 14:00	28	49	days	EHTR
	16	08-SEP-16	27-OCT-16 14:00	28	49	days	EHTR
	17	08-SEP-16	25-OCT-16 17:00	28	47	days	EHTR
	18	08-SEP-16	25-OCT-16 17:00	28	47	days	EHTR
	19	08-SEP-16	25-OCT-16 17:00	28	47	days	EHTR
	20	08-SEP-16	25-OCT-16 17:00	28	47	days	EHTR
	21	08-SEP-16	25-OCT-16 17:00	28	47	days	EHTR
	22	08-SEP-16	27-OCT-16 14:00	28	49	days	EHTR
	23	08-SEP-16	25-OCT-16 17:00	28	47	days	EHTR
	24	07-SEP-16	25-OCT-16 17:00	28	48	days	EHTR
	25	08-SEP-16	25-OCT-16 17:00	28	47	days	EHTR
	26	08-SEP-16	25-OCT-16 17:00	28	47	days	EHTR
	27	08-SEP-16	25-OCT-16 17:00	28	47	days	EHTR
	28	08-SEP-16	27-OCT-16 14:00	28	49	days	EHTR
	29	08-SEP-16	25-OCT-16 17:00	28	47	days	EHTR
	30	08-SEP-16	25-OCT-16 17:00	28	47	days	EHTR
	31	09-SEP-16	25-OCT-16 17:00	28	46	days	EHTR
	32	09-SEP-16	27-OCT-16 14:00	28	48	days	EHTR
	33	09-SEP-16	27-OCT-16 14:00	28	48	days	EHTR
	34	09-SEP-16	25-OCT-16 17:00	28	46	days	EHTR
	35	09-SEP-16	25-OCT-16 17:00	28	46	days	EHTR
	36	09-SEP-16	25-OCT-16 17:00	28	46	days	EHTR
	37	09-SEP-16	25-OCT-16 17:00	28	46	days	EHTR
	38	09-SEP-16	25-OCT-16 17:00	28	46	days	EHTR
	39	09-SEP-16	25-OCT-16 17:00	28	46	days	EHTR
	40	09-SEP-16	25-OCT-16 17:00	28	46	days	EHTR
	41	10-SEP-16	25-OCT-16 17:00	28	45	days	EHTR
	42	10-SEP-16	25-OCT-16 17:00	28	45	days	EHTR
	43	10-SEP-16	25-OCT-16 17:00	28	45	days	EHTR
	44	10-SEP-16	25-OCT-16 17:00	28	45	days	EHTR
	45	10-SEP-16	25-OCT-16 17:00	28	45	days	EHTR
	46	10-SEP-16	25-OCT-16 17:00	28	45	days	EHTR
	47	10-SEP-16	25-OCT-16 17:00	28	45	days	EHTR
	48	10-SEP-16	25-OCT-16 17:00	28	45	days	EHTR
	49	10-SEP-16	25-OCT-16 17:00	28	45	days	EHTR
	50	10-SEP-16	25-OCT-16 17:00	28	45	days	EHTR
	51	10-SEP-16	25-OCT-16 17:00	28	45	days	EHTR
	52	10-SEP-16	25-OCT-16 17:00	28	45	days	EHTR
	53	10-SEP-16	25-OCT-16 17:00	28	45	days	EHTR
	54	10-SEP-16	25-OCT-16 17:00	28	45	days	EHTR
	55	10-SEP-16	25-OCT-16 17:00	28	45	days	EHTR
	56	10-SEP-16	25-OCT-16 17:00	28	45	days	EHTR
	57	11-SEP-16	25-OCT-16 17:00	28	44	days	EHTR
	58	11-SEP-16	25-OCT-16 17:00	28	44	days	EHTR

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Metals							
Mercury in Soil by CVAFS							
	59	11-SEP-16	25-OCT-16 17:00	28	44	days	EHTR
	60	11-SEP-16	25-OCT-16 17:00	28	44	days	EHTR
	61	11-SEP-16	27-OCT-16 14:00	28	46	days	EHTR
	62	11-SEP-16	27-OCT-16 14:00	28	46	days	EHTR
	63	11-SEP-16	27-OCT-16 14:00	28	46	days	EHTR
	64	11-SEP-16	27-OCT-16 14:00	28	46	days	EHTR
	65	11-SEP-16	27-OCT-16 14:00	28	46	days	EHTR
	66	11-SEP-16	27-OCT-16 14:00	28	46	days	EHTR
	67	11-SEP-16	27-OCT-16 14:00	28	46	days	EHTR

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L1842861 were received on 13-OCT-16 13:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

GOLDER ASSOCIATES LTD
ATTN: Steven Fiddler
16820 107 Ave NW
EDMONTON AB T5P 4C3

Date Received: 18-OCT-16
Report Date: 28-OCT-16 11:15 (MT)
Version: FINAL

Client Phone: 780-483-3499

Certificate of Analysis

Lab Work Order #: L1844932

Project P.O. #: NOT SUBMITTED
Job Reference: 13-1377-0044-23000-23003
C of C Numbers:
Legal Site Desc:

Jessica Spira, Env. Tech. DIPL
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-1 16-GIANT-S-1-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0162		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581475
Metals in Soil by CRC ICPMS							
Aluminum (Al)	18300		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Antimony (Sb)	53.2		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Arsenic (As)	241		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Barium (Ba)	80.6		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Beryllium (Be)	0.50		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Boron (B)	9.6		5.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Bismuth (Bi)	0.26		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cadmium (Cd)	0.166		0.020	mg/kg	25-OCT-16	25-OCT-16	R3581640
Calcium (Ca)	5950		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Chromium (Cr)	55.4		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cobalt (Co)	17.6		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Copper (Cu)	54.3		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Iron (Fe)	27100		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lead (Pb)	12.2		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lithium (Li)	32.0		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Magnesium (Mg)	11000		20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Manganese (Mn)	410		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Molybdenum (Mo)	1.06		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Nickel (Ni)	46.8		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Phosphorus (P)	556		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Potassium (K)	3320		100	mg/kg	25-OCT-16	25-OCT-16	R3581640
Selenium (Se)	0.27		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Silver (Ag)	0.21		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Sodium (Na)	622		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Strontium (Sr)	35.5		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Thallium (Tl)	0.165		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Titanium (Ti)	722		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Uranium (U)	1.60		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Vanadium (V)	51.4		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zinc (Zn)	82.3		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zirconium (Zr)	11.6		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
L1844932-2 16-GIANT-S-2-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0351		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581475
Metals in Soil by CRC ICPMS							
Aluminum (Al)	18200		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Antimony (Sb)	265		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Arsenic (As)	964	DLHC	0.25	mg/kg	25-OCT-16	25-OCT-16	R3581640
Barium (Ba)	110		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Beryllium (Be)	0.51		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Boron (B)	28.4		5.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Bismuth (Bi)	0.23		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cadmium (Cd)	0.902		0.020	mg/kg	25-OCT-16	25-OCT-16	R3581640
Calcium (Ca)	13600		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Chromium (Cr)	47.6		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cobalt (Co)	30.1		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-2 16-GIANT-S-2-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Copper (Cu)	139		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Iron (Fe)	29400		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lead (Pb)	25.3		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lithium (Li)	29.0		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Magnesium (Mg)	11300		20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Manganese (Mn)	549		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Molybdenum (Mo)	10.5		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Nickel (Ni)	73.8		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Phosphorus (P)	843		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Potassium (K)	3450		100	mg/kg	25-OCT-16	25-OCT-16	R3581640
Selenium (Se)	1.27		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Silver (Ag)	0.70		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Sodium (Na)	1810		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Strontium (Sr)	88.0		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Thallium (Tl)	0.230		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Tin (Sn)	2.0		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Titanium (Ti)	544		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Uranium (U)	4.17		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Vanadium (V)	51.9		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zinc (Zn)	151		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zirconium (Zr)	6.7		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
L1844932-3 16-GIANT-S-3-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0152		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581475
Metals in Soil by CRC ICPMS							
Aluminum (Al)	25600		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Antimony (Sb)	4.28		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Arsenic (As)	36.3		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Barium (Ba)	248		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Beryllium (Be)	1.00		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Boron (B)	15.8		5.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Bismuth (Bi)	0.29		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cadmium (Cd)	0.163		0.020	mg/kg	25-OCT-16	25-OCT-16	R3581640
Calcium (Ca)	5670		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Chromium (Cr)	51.4		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cobalt (Co)	14.1		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Copper (Cu)	30.1		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Iron (Fe)	30100		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lead (Pb)	11.1		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lithium (Li)	42.6		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Magnesium (Mg)	11400		20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Manganese (Mn)	418		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Molybdenum (Mo)	0.75		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Nickel (Ni)	35.8		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Phosphorus (P)	600		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Potassium (K)	5550		100	mg/kg	25-OCT-16	25-OCT-16	R3581640
Selenium (Se)	<0.20		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Silver (Ag)	0.15		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Sodium (Na)	847		50	mg/kg	25-OCT-16	25-OCT-16	R3581640

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-3 16-GIANT-S-3-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Strontium (Sr)	62.4		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Thallium (Tl)	0.272		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Tin (Sn)	1.7		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Titanium (Ti)	960		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Uranium (U)	2.15		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Vanadium (V)	56.8		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zinc (Zn)	73.0		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zirconium (Zr)	23.5		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
L1844932-4 16-GIANT-S-3-D-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0139		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581475
Metals in Soil by CRC ICPMS							
Aluminum (Al)	22600		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Antimony (Sb)	3.07		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Arsenic (As)	25.1		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Barium (Ba)	225		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Beryllium (Be)	0.91		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Boron (B)	13.7		5.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Bismuth (Bi)	0.28		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cadmium (Cd)	0.157		0.020	mg/kg	25-OCT-16	25-OCT-16	R3581640
Calcium (Ca)	5210		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Chromium (Cr)	47.9		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cobalt (Co)	12.6		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Copper (Cu)	28.2		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Iron (Fe)	27500		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lead (Pb)	10.1		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lithium (Li)	40.2		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Magnesium (Mg)	10600		20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Manganese (Mn)	389		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Molybdenum (Mo)	0.68		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Nickel (Ni)	32.4		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Phosphorus (P)	575		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Potassium (K)	4720		100	mg/kg	25-OCT-16	25-OCT-16	R3581640
Selenium (Se)	<0.20		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Silver (Ag)	0.13		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Sodium (Na)	717		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Strontium (Sr)	59.4		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Thallium (Tl)	0.261		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Titanium (Ti)	926		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Uranium (U)	2.32		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Vanadium (V)	53.0		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zinc (Zn)	67.0		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zirconium (Zr)	22.8		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
L1844932-5 16-GIANT-S-4-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-5 16-GIANT-S-4-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Mercury (Hg)	0.0193		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581475
Metals in Soil by CRC ICPMS							
Aluminum (Al)	19500		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Antimony (Sb)	7.77		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Arsenic (As)	133		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Barium (Ba)	148		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Beryllium (Be)	0.56		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Boron (B)	9.1		5.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Bismuth (Bi)	0.24		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cadmium (Cd)	0.138		0.020	mg/kg	25-OCT-16	25-OCT-16	R3581640
Calcium (Ca)	12300		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Chromium (Cr)	49.4		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cobalt (Co)	14.3		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Copper (Cu)	39.1		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Iron (Fe)	27700		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lead (Pb)	10.1		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lithium (Li)	32.4		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Magnesium (Mg)	11800		20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Manganese (Mn)	405		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Molybdenum (Mo)	0.94		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Nickel (Ni)	35.0		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Phosphorus (P)	698		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Potassium (K)	3310		100	mg/kg	25-OCT-16	25-OCT-16	R3581640
Selenium (Se)	0.22		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Silver (Ag)	0.11		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Sodium (Na)	521		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Strontium (Sr)	41.8		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Thallium (Tl)	0.180		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Titanium (Ti)	710		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Uranium (U)	3.39		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Vanadium (V)	54.8		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zinc (Zn)	74.0		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zirconium (Zr)	9.3		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
L1844932-6 16-GIANT-S-5-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0160		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581475
Metals in Soil by CRC ICPMS							
Aluminum (Al)	23200		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Antimony (Sb)	20.1		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Arsenic (As)	282		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Barium (Ba)	206		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Beryllium (Be)	0.78		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Boron (B)	11.1		5.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Bismuth (Bi)	0.28		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cadmium (Cd)	0.190		0.020	mg/kg	25-OCT-16	25-OCT-16	R3581640
Calcium (Ca)	6740		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Chromium (Cr)	52.6		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cobalt (Co)	17.7		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Copper (Cu)	43.4		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-6 16-GIANT-S-5-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Iron (Fe)	31900		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lead (Pb)	12.5		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lithium (Li)	37.0		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Magnesium (Mg)	12300		20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Manganese (Mn)	653		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Molybdenum (Mo)	1.37		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Nickel (Ni)	42.7		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Phosphorus (P)	583		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Potassium (K)	3900		100	mg/kg	25-OCT-16	25-OCT-16	R3581640
Selenium (Se)	0.47		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Silver (Ag)	0.23		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Sodium (Na)	687		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Strontium (Sr)	55.7		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Thallium (Tl)	0.239		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Titanium (Ti)	764		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Uranium (U)	1.90		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Vanadium (V)	60.9		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zinc (Zn)	81.4		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zirconium (Zr)	14.8		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
L1844932-7 16-GIANT-S-6-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0253		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581475
Metals in Soil by CRC ICPMS							
Aluminum (Al)	20600		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Antimony (Sb)	36.8		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Arsenic (As)	277		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Barium (Ba)	113		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Beryllium (Be)	0.56		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Boron (B)	12.3		5.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Bismuth (Bi)	0.21		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cadmium (Cd)	0.436		0.020	mg/kg	25-OCT-16	25-OCT-16	R3581640
Calcium (Ca)	8320		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Chromium (Cr)	50.2		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cobalt (Co)	16.6		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Copper (Cu)	49.0		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Iron (Fe)	29700		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lead (Pb)	11.7		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lithium (Li)	32.1		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Magnesium (Mg)	13000		20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Manganese (Mn)	354		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Molybdenum (Mo)	1.79		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Nickel (Ni)	42.9		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Phosphorus (P)	547		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Potassium (K)	2800		100	mg/kg	25-OCT-16	25-OCT-16	R3581640
Selenium (Se)	0.34		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Silver (Ag)	0.20		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Sodium (Na)	706		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Strontium (Sr)	53.8		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-7 16-GIANT-S-6-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Thallium (Tl)	0.166		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Titanium (Ti)	611		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Uranium (U)	4.22		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Vanadium (V)	60.1		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zinc (Zn)	82.0		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zirconium (Zr)	10.4		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
L1844932-8 16-GIANT-S-7-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0677		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581475
Metals in Soil by CRC ICPMS							
Aluminum (Al)	10500		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Antimony (Sb)	66.5		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Arsenic (As)	1080	DLHC	0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Barium (Ba)	101		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Beryllium (Be)	0.28		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Boron (B)	25.9		5.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cadmium (Cd)	1.67		0.020	mg/kg	25-OCT-16	25-OCT-16	R3581640
Calcium (Ca)	74300		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Chromium (Cr)	29.3		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cobalt (Co)	44.7		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Copper (Cu)	190		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Iron (Fe)	19500		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lead (Pb)	30.4		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lithium (Li)	15.9		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Magnesium (Mg)	9620		20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Manganese (Mn)	355		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Molybdenum (Mo)	4.33		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Nickel (Ni)	39.3		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Phosphorus (P)	600		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Potassium (K)	2050		100	mg/kg	25-OCT-16	25-OCT-16	R3581640
Selenium (Se)	0.79		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Silver (Ag)	0.88		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Sodium (Na)	1100		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Strontium (Sr)	111		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Thallium (Tl)	0.173		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Tin (Sn)	1.3		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Titanium (Ti)	335		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Uranium (U)	6.38		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Vanadium (V)	29.6		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zinc (Zn)	203		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zirconium (Zr)	4.6		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
L1844932-9 16-GIANT-S-8-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.159		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581475
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-9 16-GIANT-S-8-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	19100		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Antimony (Sb)	340		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Arsenic (As)	1300	DLHC	0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Barium (Ba)	80.2		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Beryllium (Be)	0.56		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Boron (B)	12.3		5.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Bismuth (Bi)	0.30		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cadmium (Cd)	1.46		0.020	mg/kg	25-OCT-16	25-OCT-16	R3581640
Calcium (Ca)	8570		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Chromium (Cr)	48.5		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cobalt (Co)	24.1		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Copper (Cu)	311		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Iron (Fe)	30700		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lead (Pb)	128		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lithium (Li)	29.6		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Magnesium (Mg)	10700		20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Manganese (Mn)	261		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Molybdenum (Mo)	3.95		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Nickel (Ni)	82.3		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Phosphorus (P)	547		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Potassium (K)	2810		100	mg/kg	25-OCT-16	25-OCT-16	R3581640
Selenium (Se)	1.12		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Silver (Ag)	2.26		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Sodium (Na)	669		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Strontium (Sr)	62.9		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Thallium (Tl)	0.236		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Tin (Sn)	3.2		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Titanium (Ti)	544		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Uranium (U)	4.80		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Vanadium (V)	51.2		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zinc (Zn)	300		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zirconium (Zr)	10.9		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
L1844932-10 16-GIANT-S-9-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0238		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581475
Metals in Soil by CRC ICPMS							
Aluminum (Al)	18800		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Antimony (Sb)	20.3		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Arsenic (As)	128		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Barium (Ba)	153		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Beryllium (Be)	0.61		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Boron (B)	9.8		5.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Bismuth (Bi)	0.27		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cadmium (Cd)	0.179		0.020	mg/kg	25-OCT-16	25-OCT-16	R3581640
Calcium (Ca)	7830		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Chromium (Cr)	49.7		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cobalt (Co)	15.3		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Copper (Cu)	48.7		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Iron (Fe)	24900		50	mg/kg	25-OCT-16	25-OCT-16	R3581640

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-10 16-GIANT-S-9-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Lead (Pb)	15.4		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lithium (Li)	33.3		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Magnesium (Mg)	10100		20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Manganese (Mn)	294		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Molybdenum (Mo)	1.27		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Nickel (Ni)	38.5		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Phosphorus (P)	522		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Potassium (K)	3900		100	mg/kg	25-OCT-16	25-OCT-16	R3581640
Selenium (Se)	0.26		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Silver (Ag)	0.25		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Sodium (Na)	720		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Strontium (Sr)	45.3		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Thallium (Tl)	0.195		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Titanium (Ti)	817		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Uranium (U)	2.01		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Vanadium (V)	51.2		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zinc (Zn)	73.9		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zirconium (Zr)	16.7		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
L1844932-11 16-GIANT-S-10-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.104		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581475
Metals in Soil by CRC ICPMS							
Aluminum (Al)	21400		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Antimony (Sb)	88.3		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Arsenic (As)	1150	DLHC	0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Barium (Ba)	56.0		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Beryllium (Be)	0.37		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Boron (B)	6.1		5.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Bismuth (Bi)	0.23		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cadmium (Cd)	0.525		0.020	mg/kg	25-OCT-16	25-OCT-16	R3581640
Calcium (Ca)	9400		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Chromium (Cr)	47.7		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cobalt (Co)	45.2		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Copper (Cu)	258		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Iron (Fe)	41100		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lead (Pb)	69.6		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lithium (Li)	28.6		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Magnesium (Mg)	16500		20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Manganese (Mn)	530		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Molybdenum (Mo)	1.04		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Nickel (Ni)	73.6		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Phosphorus (P)	515		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Potassium (K)	1640		100	mg/kg	25-OCT-16	25-OCT-16	R3581640
Selenium (Se)	0.68		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Silver (Ag)	1.94		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Sodium (Na)	245		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Strontium (Sr)	27.3		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Thallium (Tl)	0.111		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-11 16-GIANT-S-10-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Titanium (Ti)	403		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Uranium (U)	1.46		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Vanadium (V)	80.8		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zinc (Zn)	198		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zirconium (Zr)	5.8		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
L1844932-12 16-GIANT-S-11-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0602		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581475
Metals in Soil by CRC ICPMS							
Aluminum (Al)	9450		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Antimony (Sb)	6.93		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Arsenic (As)	229		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Barium (Ba)	95.0		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Beryllium (Be)	0.34		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Boron (B)	8.6		5.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cadmium (Cd)	0.225		0.020	mg/kg	25-OCT-16	25-OCT-16	R3581640
Calcium (Ca)	14800		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Chromium (Cr)	22.8		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cobalt (Co)	5.23		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Copper (Cu)	18.0		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Iron (Fe)	11500		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lead (Pb)	6.74		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lithium (Li)	17.3		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Magnesium (Mg)	5350		20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Manganese (Mn)	148		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Molybdenum (Mo)	1.11		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Nickel (Ni)	15.0		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Phosphorus (P)	792		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Potassium (K)	770		100	mg/kg	25-OCT-16	25-OCT-16	R3581640
Selenium (Se)	0.63		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Silver (Ag)	0.11		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Sodium (Na)	321		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Strontium (Sr)	66.1		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Thallium (Tl)	0.072		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Tin (Sn)	2.3		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Titanium (Ti)	193		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Uranium (U)	34.8		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Vanadium (V)	19.9		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zinc (Zn)	40.4		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zirconium (Zr)	4.9		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
L1844932-13 16-GIANT-S-12-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0148		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581475
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-13 16-GIANT-S-12-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	12200		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Antimony (Sb)	0.89		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Arsenic (As)	143		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Barium (Ba)	88.7		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Beryllium (Be)	0.35		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Boron (B)	<5.0		5.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cadmium (Cd)	0.070		0.020	mg/kg	25-OCT-16	25-OCT-16	R3581640
Calcium (Ca)	7080		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Chromium (Cr)	29.2		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Cobalt (Co)	4.51		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Copper (Cu)	10.1		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Iron (Fe)	12200		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lead (Pb)	4.32		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Lithium (Li)	21.6		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Magnesium (Mg)	4650		20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Manganese (Mn)	146		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Molybdenum (Mo)	0.36		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Nickel (Ni)	14.8		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Phosphorus (P)	672		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Potassium (K)	840		100	mg/kg	25-OCT-16	25-OCT-16	R3581640
Selenium (Se)	0.27		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Silver (Ag)	<0.10		0.10	mg/kg	25-OCT-16	25-OCT-16	R3581640
Sodium (Na)	225		50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Strontium (Sr)	28.9		0.50	mg/kg	25-OCT-16	25-OCT-16	R3581640
Thallium (Tl)	0.092		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Titanium (Ti)	278		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Uranium (U)	8.55		0.050	mg/kg	25-OCT-16	25-OCT-16	R3581640
Vanadium (V)	23.8		0.20	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zinc (Zn)	26.3		2.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
Zirconium (Zr)	2.6		1.0	mg/kg	25-OCT-16	25-OCT-16	R3581640
L1844932-14 16-GIANT-S-13-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.126		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581507
Metals in Soil by CRC ICPMS							
Aluminum (Al)	11000		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Antimony (Sb)	5.78		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Arsenic (As)	240		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Barium (Ba)	99.3		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Beryllium (Be)	0.40		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Boron (B)	5.7		5.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cadmium (Cd)	0.169		0.020	mg/kg	25-OCT-16	26-OCT-16	R3581643
Calcium (Ca)	13800		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Chromium (Cr)	25.5		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cobalt (Co)	5.49		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Copper (Cu)	13.9		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Iron (Fe)	14800		50	mg/kg	25-OCT-16	26-OCT-16	R3581643

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-14 16-GIANT-S-13-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Lead (Pb)	5.54		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lithium (Li)	21.0		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Magnesium (Mg)	4830		20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Manganese (Mn)	240		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Molybdenum (Mo)	0.93		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Nickel (Ni)	15.0		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Phosphorus (P)	746		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Potassium (K)	780		100	mg/kg	25-OCT-16	26-OCT-16	R3581643
Selenium (Se)	0.38		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Silver (Ag)	<0.10		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Sodium (Na)	275		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Strontium (Sr)	63.1		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Thallium (Tl)	0.099		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Titanium (Ti)	219		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Uranium (U)	37.7		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Vanadium (V)	20.4		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zinc (Zn)	32.8		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zirconium (Zr)	3.7		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
L1844932-15 16-GIANT-S-14-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0747		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581507
Metals in Soil by CRC ICPMS							
Aluminum (Al)	9460		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Antimony (Sb)	11.7		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Arsenic (As)	313		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Barium (Ba)	93.7		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Beryllium (Be)	0.41		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Boron (B)	6.7		5.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cadmium (Cd)	0.224		0.020	mg/kg	25-OCT-16	26-OCT-16	R3581643
Calcium (Ca)	11800		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Chromium (Cr)	22.4		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cobalt (Co)	5.84		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Copper (Cu)	21.4		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Iron (Fe)	13800		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lead (Pb)	9.38		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lithium (Li)	14.1		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Magnesium (Mg)	4610		20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Manganese (Mn)	303		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Molybdenum (Mo)	2.61		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Nickel (Ni)	16.7		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Phosphorus (P)	803		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Potassium (K)	1110		100	mg/kg	25-OCT-16	26-OCT-16	R3581643
Selenium (Se)	0.28		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Silver (Ag)	<0.10		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Sodium (Na)	352		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Strontium (Sr)	55.3		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Thallium (Tl)	0.115		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-15 16-GIANT-S-14-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Tin (Sn)	1.8		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Titanium (Ti)	229		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Uranium (U)	26.1		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Vanadium (V)	23.4		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zinc (Zn)	40.5		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zirconium (Zr)	5.2		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
L1844932-16 16-GIANT-S-14-DUP-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0684		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581507
Metals in Soil by CRC ICPMS							
Aluminum (Al)	10500		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Antimony (Sb)	8.16		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Arsenic (As)	216		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Barium (Ba)	105		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Beryllium (Be)	0.40		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Boron (B)	5.7		5.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cadmium (Cd)	0.187		0.020	mg/kg	25-OCT-16	26-OCT-16	R3581643
Calcium (Ca)	9710		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Chromium (Cr)	24.3		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cobalt (Co)	6.02		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Copper (Cu)	21.2		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Iron (Fe)	14600		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lead (Pb)	7.55		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lithium (Li)	13.9		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Magnesium (Mg)	5290		20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Manganese (Mn)	315		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Molybdenum (Mo)	1.85		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Nickel (Ni)	17.5		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Phosphorus (P)	730		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Potassium (K)	1270		100	mg/kg	25-OCT-16	26-OCT-16	R3581643
Selenium (Se)	0.28		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Silver (Ag)	<0.10		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Sodium (Na)	357		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Strontium (Sr)	46.4		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Thallium (Tl)	0.108		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Titanium (Ti)	261		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Uranium (U)	22.1		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Vanadium (V)	25.4		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zinc (Zn)	39.9		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zirconium (Zr)	4.4		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
L1844932-17 16-GIANT-S-15-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0262		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581507
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-17 16-GIANT-S-15-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	11400		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Antimony (Sb)	7.06		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Arsenic (As)	33.6		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Barium (Ba)	84.5		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Beryllium (Be)	0.35		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Boron (B)	<5.0		5.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cadmium (Cd)	0.054		0.020	mg/kg	25-OCT-16	26-OCT-16	R3581643
Calcium (Ca)	7010		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Chromium (Cr)	28.8		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cobalt (Co)	6.67		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Copper (Cu)	14.1		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Iron (Fe)	11100		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lead (Pb)	4.63		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lithium (Li)	19.3		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Magnesium (Mg)	4510		20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Manganese (Mn)	183		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Molybdenum (Mo)	1.59		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Nickel (Ni)	15.6		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Phosphorus (P)	439		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Potassium (K)	850		100	mg/kg	25-OCT-16	26-OCT-16	R3581643
Selenium (Se)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Silver (Ag)	<0.10		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Sodium (Na)	164		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Strontium (Sr)	31.8		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Thallium (Tl)	0.112		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Titanium (Ti)	253		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Uranium (U)	10.9		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Vanadium (V)	25.9		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zinc (Zn)	30.7		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zirconium (Zr)	2.4		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
L1844932-18 16-GIANT-S-16-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0263		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581507
Metals in Soil by CRC ICPMS							
Aluminum (Al)	16800		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Antimony (Sb)	3.09		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Arsenic (As)	65.1		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Barium (Ba)	144		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Beryllium (Be)	0.65		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Boron (B)	7.3		5.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Bismuth (Bi)	0.23		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cadmium (Cd)	0.158		0.020	mg/kg	25-OCT-16	26-OCT-16	R3581643
Calcium (Ca)	9430		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Chromium (Cr)	39.8		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cobalt (Co)	8.47		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Copper (Cu)	18.9		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Iron (Fe)	19000		50	mg/kg	25-OCT-16	26-OCT-16	R3581643

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-18 16-GIANT-S-16-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Lead (Pb)	7.59		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lithium (Li)	33.8		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Magnesium (Mg)	6610		20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Manganese (Mn)	602		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Molybdenum (Mo)	0.83		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Nickel (Ni)	22.7		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Phosphorus (P)	585		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Potassium (K)	1860		100	mg/kg	25-OCT-16	26-OCT-16	R3581643
Selenium (Se)	0.78		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Silver (Ag)	<0.10		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Sodium (Na)	259		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Strontium (Sr)	52.0		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Thallium (Tl)	0.155		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Tin (Sn)	1.0		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Titanium (Ti)	423		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Uranium (U)	26.3		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Vanadium (V)	35.2		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zinc (Zn)	39.4		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zirconium (Zr)	4.9		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
L1844932-19 16-GIANT-S-17-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0338		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581507
Metals in Soil by CRC ICPMS							
Aluminum (Al)	16200		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Antimony (Sb)	6.84		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Arsenic (As)	145		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Barium (Ba)	109		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Beryllium (Be)	0.60		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Boron (B)	5.6		5.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Bismuth (Bi)	0.21		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cadmium (Cd)	0.033		0.020	mg/kg	25-OCT-16	26-OCT-16	R3581643
Calcium (Ca)	3590		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Chromium (Cr)	38.7		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cobalt (Co)	9.36		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Copper (Cu)	14.7		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Iron (Fe)	19900		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lead (Pb)	8.78		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lithium (Li)	26.1		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Magnesium (Mg)	6250		20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Manganese (Mn)	575		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Molybdenum (Mo)	1.07		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Nickel (Ni)	20.9		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Phosphorus (P)	373		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Potassium (K)	1600		100	mg/kg	25-OCT-16	26-OCT-16	R3581643
Selenium (Se)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Silver (Ag)	<0.10		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Sodium (Na)	189		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Strontium (Sr)	20.8		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Thallium (Tl)	0.127		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-19 16-GIANT-S-17-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Titanium (Ti)	465		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Uranium (U)	6.97		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Vanadium (V)	42.1		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zinc (Zn)	33.2		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zirconium (Zr)	5.1		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
L1844932-20 16-GIANT-S-18-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0533		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581507
Metals in Soil by CRC ICPMS							
Aluminum (Al)	12000		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Antimony (Sb)	5.23		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Arsenic (As)	88.2		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Barium (Ba)	141		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Beryllium (Be)	0.40		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Boron (B)	5.5		5.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cadmium (Cd)	0.122		0.020	mg/kg	25-OCT-16	26-OCT-16	R3581643
Calcium (Ca)	17600		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Chromium (Cr)	26.0		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cobalt (Co)	7.53		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Copper (Cu)	13.6		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Iron (Fe)	13900		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lead (Pb)	5.41		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lithium (Li)	21.1		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Magnesium (Mg)	5700		20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Manganese (Mn)	1050		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Molybdenum (Mo)	0.77		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Nickel (Ni)	15.4		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Phosphorus (P)	581		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Potassium (K)	840		100	mg/kg	25-OCT-16	26-OCT-16	R3581643
Selenium (Se)	0.91		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Silver (Ag)	<0.10		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Sodium (Na)	168		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Strontium (Sr)	56.5		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Thallium (Tl)	0.081		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Titanium (Ti)	231		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Uranium (U)	16.5		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Vanadium (V)	23.9		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zinc (Zn)	29.3		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zirconium (Zr)	2.4		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
L1844932-21 16-GIANT-S-19-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0504		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581507
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-21 16-GIANT-S-19-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	11000		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Antimony (Sb)	6.48		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Arsenic (As)	83.6		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Barium (Ba)	103		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Beryllium (Be)	0.34		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Boron (B)	5.4		5.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cadmium (Cd)	0.085		0.020	mg/kg	25-OCT-16	26-OCT-16	R3581643
Calcium (Ca)	12900		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Chromium (Cr)	22.9		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cobalt (Co)	6.45		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Copper (Cu)	14.3		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Iron (Fe)	12100		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lead (Pb)	6.77		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lithium (Li)	19.4		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Magnesium (Mg)	4530		20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Manganese (Mn)	453		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Molybdenum (Mo)	0.75		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Nickel (Ni)	14.0		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Phosphorus (P)	526		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Potassium (K)	960		100	mg/kg	25-OCT-16	26-OCT-16	R3581643
Selenium (Se)	0.26		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Silver (Ag)	<0.10		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Sodium (Na)	183		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Strontium (Sr)	51.6		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Thallium (Tl)	0.085		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Tin (Sn)	2.6		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Titanium (Ti)	258		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Uranium (U)	18.4		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Vanadium (V)	22.4		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zinc (Zn)	24.3		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zirconium (Zr)	2.7		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
L1844932-22 16-GIANT-S-20-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0776		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581507
Metals in Soil by CRC ICPMS							
Aluminum (Al)	12500		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Antimony (Sb)	10.2		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Arsenic (As)	440		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Barium (Ba)	109		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Beryllium (Be)	0.44		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Boron (B)	5.9		5.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cadmium (Cd)	0.171		0.020	mg/kg	25-OCT-16	26-OCT-16	R3581643
Calcium (Ca)	7780		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Chromium (Cr)	28.2		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cobalt (Co)	7.21		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Copper (Cu)	16.3		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Iron (Fe)	15200		50	mg/kg	25-OCT-16	26-OCT-16	R3581643

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-22 16-GIANT-S-20-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Lead (Pb)	10.8		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lithium (Li)	22.4		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Magnesium (Mg)	5110		20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Manganese (Mn)	522		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Molybdenum (Mo)	1.15		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Nickel (Ni)	18.1		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Phosphorus (P)	734		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Potassium (K)	1370		100	mg/kg	25-OCT-16	26-OCT-16	R3581643
Selenium (Se)	0.33		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Silver (Ag)	0.11		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Sodium (Na)	184		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Strontium (Sr)	36.4		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Thallium (Tl)	0.117		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Titanium (Ti)	282		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Uranium (U)	11.9		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Vanadium (V)	25.5		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zinc (Zn)	53.9		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zirconium (Zr)	3.0		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
L1844932-23 16-GIANT-S-21-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0106		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581507
Metals in Soil by CRC ICPMS							
Aluminum (Al)	11500		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Antimony (Sb)	0.55		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Arsenic (As)	16.8		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Barium (Ba)	59.2		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Beryllium (Be)	0.35		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Boron (B)	<5.0		5.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cadmium (Cd)	0.077		0.020	mg/kg	25-OCT-16	26-OCT-16	R3581643
Calcium (Ca)	3480		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Chromium (Cr)	29.4		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cobalt (Co)	5.22		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Copper (Cu)	16.1		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Iron (Fe)	12800		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lead (Pb)	7.14		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lithium (Li)	18.4		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Magnesium (Mg)	5170		20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Manganese (Mn)	156		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Molybdenum (Mo)	0.44		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Nickel (Ni)	16.7		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Phosphorus (P)	519		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Potassium (K)	1720		100	mg/kg	25-OCT-16	26-OCT-16	R3581643
Selenium (Se)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Silver (Ag)	<0.10		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Sodium (Na)	258		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Strontium (Sr)	19.0		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Thallium (Tl)	0.106		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-23 16-GIANT-S-21-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Titanium (Ti)	584		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Uranium (U)	3.95		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Vanadium (V)	30.4		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zinc (Zn)	36.3		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zirconium (Zr)	3.9		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
L1844932-24 16-GIANT-S-22-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	<0.0050		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581507
Metals in Soil by CRC ICPMS							
Aluminum (Al)	8850		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Antimony (Sb)	<0.10		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Arsenic (As)	6.17		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Barium (Ba)	59.5		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Beryllium (Be)	0.23		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Boron (B)	<5.0		5.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cadmium (Cd)	0.036		0.020	mg/kg	25-OCT-16	26-OCT-16	R3581643
Calcium (Ca)	2860		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Chromium (Cr)	28.0		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cobalt (Co)	6.09		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Copper (Cu)	18.8		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Iron (Fe)	13200		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lead (Pb)	3.26		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lithium (Li)	16.8		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Magnesium (Mg)	4910		20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Manganese (Mn)	156		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Molybdenum (Mo)	0.60		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Nickel (Ni)	17.3		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Phosphorus (P)	551		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Potassium (K)	1790		100	mg/kg	25-OCT-16	26-OCT-16	R3581643
Selenium (Se)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Silver (Ag)	<0.10		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Sodium (Na)	300		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Strontium (Sr)	8.55		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Thallium (Tl)	0.094		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Titanium (Ti)	591		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Uranium (U)	2.06		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Vanadium (V)	28.7		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zinc (Zn)	26.6		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zirconium (Zr)	7.9		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
L1844932-25 16-GIANT-S-23-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0177		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581507
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-25 16-GIANT-S-23-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	12100		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Antimony (Sb)	1.41		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Arsenic (As)	37.5		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Barium (Ba)	62.7		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Beryllium (Be)	0.47		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Boron (B)	<5.0		5.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cadmium (Cd)	0.173		0.020	mg/kg	25-OCT-16	26-OCT-16	R3581643
Calcium (Ca)	3440		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Chromium (Cr)	28.1		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cobalt (Co)	6.96		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Copper (Cu)	22.4		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Iron (Fe)	10600		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lead (Pb)	8.59		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lithium (Li)	20.0		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Magnesium (Mg)	5170		20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Manganese (Mn)	142		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Molybdenum (Mo)	0.82		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Nickel (Ni)	22.5		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Phosphorus (P)	596		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Potassium (K)	1470		100	mg/kg	25-OCT-16	26-OCT-16	R3581643
Selenium (Se)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Silver (Ag)	<0.10		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Sodium (Na)	222		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Strontium (Sr)	22.8		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Thallium (Tl)	0.105		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Titanium (Ti)	297		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Uranium (U)	8.91		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Vanadium (V)	31.9		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zinc (Zn)	42.1		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zirconium (Zr)	3.3		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
L1844932-26 16-GIANT-S-23-DUP-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0243		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581507
Metals in Soil by CRC ICPMS							
Aluminum (Al)	14800		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Antimony (Sb)	1.73		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Arsenic (As)	60.3		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Barium (Ba)	76.1		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Beryllium (Be)	0.50		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Boron (B)	<5.0		5.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cadmium (Cd)	0.209		0.020	mg/kg	25-OCT-16	26-OCT-16	R3581643
Calcium (Ca)	3550		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Chromium (Cr)	31.9		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cobalt (Co)	8.19		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Copper (Cu)	27.3		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Iron (Fe)	12900		50	mg/kg	25-OCT-16	26-OCT-16	R3581643

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-26 16-GIANT-S-23-DUP-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Lead (Pb)	9.68		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lithium (Li)	19.9		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Magnesium (Mg)	5800		20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Manganese (Mn)	164		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Molybdenum (Mo)	0.86		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Nickel (Ni)	27.0		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Phosphorus (P)	693		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Potassium (K)	1770		100	mg/kg	25-OCT-16	26-OCT-16	R3581643
Selenium (Se)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Silver (Ag)	<0.10		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Sodium (Na)	257		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Strontium (Sr)	24.9		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Thallium (Tl)	0.124		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Titanium (Ti)	397		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Uranium (U)	9.63		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Vanadium (V)	38.1		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zinc (Zn)	47.3		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zirconium (Zr)	3.1		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
L1844932-27 16-GIANT-S-24-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0133		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581507
Metals in Soil by CRC ICPMS							
Aluminum (Al)	13600		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Antimony (Sb)	0.99		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Arsenic (As)	15.8		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Barium (Ba)	84.8		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Beryllium (Be)	0.46		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Boron (B)	<5.0		5.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cadmium (Cd)	0.083		0.020	mg/kg	25-OCT-16	26-OCT-16	R3581643
Calcium (Ca)	2910		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Chromium (Cr)	32.2		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cobalt (Co)	5.77		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Copper (Cu)	16.2		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Iron (Fe)	14000		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lead (Pb)	6.27		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lithium (Li)	19.6		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Magnesium (Mg)	5560		20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Manganese (Mn)	141		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Molybdenum (Mo)	0.48		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Nickel (Ni)	18.1		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Phosphorus (P)	488		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Potassium (K)	1830		100	mg/kg	25-OCT-16	26-OCT-16	R3581643
Selenium (Se)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Silver (Ag)	<0.10		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Sodium (Na)	239		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Strontium (Sr)	21.4		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Thallium (Tl)	0.125		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-27 16-GIANT-S-24-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Titanium (Ti)	513		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Uranium (U)	4.92		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Vanadium (V)	32.9		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zinc (Zn)	38.8		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zirconium (Zr)	3.4		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
L1844932-28 16-GIANT-S-25-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0158		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581507
Metals in Soil by CRC ICPMS							
Aluminum (Al)	12900		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Antimony (Sb)	1.70		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Arsenic (As)	15.2		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Barium (Ba)	77.4		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Beryllium (Be)	0.40		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Boron (B)	<5.0		5.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cadmium (Cd)	0.149		0.020	mg/kg	25-OCT-16	26-OCT-16	R3581643
Calcium (Ca)	2930		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Chromium (Cr)	31.1		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cobalt (Co)	5.60		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Copper (Cu)	19.8		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Iron (Fe)	14200		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lead (Pb)	7.52		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lithium (Li)	16.8		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Magnesium (Mg)	5520		20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Manganese (Mn)	138		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Molybdenum (Mo)	0.53		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Nickel (Ni)	17.8		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Phosphorus (P)	526		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Potassium (K)	1720		100	mg/kg	25-OCT-16	26-OCT-16	R3581643
Selenium (Se)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Silver (Ag)	<0.10		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Sodium (Na)	253		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Strontium (Sr)	20.4		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Thallium (Tl)	0.121		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Titanium (Ti)	470		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Uranium (U)	6.50		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Vanadium (V)	33.1		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zinc (Zn)	39.3		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zirconium (Zr)	3.2		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
L1844932-29 16-GIANT-S-26-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0070		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581507
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-29 16-GIANT-S-26-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	10400		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Antimony (Sb)	0.51		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Arsenic (As)	14.6		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Barium (Ba)	55.4		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Beryllium (Be)	0.36		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Boron (B)	<5.0		5.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cadmium (Cd)	0.059		0.020	mg/kg	25-OCT-16	26-OCT-16	R3581643
Calcium (Ca)	2310		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Chromium (Cr)	26.2		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cobalt (Co)	5.54		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Copper (Cu)	10.4		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Iron (Fe)	12900		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lead (Pb)	5.14		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lithium (Li)	18.0		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Magnesium (Mg)	4620		20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Manganese (Mn)	140		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Molybdenum (Mo)	0.31		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Nickel (Ni)	14.6		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Phosphorus (P)	447		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Potassium (K)	1410		100	mg/kg	25-OCT-16	26-OCT-16	R3581643
Selenium (Se)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Silver (Ag)	<0.10		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Sodium (Na)	194		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Strontium (Sr)	14.5		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Thallium (Tl)	0.094		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Titanium (Ti)	500		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Uranium (U)	3.01		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Vanadium (V)	26.7		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zinc (Zn)	31.9		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zirconium (Zr)	3.6		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
L1844932-30 16-GIANT-S-27-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0106		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581507
Metals in Soil by CRC ICPMS							
Aluminum (Al)	13900		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Antimony (Sb)	0.78		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Arsenic (As)	40.8		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Barium (Ba)	96.3		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Beryllium (Be)	0.47		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Boron (B)	5.8		5.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Bismuth (Bi)	0.22		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cadmium (Cd)	0.100		0.020	mg/kg	25-OCT-16	26-OCT-16	R3581643
Calcium (Ca)	3640		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Chromium (Cr)	37.6		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cobalt (Co)	7.50		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Copper (Cu)	23.5		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Iron (Fe)	16900		50	mg/kg	25-OCT-16	26-OCT-16	R3581643

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-30 16-GIANT-S-27-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Lead (Pb)	8.84		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lithium (Li)	26.9		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Magnesium (Mg)	6830		20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Manganese (Mn)	171		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Molybdenum (Mo)	0.43		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Nickel (Ni)	22.6		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Phosphorus (P)	515		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Potassium (K)	2020		100	mg/kg	25-OCT-16	26-OCT-16	R3581643
Selenium (Se)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Silver (Ag)	<0.10		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Sodium (Na)	283		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Strontium (Sr)	43.3		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Thallium (Tl)	0.141		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Tin (Sn)	1.1		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Titanium (Ti)	658		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Uranium (U)	5.28		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Vanadium (V)	38.7		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zinc (Zn)	46.3		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zirconium (Zr)	8.0		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
L1844932-31 16-GIANT-S-28-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0118		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581507
Metals in Soil by CRC ICPMS							
Aluminum (Al)	16400		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Antimony (Sb)	19.4		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Arsenic (As)	126		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Barium (Ba)	108		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Beryllium (Be)	0.55		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Boron (B)	<5.0		5.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cadmium (Cd)	0.114		0.020	mg/kg	25-OCT-16	26-OCT-16	R3581643
Calcium (Ca)	3070		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Chromium (Cr)	39.8		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cobalt (Co)	8.31		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Copper (Cu)	69.2		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Iron (Fe)	19300		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lead (Pb)	25.8		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lithium (Li)	24.5		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Magnesium (Mg)	7240		20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Manganese (Mn)	187		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Molybdenum (Mo)	0.60		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Nickel (Ni)	27.1		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Phosphorus (P)	467		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Potassium (K)	1960		100	mg/kg	25-OCT-16	26-OCT-16	R3581643
Selenium (Se)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Silver (Ag)	0.26		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Sodium (Na)	259		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Strontium (Sr)	22.7		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Thallium (Tl)	0.151		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-31 16-GIANT-S-28-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Tin (Sn)	1.7		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Titanium (Ti)	590		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Uranium (U)	4.36		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Vanadium (V)	40.8		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zinc (Zn)	97.8		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zirconium (Zr)	6.2		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
L1844932-32 16-GIANT-S-29-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0206		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581507
Metals in Soil by CRC ICPMS							
Aluminum (Al)	13400		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Antimony (Sb)	22.5		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Arsenic (As)	206		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Barium (Ba)	79.3		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Beryllium (Be)	0.45		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Boron (B)	6.5		5.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cadmium (Cd)	0.163		0.020	mg/kg	25-OCT-16	26-OCT-16	R3581643
Calcium (Ca)	6190		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Chromium (Cr)	32.5		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cobalt (Co)	8.35		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Copper (Cu)	56.7		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Iron (Fe)	15000		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lead (Pb)	13.3		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lithium (Li)	21.2		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Magnesium (Mg)	6440		20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Manganese (Mn)	156		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Molybdenum (Mo)	2.86		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Nickel (Ni)	26.0		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Phosphorus (P)	598		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Potassium (K)	1690		100	mg/kg	25-OCT-16	26-OCT-16	R3581643
Selenium (Se)	0.25		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Silver (Ag)	0.21		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Sodium (Na)	456		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Strontium (Sr)	32.8		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Thallium (Tl)	0.119		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Titanium (Ti)	452		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Uranium (U)	23.5		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Vanadium (V)	34.5		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zinc (Zn)	88.7		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zirconium (Zr)	6.0		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
L1844932-33 16-GIANT-S-30-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Miscellaneous Parameters							
Mercury (Hg)	0.0109		0.0050	mg/kg	25-OCT-16	27-OCT-16	R3581507
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844932-33 16-GIANT-S-30-AP							
Sampled By: DPTM on 23-SEP-16							
Matrix: sediment							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	15600		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Antimony (Sb)	57.5		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Arsenic (As)	689	DLHC	0.25	mg/kg	25-OCT-16	26-OCT-16	R3581643
Barium (Ba)	111		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Beryllium (Be)	0.53		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Boron (B)	5.9		5.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Bismuth (Bi)	<0.20		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cadmium (Cd)	0.116		0.020	mg/kg	25-OCT-16	26-OCT-16	R3581643
Calcium (Ca)	3930		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Chromium (Cr)	36.7		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Cobalt (Co)	7.90		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Copper (Cu)	105		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Iron (Fe)	16400		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lead (Pb)	7.10		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Lithium (Li)	23.8		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Magnesium (Mg)	6700		20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Manganese (Mn)	181		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Molybdenum (Mo)	1.26		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Nickel (Ni)	26.3		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Phosphorus (P)	463		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Potassium (K)	2080		100	mg/kg	25-OCT-16	26-OCT-16	R3581643
Selenium (Se)	0.24		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Silver (Ag)	1.37		0.10	mg/kg	25-OCT-16	26-OCT-16	R3581643
Sodium (Na)	254		50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Strontium (Sr)	25.3		0.50	mg/kg	25-OCT-16	26-OCT-16	R3581643
Thallium (Tl)	0.149		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Tin (Sn)	<1.0		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Titanium (Ti)	545		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Uranium (U)	3.89		0.050	mg/kg	25-OCT-16	26-OCT-16	R3581643
Vanadium (V)	39.8		0.20	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zinc (Zn)	155		2.0	mg/kg	25-OCT-16	26-OCT-16	R3581643
Zirconium (Zr)	5.4		1.0	mg/kg	25-OCT-16	26-OCT-16	R3581643

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-200.2-CVAF-SK	Soil	Mercury in Soil by CVAFS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAFS.

ALS Test Code	Matrix	Test Description	Method Reference**
MET-200.2-CCMS-SK	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CRC ICPMS.

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. This method does not dissolve all silicate materials and may result in a partial extraction. depending on the sample matrix, for some metals, including, but not limited to Al, Ba, Be, Cr, Sr, Ti, Tl, and V.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
SK	ALS ENVIRONMENTAL - SASKATOON, SASKATCHEWAN, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: GOLDER ASSOCIATES LTD
16820 107 Ave NW
EDMONTON AB T5P 4C3
Contact: Steven Fiddler

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-200.2-CVAF-SK	**Soil**							
Batch R3581475								
WG2416183-3 CRM		**TILL-1**						
Mercury (Hg)			107.4		%		70-130	27-OCT-16
WG2416183-2 DUP		**L1844932-11**						
Mercury (Hg)		0.104	0.112		mg/kg	7.1	40	27-OCT-16
WG2416183-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	27-OCT-16
Batch R3581507								
WG2416184-3 CRM		**TILL-1**						
Mercury (Hg)			101.8		%		70-130	27-OCT-16
WG2416184-2 DUP		**L1844932-27**						
Mercury (Hg)		0.0133	0.0156		mg/kg	15	40	27-OCT-16
WG2416184-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	27-OCT-16
MET-200.2-CCMS-SK	**Soil**							
Batch R3581640								
WG2416183-3 CRM		**TILL-1**						
Aluminum (Al)			101.6		%		70-130	25-OCT-16
Antimony (Sb)			93.2		%		70-130	25-OCT-16
Arsenic (As)			108.5		%		70-130	25-OCT-16
Barium (Ba)			106.8		%		70-130	25-OCT-16
Beryllium (Be)			94.6		%		70-130	25-OCT-16
Bismuth (Bi)			98.6		%		70-130	25-OCT-16
Cadmium (Cd)			93.6		%		70-130	25-OCT-16
Calcium (Ca)			105.5		%		70-130	25-OCT-16
Chromium (Cr)			112.3		%		70-130	25-OCT-16
Cobalt (Co)			105.3		%		70-130	25-OCT-16
Copper (Cu)			103.0		%		70-130	25-OCT-16
Iron (Fe)			102.6		%		70-130	25-OCT-16
Lead (Pb)			93.0		%		70-130	25-OCT-16
Lithium (Li)			101.6		%		70-130	25-OCT-16
Magnesium (Mg)			106.6		%		70-130	25-OCT-16
Manganese (Mn)			102.2		%		70-130	25-OCT-16
Molybdenum (Mo)			90.1		%		70-130	25-OCT-16
Nickel (Ni)			107.4		%		70-130	25-OCT-16
Phosphorus (P)			108.5		%		70-130	25-OCT-16
Potassium (K)			107.2		%		70-130	25-OCT-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch R3581640								
WG2416183-3 CRM		**TILL-1**						
Selenium (Se)			101.3		%		70-130	25-OCT-16
Silver (Ag)			100.3		%		70-130	25-OCT-16
Sodium (Na)			117.2		%		70-130	25-OCT-16
Strontium (Sr)			100.2		%		70-130	25-OCT-16
Thallium (Tl)			93.2		%		70-130	25-OCT-16
Tin (Sn)			80.1		%		70-130	25-OCT-16
Titanium (Ti)			99.4		%		70-130	25-OCT-16
Uranium (U)			105.2		%		70-130	25-OCT-16
Vanadium (V)			109.3		%		70-130	25-OCT-16
Zinc (Zn)			102.9		%		70-130	25-OCT-16
WG2416183-2 DUP		**L1844932-11**						
Aluminum (Al)		21400	23200		mg/kg	7.8	40	25-OCT-16
Antimony (Sb)		88.3	99.5		mg/kg	12	30	25-OCT-16
Arsenic (As)		1150	1210		mg/kg	4.9	30	25-OCT-16
Barium (Ba)		56.0	56.0		mg/kg	0.0	40	25-OCT-16
Beryllium (Be)		0.37	0.39		mg/kg	5.8	30	25-OCT-16
Boron (B)		6.1	6.6		mg/kg	8.0	25	25-OCT-16
Bismuth (Bi)		0.23	0.24		mg/kg	5.3	30	25-OCT-16
Cadmium (Cd)		0.525	0.535		mg/kg	1.9	30	25-OCT-16
Calcium (Ca)		9400	9090		mg/kg	3.4	30	25-OCT-16
Chromium (Cr)		47.7	51.7		mg/kg	7.9	30	25-OCT-16
Cobalt (Co)		45.2	34.7		mg/kg	26	30	25-OCT-16
Copper (Cu)		258	265		mg/kg	2.6	30	25-OCT-16
Iron (Fe)		41100	44300		mg/kg	7.6	30	25-OCT-16
Lead (Pb)		69.6	78.2		mg/kg	12	40	25-OCT-16
Lithium (Li)		28.6	33.7		mg/kg	16	30	25-OCT-16
Magnesium (Mg)		16500	17600		mg/kg	6.7	30	25-OCT-16
Manganese (Mn)		530	542		mg/kg	2.3	30	25-OCT-16
Molybdenum (Mo)		1.04	1.16		mg/kg	11	40	25-OCT-16
Nickel (Ni)		73.6	76.2		mg/kg	3.4	30	25-OCT-16
Phosphorus (P)		515	509		mg/kg	1.2	30	25-OCT-16
Potassium (K)		1640	1660		mg/kg	1.5	40	25-OCT-16
Selenium (Se)		0.68	0.61		mg/kg	10	30	25-OCT-16
Silver (Ag)		1.94	1.97		mg/kg	1.5	40	25-OCT-16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch R3581640								
WG2416183-2 DUP		**L1844932-11**						
Sodium (Na)		245	253		mg/kg	3.3	40	25-OCT-16
Strontium (Sr)		27.3	29.3		mg/kg	7.0	40	25-OCT-16
Thallium (Tl)		0.111	0.115		mg/kg	3.4	30	25-OCT-16
Tin (Sn)		<1.0	<1.0	RPD-NA	mg/kg	N/A	40	25-OCT-16
Titanium (Ti)		403	420		mg/kg	4.1	40	25-OCT-16
Uranium (U)		1.46	1.50		mg/kg	3.1	30	25-OCT-16
Vanadium (V)		80.8	94.4		mg/kg	16	30	25-OCT-16
Zinc (Zn)		198	213		mg/kg	7.3	30	25-OCT-16
Zirconium (Zr)		5.8	6.4		mg/kg	11	25	25-OCT-16
WG2416183-1 MB								
Aluminum (Al)			<50		mg/kg		50	25-OCT-16
Antimony (Sb)			<0.10		mg/kg		0.1	25-OCT-16
Arsenic (As)			<0.10		mg/kg		0.1	25-OCT-16
Barium (Ba)			<0.50		mg/kg		0.5	25-OCT-16
Beryllium (Be)			<0.10		mg/kg		0.1	25-OCT-16
Boron (B)			<5.0		mg/kg		5	25-OCT-16
Bismuth (Bi)			<0.20		mg/kg		0.2	25-OCT-16
Cadmium (Cd)			<0.020		mg/kg		0.02	25-OCT-16
Calcium (Ca)			<50		mg/kg		50	25-OCT-16
Chromium (Cr)			<0.50		mg/kg		0.5	25-OCT-16
Cobalt (Co)			<0.10		mg/kg		0.1	25-OCT-16
Copper (Cu)			<0.50		mg/kg		0.5	25-OCT-16
Iron (Fe)			<50		mg/kg		50	25-OCT-16
Lead (Pb)			<0.50		mg/kg		0.5	25-OCT-16
Lithium (Li)			<2.0		mg/kg		2	25-OCT-16
Magnesium (Mg)			<20		mg/kg		20	25-OCT-16
Manganese (Mn)			<1.0		mg/kg		1	25-OCT-16
Molybdenum (Mo)			<0.10		mg/kg		0.1	25-OCT-16
Nickel (Ni)			<0.50		mg/kg		0.5	25-OCT-16
Phosphorus (P)			<50		mg/kg		50	25-OCT-16
Potassium (K)			<100		mg/kg		100	25-OCT-16
Selenium (Se)			<0.20		mg/kg		0.2	25-OCT-16
Silver (Ag)			<0.10		mg/kg		0.1	25-OCT-16
Sodium (Na)			<50		mg/kg		50	25-OCT-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch R3581640								
WG2416183-1 MB								
Strontium (Sr)			<0.50		mg/kg		0.5	25-OCT-16
Thallium (Tl)			<0.050		mg/kg		0.05	25-OCT-16
Tin (Sn)			<1.0		mg/kg		1	25-OCT-16
Titanium (Ti)			<1.0		mg/kg		1	25-OCT-16
Uranium (U)			<0.050		mg/kg		0.05	25-OCT-16
Vanadium (V)			<0.20		mg/kg		0.2	25-OCT-16
Zinc (Zn)			<2.0		mg/kg		2	25-OCT-16
Zirconium (Zr)			<1.0		mg/kg		1	25-OCT-16
Batch R3581643								
WG2416184-3 CRM		**TILL-1**						
Aluminum (Al)			105.9		%		70-130	26-OCT-16
Antimony (Sb)			98.9		%		70-130	26-OCT-16
Arsenic (As)			109.1		%		70-130	26-OCT-16
Barium (Ba)			105.3		%		70-130	26-OCT-16
Beryllium (Be)			96.9		%		70-130	26-OCT-16
Bismuth (Bi)			97.1		%		70-130	26-OCT-16
Cadmium (Cd)			87.1		%		70-130	26-OCT-16
Calcium (Ca)			106.8		%		70-130	26-OCT-16
Chromium (Cr)			108.4		%		70-130	26-OCT-16
Cobalt (Co)			101.6		%		70-130	26-OCT-16
Copper (Cu)			99.8		%		70-130	26-OCT-16
Iron (Fe)			96.0		%		70-130	26-OCT-16
Lead (Pb)			92.7		%		70-130	26-OCT-16
Lithium (Li)			106.7		%		70-130	26-OCT-16
Magnesium (Mg)			98.2		%		70-130	26-OCT-16
Manganese (Mn)			101.0		%		70-130	26-OCT-16
Molybdenum (Mo)			91.5		%		70-130	26-OCT-16
Nickel (Ni)			104.0		%		70-130	26-OCT-16
Phosphorus (P)			109.1		%		70-130	26-OCT-16
Potassium (K)			102.6		%		70-130	26-OCT-16
Selenium (Se)			88.1		%		70-130	26-OCT-16
Silver (Ag)			105.1		%		70-130	26-OCT-16
Sodium (Na)			111.1		%		70-130	26-OCT-16
Strontium (Sr)			107.6		%		70-130	26-OCT-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch R3581643								
WG2416184-3 CRM		**TILL-1**						
Thallium (Tl)			95.6		%		70-130	26-OCT-16
Tin (Sn)			85.2		%		70-130	26-OCT-16
Titanium (Ti)			98.1		%		70-130	26-OCT-16
Uranium (U)			105.9		%		70-130	26-OCT-16
Vanadium (V)			106.4		%		70-130	26-OCT-16
Zinc (Zn)			97.7		%		70-130	26-OCT-16
WG2416184-2 DUP		**L1844932-27**						
Aluminum (Al)		13600	14000		mg/kg	2.6	40	26-OCT-16
Antimony (Sb)		0.99	1.12		mg/kg	12	30	26-OCT-16
Arsenic (As)		15.8	16.7		mg/kg	5.3	30	26-OCT-16
Barium (Ba)		84.8	84.8		mg/kg	0.1	40	26-OCT-16
Beryllium (Be)		0.46	0.50		mg/kg	8.5	30	26-OCT-16
Boron (B)		<5.0	5.6	RPD-NA	mg/kg	N/A	25	26-OCT-16
Bismuth (Bi)		<0.20	<0.20	RPD-NA	mg/kg	N/A	30	26-OCT-16
Cadmium (Cd)		0.083	0.093		mg/kg	11	30	26-OCT-16
Calcium (Ca)		2910	3200		mg/kg	9.7	30	26-OCT-16
Chromium (Cr)		32.2	32.6		mg/kg	1.0	30	26-OCT-16
Cobalt (Co)		5.77	5.86		mg/kg	1.6	30	26-OCT-16
Copper (Cu)		16.2	17.3		mg/kg	6.7	30	26-OCT-16
Iron (Fe)		14000	14400		mg/kg	2.9	30	26-OCT-16
Lead (Pb)		6.27	6.90		mg/kg	9.6	40	26-OCT-16
Lithium (Li)		19.6	21.0		mg/kg	7.0	30	26-OCT-16
Magnesium (Mg)		5560	5800		mg/kg	4.1	30	26-OCT-16
Manganese (Mn)		141	144		mg/kg	2.3	30	26-OCT-16
Molybdenum (Mo)		0.48	0.56		mg/kg	16	40	26-OCT-16
Nickel (Ni)		18.1	18.5		mg/kg	2.3	30	26-OCT-16
Phosphorus (P)		488	543		mg/kg	11	30	26-OCT-16
Potassium (K)		1830	1910		mg/kg	4.1	40	26-OCT-16
Selenium (Se)		<0.20	<0.20	RPD-NA	mg/kg	N/A	30	26-OCT-16
Silver (Ag)		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	26-OCT-16
Sodium (Na)		239	241		mg/kg	1.0	40	26-OCT-16
Strontium (Sr)		21.4	23.3		mg/kg	8.6	40	26-OCT-16
Thallium (Tl)		0.125	0.136		mg/kg	8.5	30	26-OCT-16
Tin (Sn)		<1.0	<1.0	RPD-NA	mg/kg	N/A	40	26-OCT-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch R3581643								
WG2416184-2 DUP		**L1844932-27**						
Titanium (Ti)		513	546		mg/kg	6.2	40	26-OCT-16
Uranium (U)		4.92	5.58		mg/kg	13	30	26-OCT-16
Vanadium (V)		32.9	33.7		mg/kg	2.4	30	26-OCT-16
Zinc (Zn)		38.8	39.5		mg/kg	2.0	30	26-OCT-16
Zirconium (Zr)		3.4	4.0		mg/kg	15	25	26-OCT-16
WG2416184-1 MB								
Aluminum (Al)			<50		mg/kg		50	26-OCT-16
Antimony (Sb)			<0.10		mg/kg		0.1	26-OCT-16
Arsenic (As)			<0.10		mg/kg		0.1	26-OCT-16
Barium (Ba)			<0.50		mg/kg		0.5	26-OCT-16
Beryllium (Be)			<0.10		mg/kg		0.1	26-OCT-16
Boron (B)			<5.0		mg/kg		5	26-OCT-16
Bismuth (Bi)			<0.20		mg/kg		0.2	26-OCT-16
Cadmium (Cd)			<0.020		mg/kg		0.02	26-OCT-16
Calcium (Ca)			<50		mg/kg		50	26-OCT-16
Chromium (Cr)			<0.50		mg/kg		0.5	26-OCT-16
Cobalt (Co)			<0.10		mg/kg		0.1	26-OCT-16
Copper (Cu)			<0.50		mg/kg		0.5	26-OCT-16
Iron (Fe)			<50		mg/kg		50	26-OCT-16
Lead (Pb)			<0.50		mg/kg		0.5	26-OCT-16
Lithium (Li)			<2.0		mg/kg		2	26-OCT-16
Magnesium (Mg)			<20		mg/kg		20	26-OCT-16
Manganese (Mn)			<1.0		mg/kg		1	26-OCT-16
Molybdenum (Mo)			<0.10		mg/kg		0.1	26-OCT-16
Nickel (Ni)			<0.50		mg/kg		0.5	26-OCT-16
Phosphorus (P)			<50		mg/kg		50	26-OCT-16
Potassium (K)			<100		mg/kg		100	26-OCT-16
Selenium (Se)			<0.20		mg/kg		0.2	26-OCT-16
Silver (Ag)			<0.10		mg/kg		0.1	26-OCT-16
Sodium (Na)			<50		mg/kg		50	26-OCT-16
Strontium (Sr)			<0.50		mg/kg		0.5	26-OCT-16
Thallium (Tl)			<0.050		mg/kg		0.05	26-OCT-16
Tin (Sn)			<1.0		mg/kg		1	26-OCT-16
Titanium (Ti)			<1.0		mg/kg		1	26-OCT-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-SK	**Soil**							
Batch R3581643								
WG2416184-1 MB								
Uranium (U)			<0.050		mg/kg		0.05	26-OCT-16
Vanadium (V)			<0.20		mg/kg		0.2	26-OCT-16
Zinc (Zn)			<2.0		mg/kg		2	26-OCT-16
Zirconium (Zr)			<1.0		mg/kg		1	26-OCT-16

Quality Control Report

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Metals							
Mercury in Soil by CVAFS							
	1	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	2	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	3	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	4	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	5	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	6	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	7	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	8	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	9	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	10	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	11	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	12	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	13	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	14	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	15	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	16	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	17	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	18	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	19	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	20	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	21	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	22	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	23	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	24	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	25	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	26	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	27	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	28	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	29	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	30	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	31	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	32	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT
	33	23-SEP-16	27-OCT-16 14:00	28	34	days	EHT

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L1844932 were received on 18-OCT-16 14:10.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

GOLDER ASSOCIATES LTD
ATTN: Steven Fiddler
16820 107 Ave NW
EDMONTON AB T5P 4C3

Date Received: 18-OCT-16
Report Date: 06-DEC-16 15:56 (MT)
Version: FINAL

Client Phone: 780-483-3499

Certificate of Analysis

Lab Work Order #: L1844974
Project P.O. #: NOT SUBMITTED
Job Reference: 13-1377-0044-23000-23003
C of C Numbers:
Legal Site Desc:

Jessica Spira, Env. Tech. DIPL
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-1 16-GIANT-AP-1							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	72.7		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	0.0065		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0018		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	0.105		0.0050	mg/kg	30-NOV-16	05-DEC-16	R3611802
Silver (Ag)-Total	0.0287		0.0010	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	806		2.0	mg/kg	30-NOV-16	05-DEC-16	R3611802
Antimony (Sb)-Total	24.2		0.010	mg/kg	30-NOV-16	05-DEC-16	R3611802
Arsenic (As)-Total	146		0.020	mg/kg	30-NOV-16	05-DEC-16	R3611802
Barium (Ba)-Total	11.0		0.050	mg/kg	30-NOV-16	05-DEC-16	R3611802
Beryllium (Be)-Total	0.022		0.010	mg/kg	30-NOV-16	05-DEC-16	R3611802
Bismuth (Bi)-Total	0.013		0.010	mg/kg	30-NOV-16	05-DEC-16	R3611802
Boron (B)-Total	30.2		1.0	mg/kg	30-NOV-16	05-DEC-16	R3611802
Cadmium (Cd)-Total	0.0917		0.0050	mg/kg	30-NOV-16	05-DEC-16	R3611802
Calcium (Ca)-Total	15300		20	mg/kg	30-NOV-16	05-DEC-16	R3611802
Cesium (Cs)-Total	0.120		0.0050	mg/kg	30-NOV-16	05-DEC-16	R3611802
Chromium (Cr)-Total	2.52		0.050	mg/kg	30-NOV-16	05-DEC-16	R3611802
Cobalt (Co)-Total	5.49		0.020	mg/kg	30-NOV-16	05-DEC-16	R3611802
Copper (Cu)-Total	17.7		0.10	mg/kg	30-NOV-16	05-DEC-16	R3611802
Iron (Fe)-Total	1970		3.0	mg/kg	30-NOV-16	05-DEC-16	R3611802
Lead (Pb)-Total	2.39		0.020	mg/kg	30-NOV-16	05-DEC-16	R3611802
Lithium (Li)-Total	2.51		0.50	mg/kg	30-NOV-16	05-DEC-16	R3611802
Magnesium (Mg)-Total	4310		2.0	mg/kg	30-NOV-16	05-DEC-16	R3611802
Manganese (Mn)-Total	563		0.050	mg/kg	30-NOV-16	05-DEC-16	R3611802
Molybdenum (Mo)-Total	5.43		0.020	mg/kg	30-NOV-16	05-DEC-16	R3611802
Nickel (Ni)-Total	10.6		0.20	mg/kg	30-NOV-16	05-DEC-16	R3611802
Phosphorus (P)-Total	1910		10	mg/kg	30-NOV-16	05-DEC-16	R3611802
Potassium (K)-Total	26000		20	mg/kg	30-NOV-16	05-DEC-16	R3611802
Rubidium (Rb)-Total	5.39		0.050	mg/kg	30-NOV-16	05-DEC-16	R3611802
Selenium (Se)-Total	0.331		0.050	mg/kg	30-NOV-16	05-DEC-16	R3611802
Sodium (Na)-Total	10600		20	mg/kg	30-NOV-16	05-DEC-16	R3611802
Strontium (Sr)-Total	152		0.050	mg/kg	30-NOV-16	05-DEC-16	R3611802
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	05-DEC-16	R3611802
Thallium (Tl)-Total	0.0147		0.0020	mg/kg	30-NOV-16	05-DEC-16	R3611802
Tin (Sn)-Total	0.26		0.10	mg/kg	30-NOV-16	05-DEC-16	R3611802
Uranium (U)-Total	0.435		0.0020	mg/kg	30-NOV-16	05-DEC-16	R3611802
Vanadium (V)-Total	3.00		0.10	mg/kg	30-NOV-16	05-DEC-16	R3611802
Zinc (Zn)-Total	40.7		0.50	mg/kg	30-NOV-16	05-DEC-16	R3611802
Zirconium (Zr)-Total	0.70		0.20	mg/kg	30-NOV-16	05-DEC-16	R3611802
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	220		0.40	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Antimony (Sb)-Total	6.60		0.0020	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Arsenic (As)-Total	39.9		0.0040	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Barium (Ba)-Total	3.01		0.010	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Beryllium (Be)-Total	0.0060		0.0020	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Bismuth (Bi)-Total	0.0037		0.0020	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Boron (B)-Total	8.25		0.20	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Cadmium (Cd)-Total	0.0250		0.0010	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Calcium (Ca)-Total	4170		4.0	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Cesium (Cs)-Total	0.0326		0.0010	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Chromium (Cr)-Total	0.687		0.010	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-1 16-GIANT-AP-1							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	1.50		0.0040	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Copper (Cu)-Total	4.82		0.020	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Iron (Fe)-Total	536		0.60	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Lead (Pb)-Total	0.652		0.0040	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Lithium (Li)-Total	0.69		0.10	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Magnesium (Mg)-Total	1180		0.40	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Manganese (Mn)-Total	154		0.010	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Molybdenum (Mo)-Total	1.48		0.0040	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Nickel (Ni)-Total	2.89		0.040	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Phosphorus (P)-Total	520		2.0	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Potassium (K)-Total	7110		4.0	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Rubidium (Rb)-Total	1.47		0.010	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Selenium (Se)-Total	0.090		0.010	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Sodium (Na)-Total	2880		4.0	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Strontium (Sr)-Total	41.4		0.010	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Thallium (Tl)-Total	0.00400		0.00040	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Tin (Sn)-Total	0.070		0.020	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Uranium (U)-Total	0.119		0.00040	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Vanadium (V)-Total	0.819		0.020	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Zinc (Zn)-Total	11.1		0.10	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
Zirconium (Zr)-Total	0.190		0.040	mg/kg wwt	30-NOV-16	05-DEC-16	R3611802
L1844974-2 16-GIANT-AP-2							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	49.0		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	0.0061		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0031		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0020		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	47.4		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	2.86		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	11.2		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	11.6		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	36.8		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0313		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	7170		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0069		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.169		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.285		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	3.99		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	175		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.169		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1970		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	200		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.574		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-2 16-GIANT-AP-2							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	1.02		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	477		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	6840		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	0.941		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.219		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	1360		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	78.5		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0881		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.22		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	32.7		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	24.2		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	1.46		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	5.71		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	5.91		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	18.8		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0159		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	3650		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0035		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.086		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.145		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.03		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	89.2		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0861		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.21		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1010		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	102		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.293		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.518		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	243		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3490		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	0.480		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.112		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	692		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	40.0		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	0.0053		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00083		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	0.041		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0449		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.110		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	16.7		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-3 16-GIANT-AP-3							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-3 16-GIANT-AP-3							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	67.2		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0015		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	28.6		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.892		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	5.59		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	3.52		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	12.2		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0092		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	6280		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0107		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.116		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.099		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.92		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	91.6		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.069		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.69		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2650		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	158		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.705		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.63		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	1390		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	12900		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	6.54		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.078		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	433		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	51.3		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0031		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.12		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	22.6		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	9.38		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.292		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.83		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	1.16		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	3.98		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0030		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	2060		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0035		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.038		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-3 16-GIANT-AP-3							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0324		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.955		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	30.0		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0227		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.22		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	868		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	51.9		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.231		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.207		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	455		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	4240		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	2.14		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.025		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	142		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	16.8		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	0.0066		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	0.030		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00101		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.039		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	7.41		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-4 16-GIANT-AP-3-D							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	68.5		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0013		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	23.3		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.636		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	4.29		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	3.18		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	7.8		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	5570		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0096		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.095		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.107		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.94		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	77.6		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.059		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.50		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2370		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	123		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.565		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-4 16-GIANT-AP-3-D							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.74		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	1450		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	15600		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	7.24		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.067		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	390		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	47.4		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0025		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	21.5		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	7.34		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.200		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.35		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	1.00		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	2.46		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0011		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	1750		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0030		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.030		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.0338		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.926		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	24.4		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0187		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.16		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	745		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	38.7		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.178		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.232		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	456		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	4930		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	2.28		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.021		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	123		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	14.9		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00078		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.031		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	6.77		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-5 16-GIANT-AP-4							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-5 16-GIANT-AP-4							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	61.9		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	0.0078		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0030		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	0.0073		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0028		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	67.3		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	3.46		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	10.8		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	8.52		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	13.8		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0366		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	8270		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0220		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.255		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.650		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	4.01		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	162		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.173		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.65		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2430		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	158		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	2.37		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	4.67		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	988		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	9360		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	6.49		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.052		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	2850		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	125		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0026		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	0.11		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.119		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.26		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	21.0		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	25.6		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	1.32		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	4.12		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	3.25		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	5.24		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0139		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	3150		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0084		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.097		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-5 16-GIANT-AP-4							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.247		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.53		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	61.6		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0661		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.25		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	925		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	60.2		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.904		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	1.78		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	376		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3570		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	2.47		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.020		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	1080		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	47.5		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00097		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	0.041		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0453		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.101		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	8.00		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-6 16-GIANT-AP-5							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	52.8		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0022		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	0.0055		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0026		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	34.6		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	1.30		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	7.49		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	18.0		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	29.1		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0394		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	9600		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0068		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.118		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.434		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.06		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	97.6		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.075		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	1.15		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2130		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	504		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	1.11		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-6 16-GIANT-AP-5							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.94		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	876		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	5940		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	0.828		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.109		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	1830		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	86.9		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0033		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.129		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.15		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	22.9		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	16.4		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.615		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	3.54		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	8.50		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	13.7		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0186		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	4540		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0032		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.056		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.205		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.972		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	46.1		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0356		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.54		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1010		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	238		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.524		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.443		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	414		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	2810		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	0.391		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.051		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	866		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	41.1		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	0.0079		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00158		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	0.031		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0611		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.070		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	10.8		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-7 16-GIANT-AP-6							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-7 16-GIANT-AP-6							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	54.3		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0021		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0013		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	60.1		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.826		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	5.37		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	9.89		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	23.7		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0258		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	8820		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0097		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.176		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.130		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.87		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	121		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.070		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.55		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2030		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	439		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	1.05		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.31		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	1430		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	8190		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	1.64		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.061		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	839		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	77.7		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0028		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0190		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.18		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	14.6		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	27.4		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.378		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	2.45		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	4.52		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	10.8		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0118		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	4030		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0044		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.081		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-7 16-GIANT-AP-6							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0592		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.31		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	55.5		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0319		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.25		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	925		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	200		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.480		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.142		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	652		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3740		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	0.750		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.028		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	384		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	35.5		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	0.0079		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00128		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00869		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.083		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	6.69		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-8 16-GIANT-AP-7							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	49.7		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	0.0052		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0026		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0020		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	139		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.309		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	11.4		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	12.3		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	36.6		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0153		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	9520		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0131		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.592		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.273		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.40		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	271		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.232		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.84		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1550		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	318		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.178		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-8 16-GIANT-AP-7							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.61		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	651		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	9090		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	0.617		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	1350		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	32.3		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	0.024		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0024		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0286		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.52		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	11.5		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	69.7		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.155		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	5.73		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	6.19		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	18.4		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0077		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	4790		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0066		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.298		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.137		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.706		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	136		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.116		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.42		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	781		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	160		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0897		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.308		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	327		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	4570		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	0.310		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.016		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	680		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	16.2		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	0.0123		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00118		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0144		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.263		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	5.80		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	0.051		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-9 16-GIANT-AP-8							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-9 16-GIANT-AP-8							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	50.1		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0024		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	0.0208		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0104		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	85.5		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.613		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	3.27		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	11.7		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	26.3		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0499		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	8130		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0101		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.316		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.127		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.68		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	185		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.271		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2300		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	285		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.204		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.71		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	752		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	7690		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	1.15		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	776		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	44.7		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0093		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.31		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	56.5		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	42.7		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.306		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.63		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	5.82		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	13.1		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0249		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	4060		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0050		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.158		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-9 16-GIANT-AP-8							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0631		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.34		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	92.5		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.135		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.21		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1150		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	142		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.102		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.356		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	375		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3840		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	0.574		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.022		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	387		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	22.3		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00088		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00466		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.156		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	28.2		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-10 16-GIANT-AP-9							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	53.9		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0022		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0018		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	27.9		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.332		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	2.99		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	13.3		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	26.6		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0137		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	5740		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.079		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.067		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	80.1		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.064		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.86		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1180		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	571		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	2.31		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-10 16-GIANT-AP-9							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.36		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	920		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	10800		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	1.10		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.085		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	1720		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	54.4		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0076		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	25.1		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	12.8		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.153		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.38		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	6.12		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	12.3		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0063		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	2640		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0020		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.036		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.0306		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.966		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	36.9		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0296		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.39		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	544		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	263		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	1.07		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.164		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	424		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	4990		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	0.507		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.039		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	791		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	25.0		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	0.0089		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.00040		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00351		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.045		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	11.6		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-11 16-GIANT-AP-10							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-11 16-GIANT-AP-10							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	50.6		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0023		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	0.0249		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0123		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	48.3		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.865		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	16.0		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	12.3		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	28.2		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0271		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	8130		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0081		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.131		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.520		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	3.17		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	149		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.194		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.69		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1590		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	231		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	1.76		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.89		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	735		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	5540		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	1.60		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.087		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	856		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	60.5		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0289		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.16		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	18.2		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	23.9		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.428		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	7.93		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	6.10		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	14.0		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0134		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	4020		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0040		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.065		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-11 16-GIANT-AP-10							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.257		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.57		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	73.5		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0960		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.34		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	785		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	114		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.872		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.440		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	363		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	2740		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	0.792		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.043		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	423		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	29.9		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00086		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	0.021		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0143		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.080		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	9.00		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-12 16-GIANT-AP-11							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	49.0		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0024		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	5.8		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.027		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	4.07		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	18.5		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	11.8		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	4700		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.133		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.55		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	66.2		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2380		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	146		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.283		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-12 16-GIANT-AP-11							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	969		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3460		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	6.26		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	1140		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	15.4		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0021		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	10.4		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	2.93		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0140		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	2.07		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	9.43		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	5.99		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	2400		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0679		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.0078		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.278		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	33.7		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0083		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.13		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1220		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	74.3		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.144		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	494		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	1760		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	3.19		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	580		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	7.86		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00106		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00087		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	5.28		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-13 16-GIANT-AP-12							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-13 16-GIANT-AP-12							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	42.4		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0028		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	7.9		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.025		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.20		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	15.6		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	12.8		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	5960		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0878		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.36		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	54.0		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.70		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	3480		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	151		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.151		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	999		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	2940		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	3.42		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	1120		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	20.8		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0031		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	8.62		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	4.55		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0142		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.693		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	9.02		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	7.39		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	3440		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0506		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.022		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-13 16-GIANT-AP-12							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0081		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.208		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	31.1		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0109		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.40		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2000		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	86.9		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.0868		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	576		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	1690		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	1.97		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	643		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	12.0		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00076		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00178		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	4.97		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-14 16-GIANT-AP-13							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	36.1		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	0.0063		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0040		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	6.8		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.032		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.20		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	18.6		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	9.0		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	4640		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.166		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.50		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	48.4		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2410		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	187		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.229		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-14 16-GIANT-AP-13							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	1000		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	7470		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	11.9		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	284		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	18.4		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0039		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	7.58		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	4.33		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0204		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.769		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	11.9		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	5.77		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	2960		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.106		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.018		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.0089		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.317		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	30.9		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0090		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.32		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1540		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	120		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.146		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	639		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	4780		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	7.61		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	182		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	11.8		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00124		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00249		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	4.85		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-15 16-GIANT-AP-14							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-15 16-GIANT-AP-14							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	49.7		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	0.0065		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0033		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	6.6		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.027		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.70		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	25.8		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	13.2		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	7060		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0728		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.61		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	72.1		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	1.03		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2770		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	486		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.865		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	720		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	6370		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	7.48		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	231		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	23.5		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0024		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	15.8		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	3.30		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0135		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.855		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	13.0		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	6.67		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0011		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	3550		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0367		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.014		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-15 16-GIANT-AP-14							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0099		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.308		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	36.3		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0068		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.52		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1390		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	245		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.435		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	363		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3210		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	3.77		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	116		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	11.8		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00093		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00121		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	7.95		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	0.071		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-16 16-GIANT-AP-14-D							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	43.2		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	0.0072		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0041		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	7.8		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.039		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.69		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	30.7		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	15.6		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	7970		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.121		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.56		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	74.1		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	1.11		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2820		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	350		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.563		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-16 16-GIANT-AP-14-D							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	680		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	6480		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	9.53		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	303		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	26.3		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0030		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0020		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	11.8		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	4.42		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0221		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.958		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	17.4		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	8.86		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	4520		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0688		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.026		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.0103		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.318		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	42.1		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0104		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.63		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1600		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	199		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.320		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	386		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3680		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	5.41		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	172		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	14.9		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00170		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00116		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	6.73		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-17 16-GIANT-AP-15							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-17 16-GIANT-AP-15							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	51.4		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0022		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	14.6		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.084		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	4.89		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	22.0		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	10.6		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	4700		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0994		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.076		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.049		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.59		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	150		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.031		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1480		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	344		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.440		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	370		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	9410		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	19.3		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	52		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	20.0		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0062		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	9.84		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	7.11		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0408		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	2.37		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	10.7		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	5.14		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	2280		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0483		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.037		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-17 16-GIANT-AP-15							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0239		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.285		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	72.7		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0151		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.11		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	720		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	167		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.214		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.041		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	180		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	4570		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	9.38		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	25.3		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	9.72		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00078		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00302		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.027		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	4.78		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-18 16-GIANT-AP-16							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	53.7		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0023		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	03-DEC-16	R3611663
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	70.4		2.0	mg/kg	30-NOV-16	03-DEC-16	R3611663
Antimony (Sb)-Total	0.056		0.010	mg/kg	30-NOV-16	03-DEC-16	R3611663
Arsenic (As)-Total	3.07		0.020	mg/kg	30-NOV-16	03-DEC-16	R3611663
Barium (Ba)-Total	57.1		0.050	mg/kg	30-NOV-16	03-DEC-16	R3611663
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	03-DEC-16	R3611663
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	03-DEC-16	R3611663
Boron (B)-Total	13.1		1.0	mg/kg	30-NOV-16	03-DEC-16	R3611663
Cadmium (Cd)-Total	0.0061		0.0050	mg/kg	30-NOV-16	03-DEC-16	R3611663
Calcium (Ca)-Total	6080		20	mg/kg	30-NOV-16	03-DEC-16	R3611663
Cesium (Cs)-Total	0.106		0.0050	mg/kg	30-NOV-16	03-DEC-16	R3611663
Chromium (Cr)-Total	0.181		0.050	mg/kg	30-NOV-16	03-DEC-16	R3611663
Cobalt (Co)-Total	0.097		0.020	mg/kg	30-NOV-16	03-DEC-16	R3611663
Copper (Cu)-Total	1.95		0.10	mg/kg	30-NOV-16	03-DEC-16	R3611663
Iron (Fe)-Total	146		3.0	mg/kg	30-NOV-16	03-DEC-16	R3611663
Lead (Pb)-Total	0.052		0.020	mg/kg	30-NOV-16	03-DEC-16	R3611663
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	03-DEC-16	R3611663
Magnesium (Mg)-Total	2940		2.0	mg/kg	30-NOV-16	03-DEC-16	R3611663
Manganese (Mn)-Total	750		0.050	mg/kg	30-NOV-16	03-DEC-16	R3611663
Molybdenum (Mo)-Total	8.57		0.020	mg/kg	30-NOV-16	03-DEC-16	R3611663

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-18 16-GIANT-AP-16							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.22		0.20	mg/kg	30-NOV-16	03-DEC-16	R3611663
Phosphorus (P)-Total	964		10	mg/kg	30-NOV-16	03-DEC-16	R3611663
Potassium (K)-Total	10300		20	mg/kg	30-NOV-16	03-DEC-16	R3611663
Rubidium (Rb)-Total	12.1		0.050	mg/kg	30-NOV-16	03-DEC-16	R3611663
Selenium (Se)-Total	0.061		0.050	mg/kg	30-NOV-16	03-DEC-16	R3611663
Sodium (Na)-Total	187		20	mg/kg	30-NOV-16	03-DEC-16	R3611663
Strontium (Sr)-Total	34.8		0.050	mg/kg	30-NOV-16	03-DEC-16	R3611663
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	03-DEC-16	R3611663
Thallium (Tl)-Total	0.0133		0.0020	mg/kg	30-NOV-16	03-DEC-16	R3611663
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	03-DEC-16	R3611663
Uranium (U)-Total	0.0509		0.0020	mg/kg	30-NOV-16	03-DEC-16	R3611663
Vanadium (V)-Total	0.16		0.10	mg/kg	30-NOV-16	03-DEC-16	R3611663
Zinc (Zn)-Total	19.0		0.50	mg/kg	30-NOV-16	03-DEC-16	R3611663
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	03-DEC-16	R3611663
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	32.6		0.40	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Antimony (Sb)-Total	0.0257		0.0020	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Arsenic (As)-Total	1.42		0.0040	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Barium (Ba)-Total	26.4		0.010	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Boron (B)-Total	6.06		0.20	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Cadmium (Cd)-Total	0.0028		0.0010	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Calcium (Ca)-Total	2810		4.0	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Cesium (Cs)-Total	0.0489		0.0010	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Chromium (Cr)-Total	0.084		0.010	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Cobalt (Co)-Total	0.0450		0.0040	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Copper (Cu)-Total	0.902		0.020	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Iron (Fe)-Total	67.7		0.60	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Lead (Pb)-Total	0.0241		0.0040	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Lithium (Li)-Total	0.21		0.10	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Magnesium (Mg)-Total	1360		0.40	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Manganese (Mn)-Total	347		0.010	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Molybdenum (Mo)-Total	3.97		0.0040	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Nickel (Ni)-Total	0.102		0.040	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Phosphorus (P)-Total	446		2.0	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Potassium (K)-Total	4790		4.0	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Rubidium (Rb)-Total	5.59		0.010	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Selenium (Se)-Total	0.028		0.010	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Sodium (Na)-Total	86.7		4.0	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Strontium (Sr)-Total	16.1		0.010	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Thallium (Tl)-Total	0.00616		0.00040	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Uranium (U)-Total	0.0236		0.00040	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Vanadium (V)-Total	0.076		0.020	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Zinc (Zn)-Total	8.78		0.10	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
Zirconium (Zr)-Total	0.048		0.040	mg/kg wwt	30-NOV-16	03-DEC-16	R3611663
L1844974-19 16-GIANT-AP-17							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-19 16-GIANT-AP-17							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	61.9		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	0.0061		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0023		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0017		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	11.8		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.099		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	12.3		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	34.8		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	14.0		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0196		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	6750		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0111		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.120		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	3.71		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	127		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.028		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.60		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1480		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	760		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	3.72		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.33		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	1500		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	10900		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	7.90		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	201		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	20.7		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0021		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0331		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	17.3		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	4.48		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0375		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	4.70		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	13.2		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	5.33		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0075		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	2570		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0042		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.017		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-19 16-GIANT-AP-17							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0458		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.41		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	48.2		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0108		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.23		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	563		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	289		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	1.42		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.127		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	572		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	4140		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	3.01		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.015		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	76.3		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	7.90		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00082		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0126		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	6.60		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-20 16-GIANT-AP-18							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	56.9		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	0.0074		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0032		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	13.5		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.082		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	12.3		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	18.7		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	6.6		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0064		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	4190		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0172		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.127		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.23		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	160		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.024		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1320		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	544		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	1.23		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-20 16-GIANT-AP-18							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	1290		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	7480		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	8.50		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.053		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	137		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	15.5		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0034		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0403		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	7.38		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	5.82		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0352		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	5.28		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	8.05		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	2.83		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0028		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	1810		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0074		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.015		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.0549		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.531		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	69.1		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0103		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.17		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	570		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	234		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.532		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	557		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3220		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	3.66		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.023		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	58.9		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	6.67		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00147		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0173		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	3.18		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-21 16-GIANT-AP-19							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-21 16-GIANT-AP-19							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	70.9		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0014		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	0.0096		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0028		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	18.2		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.147		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	20.6		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	32.2		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	7.4		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0405		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	3970		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0078		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.080		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.178		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	3.77		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	339		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.073		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.52		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1080		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	1050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	1.02		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.76		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	1410		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	12000		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	5.84		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	233		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	14.8		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0042		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0581		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	18.3		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	5.28		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0427		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	5.99		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	9.38		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	2.16		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0118		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	1150		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0023		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.023		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-21 16-GIANT-AP-19							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0519		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.10		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	98.5		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0213		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.15		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	313		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	304		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.295		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.221		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	409		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3490		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	1.70		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	0.014		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	67.8		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	4.31		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00121		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0169		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.024		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	5.32		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-22 16-GIANT-AP-20							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	45.1		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	0.0067		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0037		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	16.7		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.034		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.83		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	118		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	21.0		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0164		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	9390		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.186		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.057		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.054		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.19		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	57.1		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.054		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	2000		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	1580		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.929		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-22 16-GIANT-AP-20							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.27		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	703		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	6190		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	14.9		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	36		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	44.1		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0089		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0028		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	36.4		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	9.19		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0185		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.01		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	64.6		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	11.5		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0090		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	5150		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.102		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.031		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.0295		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.20		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	31.3		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0298		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.12		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1100		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	868		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.510		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.149		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	386		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3400		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	8.17		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	20.0		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	24.2		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00486		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00153		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.029		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	20.0		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-23 16-GIANT-AP-21							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-23 16-GIANT-AP-21							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	49.8		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0019		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	28.5		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.03		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	31.2		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	18.5		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	6670		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0051		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.069		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.026		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.25		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	86.9		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.029		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1130		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	183		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	3.57		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	490		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	10100		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	1.27		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	15.4		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0113		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	16.2		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	14.3		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0033		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.515		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	15.7		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	9.27		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	3350		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0026		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.035		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-23 16-GIANT-AP-21							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0128		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.629		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	43.6		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0147		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	566		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	91.6		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	1.79		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.069		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	246		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	5070		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	0.636		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	6.8		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	7.73		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00046		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00568		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.038		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	8.14		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-24 16-GIANT-AP-22							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	62.7		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	0.0054		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0020		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	39.0		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.362		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	87.1		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	22.7		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0054		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	8490		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0121		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.143		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.081		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.29		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	101		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.040		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.77		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1370		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	666		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	1.33		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-24 16-GIANT-AP-22							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.49		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	788		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	10300		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	4.28		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	28.3		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0025		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0065		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.14		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	7.59		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	14.5		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.135		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	32.5		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	8.45		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0020		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	3170		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0045		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.053		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.0302		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.480		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	37.6		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0149		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.29		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	510		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	248		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.497		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.183		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	294		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3820		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	1.59		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	4.1		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	10.6		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00094		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00244		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.051		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	2.83		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-25 16-GIANT-AP-23							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-25 16-GIANT-AP-23							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	47.3		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	0.0057		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0030		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	14.4		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.662		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	36.5		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	14.4		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0089		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	5990		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0988		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.741		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.44		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	215		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.030		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1500		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	195		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.567		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	1.16		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	1120		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	13300		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	20.0		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	80		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	26.6		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0038		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0047		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	11.4		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	7.61		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.349		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	19.2		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.0026		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	7.61		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0047		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	3150		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0520		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.018		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-25 16-GIANT-AP-23							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.390		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.761		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	113		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0159		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.25		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	792		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	103		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.298		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.612		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	588		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	7020		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	10.6		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	42.0		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	14.0		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00201		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00249		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	5.98		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-26 16-GIANT-AP-23-DUP							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	56.1		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	0.0071		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0031		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	20.0		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.917		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	45.3		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	18.3		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0140		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	7750		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.115		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.073		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	1.32		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.48		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	408		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.057		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.60		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1940		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	255		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.749		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-26 16-GIANT-AP-23-DUP							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	1.73		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	1260		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	15100		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	24.5		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	199		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	35.9		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0063		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0149		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	15.7		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	8.76		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.402		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	19.9		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.0033		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	8.01		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0061		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	3400		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0503		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.032		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.579		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.09		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	179		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0252		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.26		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	851		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	112		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.328		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.760		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	554		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	6630		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	10.7		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	87.5		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	15.8		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00277		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00654		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.034		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	6.89		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-27 16-GIANT-AP-24							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-27 16-GIANT-AP-24							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	47.0		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0026		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	30.4		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.360		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	37.5		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	24.7		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0110		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	6120		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0336		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.103		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.359		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.09		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	183		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.062		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1720		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	224		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.356		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.48		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	883		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	9590		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	10.2		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	51		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	30.3		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0036		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0316		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.11		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	21.9		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	16.1		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0030		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.191		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	19.9		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	13.1		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0058		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	3240		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0178		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.055		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-27 16-GIANT-AP-24							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.190		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.11		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	97.3		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0331		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	909		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	119		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.189		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.254		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	468		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	5080		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	5.39		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	26.8		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	16.0		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00192		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0168		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.060		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	11.6		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	0.043		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-28 16-GIANT-AP-25							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	51.5		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	0.0052		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0025		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	13.3		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.554		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	37.1		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	16.5		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0102		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	5200		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0290		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.070		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.330		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.16		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	117		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.032		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1360		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	177		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.730		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-28 16-GIANT-AP-25							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	1.03		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	1300		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	12300		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	9.24		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	<20		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	26.8		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0059		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0063		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	13.5		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	6.45		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.268		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	18.0		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	0.0021		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	8.01		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0049		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	2520		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0141		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.034		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.160		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.05		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	56.5		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0157		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.10		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	657		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	85.8		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.354		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.499		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	628		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	5960		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	4.48		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	9.6		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	13.0		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00287		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00306		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.022		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	6.54		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-29 16-GIANT-AP-26							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-29 16-GIANT-AP-26							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	43.9		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	0.0068		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0038		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	19.2		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.448		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	46.9		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	8.4		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0137		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	4420		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0365		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.075		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.164		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.20		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	84.6		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.040		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.72		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1420		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	293		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.767		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.48		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	767		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	7760		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	7.75		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	51		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	19.5		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0141		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0179		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	14.2		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	10.8		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0032		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.251		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	26.3		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	4.72		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0077		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	2480		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0205		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.042		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-29 16-GIANT-AP-26							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0923		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.23		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	47.5		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0225		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.40		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	800		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	164		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.431		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.268		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	431		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	4360		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	4.35		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	28.7		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	10.9		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00793		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0101		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.032		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	7.96		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-30 16-GIANT-AP-27							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	62.5		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0013		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	150		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.546		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	31.1		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	18.9		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0119		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	6060		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0338		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.345		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.143		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.74		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	259		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.168		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.55		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1710		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	136		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.862		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-30 16-GIANT-AP-27							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.39		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	539		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	10500		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	6.64		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	77		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	58.2		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0040		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.104		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.35		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	13.7		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	0.30		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	56.1		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0032		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.205		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	11.7		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	7.07		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0045		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	2270		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0127		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.129		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.0538		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.651		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	97.1		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0629		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.21		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	642		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	50.9		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.323		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.148		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	202		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3950		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	2.49		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	28.8		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	21.8		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00148		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0389		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.132		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	5.15		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	0.111		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-31 16-GIANT-AP-28							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-31 16-GIANT-AP-28							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	64.1		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	0.0056		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0020		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	0.0051		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0018		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	17.7		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.018		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	2.49		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	29.5		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	9.5		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0095		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	6010		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.104		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.073		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.161		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	3.06		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	100		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.068		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1640		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	544		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	1.72		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.78		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	1070		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	11000		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	15.5		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	183		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	26.7		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0090		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0268		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.11		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	22.6		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	6.36		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0065		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	0.896		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	10.6		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	3.41		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0034		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	2160		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0375		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.026		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-31 16-GIANT-AP-28							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.0577		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.10		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	36.0		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0245		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.10		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	588		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	196		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.618		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.282		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	386		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3960		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	5.56		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	65.9		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	9.61		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00324		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00962		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.039		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	8.14		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-32 16-GIANT-AP-29							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	48.2		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0021		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	<0.0010		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	15.5		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.060		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	3.37		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	23.6		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	21.0		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0063		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	6630		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0140		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.082		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.094		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.30		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	88.5		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.021		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1280		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	400		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.886		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-32 16-GIANT-AP-29							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	837		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	8240		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	2.60		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	287		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	29.9		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0074		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	21.2		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	8.01		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0312		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	1.75		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	12.2		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	10.9		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0033		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	3430		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0072		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.043		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.0485		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	0.672		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	45.8		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0107		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.17		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	664		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	207		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.459		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.081		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	434		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	4270		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	1.35		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	149		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	15.5		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00056		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00383		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.030		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	11.0		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
L1844974-33 16-GIANT-AP-30							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-33 16-GIANT-AP-30							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Miscellaneous Parameters							
% Moisture	58.2		0.50	%		22-NOV-16	R3602091
Mercury (Hg)-Total	0.0051		0.0050	mg/kg	30-NOV-16	01-DEC-16	R3608265
Mercury (Hg)-Total	0.0021		0.0010	mg/kg wwt	30-NOV-16	01-DEC-16	R3608262
Silver (Ag)-Total	0.0107		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Silver (Ag)-Total	0.0045		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	40.8		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.165		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	15.5		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	22.4		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	11.1		1.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0168		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	5290		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0418		0.0050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.183		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Cobalt (Co)-Total	0.240		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	2.46		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	623		3.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.106		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	<0.50		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	1580		2.0	mg/kg	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	211		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.919		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.45		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	779		10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	8490		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	7.74		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.050		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	69		20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	19.3		0.050	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.020		0.020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.0044		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.10		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.0205		0.0020	mg/kg	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.25		0.10	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	41.3		0.50	mg/kg	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	30-NOV-16	30-NOV-16	R3608169
Metals in Tissue by CRC ICPMS (WET)							
Aluminum (Al)-Total	17.0		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Antimony (Sb)-Total	0.0689		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Arsenic (As)-Total	6.49		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Barium (Ba)-Total	9.35		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Beryllium (Be)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Bismuth (Bi)-Total	<0.0020		0.0020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Boron (B)-Total	4.66		0.20	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cadmium (Cd)-Total	0.0070		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Calcium (Ca)-Total	2210		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Cesium (Cs)-Total	0.0175		0.0010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Chromium (Cr)-Total	0.076		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1844974-33 16-GIANT-AP-30							
Sampled By: DPTM on 23-SEP-16							
Matrix: vegetation							
Metals in Tissue by CRC ICPMS (WET)							
Cobalt (Co)-Total	0.100		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Copper (Cu)-Total	1.03		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Iron (Fe)-Total	260		0.60	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lead (Pb)-Total	0.0444		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Lithium (Li)-Total	0.11		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Magnesium (Mg)-Total	660		0.40	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Manganese (Mn)-Total	88.1		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Molybdenum (Mo)-Total	0.384		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Nickel (Ni)-Total	0.187		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Phosphorus (P)-Total	326		2.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Potassium (K)-Total	3550		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Rubidium (Rb)-Total	3.24		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Selenium (Se)-Total	<0.010		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Sodium (Na)-Total	29.0		4.0	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Strontium (Sr)-Total	8.05		0.010	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tellurium (Te)-Total	<0.0040		0.0040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Thallium (Tl)-Total	0.00186		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Tin (Sn)-Total	<0.020		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Uranium (U)-Total	0.00857		0.00040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Vanadium (V)-Total	0.106		0.020	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zinc (Zn)-Total	17.3		0.10	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169
Zirconium (Zr)-Total	<0.040		0.040	mg/kg wwt	30-NOV-16	30-NOV-16	R3608169

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
AG-DRY-CCMS-N-VA	Tissue	Silver in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

AG-WET-CCMS-N-VA	Tissue	Silver in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: GOLDER ASSOCIATES LTD
16820 107 Ave NW
EDMONTON AB T5P 4C3
Contact: Steven Fiddler

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
AG-DRY-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442751-5 CRM		**VA-NIST-1575A**						
Silver (Ag)-Total			0.0120		mg/kg		0.0061-0.01	30-NOV-16
WG2442751-8 CRM		**VA-NIST-1566B**						
Silver (Ag)-Total			98.3		%		70-130	30-NOV-16
WG2442751-4 DUP		**L1844974-21**						
Silver (Ag)-Total		0.0096	0.0114		mg/kg	18	40	30-NOV-16
WG2442751-6 LCS								
Silver (Ag)-Total			95.0		%		70-130	30-NOV-16
WG2442751-7 LCS								
Silver (Ag)-Total			92.2		%		70-130	30-NOV-16
WG2442751-1 MB								
Silver (Ag)-Total			<0.0050		mg/kg		0.005	30-NOV-16
WG2442751-2 MB								
Silver (Ag)-Total			<0.0050		mg/kg		0.005	30-NOV-16
Batch R3611802								
WG2442751-3 DUP		**L1844974-1**						
Silver (Ag)-Total		0.105	0.0988		mg/kg	6.3	40	05-DEC-16
AG-WET-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442751-5 CRM		**VA-NIST-1575A**						
Silver (Ag)-Total			0.0120		mg/kg wwt		0.0061-0.01	30-NOV-16
WG2442751-8 CRM		**VA-NIST-1566B**						
Silver (Ag)-Total			98.3		%		70-130	30-NOV-16
WG2442751-4 DUP		**L1844974-21**						
Silver (Ag)-Total		0.0028	0.0033		mg/kg wwt	18	40	30-NOV-16
WG2442751-6 LCS								
Silver (Ag)-Total			95.0		%		70-130	30-NOV-16
WG2442751-7 LCS								
Silver (Ag)-Total			92.2		%		70-130	30-NOV-16
WG2442751-1 MB								
Silver (Ag)-Total			<0.0010		mg/kg wwt		0.001	30-NOV-16
WG2442751-2 MB								
Silver (Ag)-Total			<0.0010		mg/kg wwt		0.001	30-NOV-16
Batch R3611802								
WG2442751-3 DUP		**L1844974-1**						
Silver (Ag)-Total		0.0287	0.0270		mg/kg wwt	6.3	40	05-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-DRY-CVAFS-N-VA	**Tissue**							
Batch R3608265								
WG2442751-5 CRM		**VA-NIST-1575A**						
Mercury (Hg)-Total			84.7		%		70-130	01-DEC-16
WG2442751-8 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			76.6		%		70-130	01-DEC-16
WG2442751-3 DUP		**L1844974-1**						
Mercury (Hg)-Total		0.0065	0.0071		mg/kg	10	40	01-DEC-16
WG2442751-4 DUP		**L1844974-21**						
Mercury (Hg)-Total		<0.0050	0.0052	RPD-NA	mg/kg	N/A	40	01-DEC-16
WG2442751-6 LCS								
Mercury (Hg)-Total			87.2		%		70-130	01-DEC-16
WG2442751-7 LCS								
Mercury (Hg)-Total			88.5		%		70-130	01-DEC-16
WG2442751-1 MB								
Mercury (Hg)-Total			<0.0050		mg/kg		0.005	01-DEC-16
WG2442751-2 MB								
Mercury (Hg)-Total			<0.0050		mg/kg		0.005	01-DEC-16
HG-WET-CVAFS-N-VA	**Tissue**							
Batch R3608262								
WG2442751-5 CRM		**VA-NIST-1575A**						
Mercury (Hg)-Total			84.7		%		70-130	01-DEC-16
WG2442751-8 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			76.6		%		70-130	01-DEC-16
WG2442751-3 DUP		**L1844974-1**						
Mercury (Hg)-Total		0.0018	0.0019		mg/kg wwt	10	40	01-DEC-16
WG2442751-4 DUP		**L1844974-21**						
Mercury (Hg)-Total		0.0014	0.0015		mg/kg wwt	6.4	40	01-DEC-16
WG2442751-6 LCS								
Mercury (Hg)-Total			87.2		%		70-130	01-DEC-16
WG2442751-7 LCS								
Mercury (Hg)-Total			88.5		%		70-130	01-DEC-16
WG2442751-1 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	01-DEC-16
WG2442751-2 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	01-DEC-16
MET-DRY-CCMS-N-VA	**Tissue**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442751-5 CRM		**VA-NIST-1575A**						
Aluminum (Al)-Total			94.5		%		70-130	30-NOV-16
Arsenic (As)-Total			0.038		mg/kg		0.019-0.059	30-NOV-16
Barium (Ba)-Total			104.6		%		70-130	30-NOV-16
Boron (B)-Total			87.8		%		70-130	30-NOV-16
Cadmium (Cd)-Total			100.7		%		70-130	30-NOV-16
Calcium (Ca)-Total			100.9		%		70-130	30-NOV-16
Cesium (Cs)-Total			98.8		%		70-130	30-NOV-16
Chromium (Cr)-Total			94.7		%		70-130	30-NOV-16
Cobalt (Co)-Total			0.059		mg/kg		0.041-0.081	30-NOV-16
Copper (Cu)-Total			102.4		%		70-130	30-NOV-16
Iron (Fe)-Total			97.0		%		70-130	30-NOV-16
Lead (Pb)-Total			101.7		%		70-130	30-NOV-16
Magnesium (Mg)-Total			93.4		%		70-130	30-NOV-16
Manganese (Mn)-Total			89.2		%		70-130	30-NOV-16
Nickel (Ni)-Total			105.8		%		70-130	30-NOV-16
Phosphorus (P)-Total			93.8		%		70-130	30-NOV-16
Potassium (K)-Total			89.7		%		70-130	30-NOV-16
Rubidium (Rb)-Total			94.7		%		70-130	30-NOV-16
Selenium (Se)-Total			0.101		mg/kg		0.049-0.149	30-NOV-16
Sodium (Na)-Total			55		mg/kg		43-83	30-NOV-16
Strontium (Sr)-Total			100.1		%		70-130	30-NOV-16
Thallium (Tl)-Total			85.6		%		70-130	30-NOV-16
Uranium (U)-Total			0.0040		mg/kg		0.002-0.006	30-NOV-16
Vanadium (V)-Total			0.09		mg/kg		0-0.19	30-NOV-16
Zinc (Zn)-Total			100.1		%		70-130	30-NOV-16
WG2442751-8 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.016		mg/kg		0-0.018	30-NOV-16
Arsenic (As)-Total			96.6		%		70-130	30-NOV-16
Barium (Ba)-Total			98.2		%		70-130	30-NOV-16
Boron (B)-Total			91.3		%		70-130	30-NOV-16
Cadmium (Cd)-Total			99.5		%		70-130	30-NOV-16
Calcium (Ca)-Total			96.7		%		70-130	30-NOV-16
Chromium (Cr)-Total			87.2		%		70-130	30-NOV-16
Cobalt (Co)-Total			93.5		%		70-130	30-NOV-16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442751-8 CRM		**VA-NIST-1566B**						
Copper (Cu)-Total			92.3		%		70-130	30-NOV-16
Iron (Fe)-Total			96.1		%		70-130	30-NOV-16
Lead (Pb)-Total			106.6		%		70-130	30-NOV-16
Magnesium (Mg)-Total			87.2		%		70-130	30-NOV-16
Manganese (Mn)-Total			96.5		%		70-130	30-NOV-16
Molybdenum (Mo)-Total			100.7		%		70-130	30-NOV-16
Nickel (Ni)-Total			107.5		%		70-130	30-NOV-16
Phosphorus (P)-Total			96.2		%		70-130	30-NOV-16
Potassium (K)-Total			88.3		%		70-130	30-NOV-16
Rubidium (Rb)-Total			99.4		%		70-130	30-NOV-16
Selenium (Se)-Total			99.6		%		70-130	30-NOV-16
Sodium (Na)-Total			86.7		%		70-130	30-NOV-16
Strontium (Sr)-Total			91.7		%		70-130	30-NOV-16
Uranium (U)-Total			98.9		%		70-130	30-NOV-16
Vanadium (V)-Total			95.4		%		70-130	30-NOV-16
Zinc (Zn)-Total			89.7		%		70-130	30-NOV-16
WG2442751-4 DUP		**L1844974-21**						
Aluminum (Al)-Total		18.2	23.8		mg/kg	27	40	30-NOV-16
Antimony (Sb)-Total		0.147	0.171		mg/kg	15	40	30-NOV-16
Arsenic (As)-Total		20.6	25.3		mg/kg	20	40	30-NOV-16
Barium (Ba)-Total		32.2	33.9		mg/kg	4.9	40	30-NOV-16
Beryllium (Be)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	30-NOV-16
Bismuth (Bi)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	30-NOV-16
Boron (B)-Total		7.4	8.3		mg/kg	11	40	30-NOV-16
Cadmium (Cd)-Total		0.0405	0.0384		mg/kg	5.3	40	30-NOV-16
Calcium (Ca)-Total		3970	4140		mg/kg	4.2	60	30-NOV-16
Cesium (Cs)-Total		0.0078	0.0077		mg/kg	0.1	40	30-NOV-16
Chromium (Cr)-Total		0.080	0.104		mg/kg	26	40	30-NOV-16
Cobalt (Co)-Total		0.178	0.197		mg/kg	9.6	40	30-NOV-16
Copper (Cu)-Total		3.77	3.66		mg/kg	2.9	40	30-NOV-16
Iron (Fe)-Total		339	427		mg/kg	23	40	30-NOV-16
Lead (Pb)-Total		0.073	0.090		mg/kg	20	40	30-NOV-16
Lithium (Li)-Total		0.52	0.53		mg/kg	1.1	40	30-NOV-16
Magnesium (Mg)-Total		1080	1100		mg/kg	2.6	40	30-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442751-4 DUP		**L1844974-21**						
Manganese (Mn)-Total		1050	1140		mg/kg	8.6	40	30-NOV-16
Molybdenum (Mo)-Total		1.02	1.17		mg/kg	14	40	30-NOV-16
Nickel (Ni)-Total		0.76	0.77		mg/kg	1.1	40	30-NOV-16
Phosphorus (P)-Total		1410	1450		mg/kg	3.1	40	30-NOV-16
Potassium (K)-Total		12000	11800		mg/kg	2.1	40	30-NOV-16
Rubidium (Rb)-Total		5.84	5.49		mg/kg	6.2	40	30-NOV-16
Selenium (Se)-Total		<0.050	<0.050	RPD-NA	mg/kg	N/A	40	30-NOV-16
Sodium (Na)-Total		233	238		mg/kg	2.1	40	30-NOV-16
Strontium (Sr)-Total		14.8	15.2		mg/kg	2.7	60	30-NOV-16
Tellurium (Te)-Total		<0.020	<0.020	RPD-NA	mg/kg	N/A	40	30-NOV-16
Thallium (Tl)-Total		0.0042	0.0045		mg/kg	7.4	40	30-NOV-16
Tin (Sn)-Total		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	30-NOV-16
Uranium (U)-Total		0.0581	0.0700		mg/kg	19	40	30-NOV-16
Vanadium (V)-Total		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	30-NOV-16
Zinc (Zn)-Total		18.3	18.3		mg/kg	0.0	40	30-NOV-16
Zirconium (Zr)-Total		<0.20	<0.20	RPD-NA	mg/kg	N/A	40	30-NOV-16
WG2442751-6 LCS								
Aluminum (Al)-Total			92.6		%		70-130	30-NOV-16
Antimony (Sb)-Total			97.5		%		70-130	30-NOV-16
Arsenic (As)-Total			97.7		%		70-130	30-NOV-16
Barium (Ba)-Total			100.7		%		70-130	30-NOV-16
Beryllium (Be)-Total			96.7		%		70-130	30-NOV-16
Bismuth (Bi)-Total			97.5		%		70-130	30-NOV-16
Boron (B)-Total			83.2		%		70-130	30-NOV-16
Cadmium (Cd)-Total			96.1		%		70-130	30-NOV-16
Calcium (Ca)-Total			98.6		%		70-130	30-NOV-16
Cesium (Cs)-Total			97.0		%		70-130	30-NOV-16
Chromium (Cr)-Total			89.2		%		70-130	30-NOV-16
Cobalt (Co)-Total			92.0		%		70-130	30-NOV-16
Copper (Cu)-Total			91.1		%		70-130	30-NOV-16
Iron (Fe)-Total			94.2		%		70-130	30-NOV-16
Lead (Pb)-Total			97.3		%		70-130	30-NOV-16
Lithium (Li)-Total			102.6		%		70-130	30-NOV-16
Magnesium (Mg)-Total			91.8		%		70-130	30-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442751-6 LCS								
Manganese (Mn)-Total			92.5		%		70-130	30-NOV-16
Molybdenum (Mo)-Total			101.8		%		70-130	30-NOV-16
Nickel (Ni)-Total			92.7		%		70-130	30-NOV-16
Phosphorus (P)-Total			101.0		%		70-130	30-NOV-16
Potassium (K)-Total			90.5		%		70-130	30-NOV-16
Rubidium (Rb)-Total			95.6		%		70-130	30-NOV-16
Selenium (Se)-Total			94.5		%		70-130	30-NOV-16
Sodium (Na)-Total			92.7		%		70-130	30-NOV-16
Strontium (Sr)-Total			103.8		%		70-130	30-NOV-16
Tellurium (Te)-Total			96.8		%		70-130	30-NOV-16
Thallium (Tl)-Total			95.0		%		70-130	30-NOV-16
Tin (Sn)-Total			96.7		%		70-130	30-NOV-16
Uranium (U)-Total			101.7		%		70-130	30-NOV-16
Vanadium (V)-Total			89.5		%		70-130	30-NOV-16
Zinc (Zn)-Total			89.1		%		70-130	30-NOV-16
Zirconium (Zr)-Total			92.6		%		70-130	30-NOV-16
WG2442751-7 LCS								
Aluminum (Al)-Total			102.9		%		70-130	30-NOV-16
Antimony (Sb)-Total			96.1		%		70-130	30-NOV-16
Arsenic (As)-Total			101.1		%		70-130	30-NOV-16
Barium (Ba)-Total			105.2		%		70-130	30-NOV-16
Beryllium (Be)-Total			95.4		%		70-130	30-NOV-16
Bismuth (Bi)-Total			95.5		%		70-130	30-NOV-16
Boron (B)-Total			83.8		%		70-130	30-NOV-16
Cadmium (Cd)-Total			98.0		%		70-130	30-NOV-16
Calcium (Ca)-Total			95.7		%		70-130	30-NOV-16
Cesium (Cs)-Total			94.1		%		70-130	30-NOV-16
Chromium (Cr)-Total			95.7		%		70-130	30-NOV-16
Cobalt (Co)-Total			96.3		%		70-130	30-NOV-16
Copper (Cu)-Total			94.4		%		70-130	30-NOV-16
Iron (Fe)-Total			99.0		%		70-130	30-NOV-16
Lead (Pb)-Total			96.0		%		70-130	30-NOV-16
Lithium (Li)-Total			100.4		%		70-130	30-NOV-16
Magnesium (Mg)-Total			101.0		%		70-130	30-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442751-7 LCS								
Manganese (Mn)-Total			98.2		%		70-130	30-NOV-16
Molybdenum (Mo)-Total			101.4		%		70-130	30-NOV-16
Nickel (Ni)-Total			96.6		%		70-130	30-NOV-16
Phosphorus (P)-Total			106.6		%		70-130	30-NOV-16
Potassium (K)-Total			100.5		%		70-130	30-NOV-16
Rubidium (Rb)-Total			100.3		%		70-130	30-NOV-16
Selenium (Se)-Total			98.1		%		70-130	30-NOV-16
Sodium (Na)-Total			102.1		%		70-130	30-NOV-16
Strontium (Sr)-Total			102.7		%		70-130	30-NOV-16
Tellurium (Te)-Total			96.2		%		70-130	30-NOV-16
Thallium (Tl)-Total			93.8		%		70-130	30-NOV-16
Tin (Sn)-Total			95.0		%		70-130	30-NOV-16
Uranium (U)-Total			99.1		%		70-130	30-NOV-16
Vanadium (V)-Total			97.6		%		70-130	30-NOV-16
Zinc (Zn)-Total			92.2		%		70-130	30-NOV-16
Zirconium (Zr)-Total			92.2		%		70-130	30-NOV-16
WG2442751-1 MB								
Aluminum (Al)-Total			<2.0		mg/kg		2	30-NOV-16
Antimony (Sb)-Total			<0.010		mg/kg		0.01	30-NOV-16
Arsenic (As)-Total			<0.020		mg/kg		0.02	30-NOV-16
Barium (Ba)-Total			<0.050		mg/kg		0.05	30-NOV-16
Beryllium (Be)-Total			<0.010		mg/kg		0.01	30-NOV-16
Bismuth (Bi)-Total			<0.010		mg/kg		0.01	30-NOV-16
Boron (B)-Total			<1.0		mg/kg		1	30-NOV-16
Cadmium (Cd)-Total			<0.0050		mg/kg		0.005	30-NOV-16
Calcium (Ca)-Total			<20		mg/kg		20	30-NOV-16
Cesium (Cs)-Total			<0.0050		mg/kg		0.005	30-NOV-16
Chromium (Cr)-Total			<0.050		mg/kg		0.05	30-NOV-16
Cobalt (Co)-Total			<0.020		mg/kg		0.02	30-NOV-16
Copper (Cu)-Total			<0.10		mg/kg		0.1	30-NOV-16
Iron (Fe)-Total			<3.0		mg/kg		3	30-NOV-16
Lead (Pb)-Total			<0.020		mg/kg		0.02	30-NOV-16
Lithium (Li)-Total			<0.50		mg/kg		0.5	30-NOV-16
Magnesium (Mg)-Total			<2.0		mg/kg		2	30-NOV-16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442751-1 MB								
Manganese (Mn)-Total			<0.050		mg/kg		0.05	30-NOV-16
Molybdenum (Mo)-Total			<0.020		mg/kg		0.02	30-NOV-16
Nickel (Ni)-Total			<0.20		mg/kg		0.2	30-NOV-16
Phosphorus (P)-Total			<10		mg/kg		10	30-NOV-16
Potassium (K)-Total			<20		mg/kg		20	30-NOV-16
Rubidium (Rb)-Total			<0.050		mg/kg		0.05	30-NOV-16
Selenium (Se)-Total			<0.050		mg/kg		0.05	30-NOV-16
Sodium (Na)-Total			<20		mg/kg		20	30-NOV-16
Strontium (Sr)-Total			<0.050		mg/kg		0.05	30-NOV-16
Tellurium (Te)-Total			<0.020		mg/kg		0.02	30-NOV-16
Thallium (Tl)-Total			<0.0020		mg/kg		0.002	30-NOV-16
Tin (Sn)-Total			<0.10		mg/kg		0.1	30-NOV-16
Uranium (U)-Total			<0.0020		mg/kg		0.002	30-NOV-16
Vanadium (V)-Total			<0.10		mg/kg		0.1	30-NOV-16
Zinc (Zn)-Total			<0.50		mg/kg		0.5	30-NOV-16
Zirconium (Zr)-Total			<0.20		mg/kg		0.2	30-NOV-16
WG2442751-2 MB								
Aluminum (Al)-Total			<2.0		mg/kg		2	30-NOV-16
Antimony (Sb)-Total			<0.010		mg/kg		0.01	30-NOV-16
Arsenic (As)-Total			<0.020		mg/kg		0.02	30-NOV-16
Barium (Ba)-Total			<0.050		mg/kg		0.05	30-NOV-16
Beryllium (Be)-Total			<0.010		mg/kg		0.01	30-NOV-16
Bismuth (Bi)-Total			<0.010		mg/kg		0.01	30-NOV-16
Boron (B)-Total			<1.0		mg/kg		1	30-NOV-16
Cadmium (Cd)-Total			<0.0050		mg/kg		0.005	30-NOV-16
Calcium (Ca)-Total			<20		mg/kg		20	30-NOV-16
Cesium (Cs)-Total			<0.0050		mg/kg		0.005	30-NOV-16
Chromium (Cr)-Total			<0.050		mg/kg		0.05	30-NOV-16
Cobalt (Co)-Total			<0.020		mg/kg		0.02	30-NOV-16
Copper (Cu)-Total			<0.10		mg/kg		0.1	30-NOV-16
Iron (Fe)-Total			<3.0		mg/kg		3	30-NOV-16
Lead (Pb)-Total			<0.020		mg/kg		0.02	30-NOV-16
Lithium (Li)-Total			<0.50		mg/kg		0.5	30-NOV-16
Magnesium (Mg)-Total			<2.0		mg/kg		2	30-NOV-16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442751-2 MB								
Molybdenum (Mo)-Total			<0.020		mg/kg		0.02	30-NOV-16
Nickel (Ni)-Total			<0.20		mg/kg		0.2	30-NOV-16
Phosphorus (P)-Total			<10		mg/kg		10	30-NOV-16
Potassium (K)-Total			<20		mg/kg		20	30-NOV-16
Rubidium (Rb)-Total			<0.050		mg/kg		0.05	30-NOV-16
Selenium (Se)-Total			<0.050		mg/kg		0.05	30-NOV-16
Sodium (Na)-Total			<20		mg/kg		20	30-NOV-16
Strontium (Sr)-Total			<0.050		mg/kg		0.05	30-NOV-16
Tellurium (Te)-Total			<0.020		mg/kg		0.02	30-NOV-16
Thallium (Tl)-Total			<0.0020		mg/kg		0.002	30-NOV-16
Tin (Sn)-Total			<0.10		mg/kg		0.1	30-NOV-16
Uranium (U)-Total			<0.0020		mg/kg		0.002	30-NOV-16
Vanadium (V)-Total			<0.10		mg/kg		0.1	30-NOV-16
Zinc (Zn)-Total			<0.50		mg/kg		0.5	30-NOV-16
Zirconium (Zr)-Total			<0.20		mg/kg		0.2	30-NOV-16
Batch R3609346								
WG2442751-2 MB								
Manganese (Mn)-Total			0.069	MB-LOR	mg/kg		0.05	01-DEC-16
Batch R3611802								
WG2442751-3 DUP		**L1844974-1**						
Aluminum (Al)-Total		806	820		mg/kg	1.7	40	05-DEC-16
Antimony (Sb)-Total		24.2	24.0		mg/kg	0.8	40	05-DEC-16
Arsenic (As)-Total		146	147		mg/kg	0.2	40	05-DEC-16
Barium (Ba)-Total		11.0	11.0		mg/kg	0.2	40	05-DEC-16
Beryllium (Be)-Total		0.022	0.023		mg/kg	2.9	40	05-DEC-16
Bismuth (Bi)-Total		0.013	0.013		mg/kg	3.5	40	05-DEC-16
Boron (B)-Total		30.2	30.1		mg/kg	0.4	40	05-DEC-16
Cadmium (Cd)-Total		0.0917	0.0912		mg/kg	0.6	40	05-DEC-16
Calcium (Ca)-Total		15300	14900		mg/kg	2.7	60	05-DEC-16
Cesium (Cs)-Total		0.120	0.120		mg/kg	0.2	40	05-DEC-16
Chromium (Cr)-Total		2.52	2.71		mg/kg	7.3	40	05-DEC-16
Cobalt (Co)-Total		5.49	5.41		mg/kg	1.4	40	05-DEC-16
Copper (Cu)-Total		17.7	16.8		mg/kg	5.3	40	05-DEC-16
Iron (Fe)-Total		1970	1940		mg/kg	1.2	40	05-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R3611802								
WG2442751-3 DUP		**L1844974-1**						
Lead (Pb)-Total		2.39	2.32		mg/kg	2.7	40	05-DEC-16
Lithium (Li)-Total		2.51	2.45		mg/kg	2.5	40	05-DEC-16
Magnesium (Mg)-Total		4310	4070		mg/kg	5.7	40	05-DEC-16
Manganese (Mn)-Total		563	550		mg/kg	2.3	40	05-DEC-16
Molybdenum (Mo)-Total		5.43	5.11		mg/kg	6.0	40	05-DEC-16
Nickel (Ni)-Total		10.6	10.6		mg/kg	0.4	40	05-DEC-16
Phosphorus (P)-Total		1910	1830		mg/kg	4.3	40	05-DEC-16
Potassium (K)-Total		26000	25500		mg/kg	2.0	40	05-DEC-16
Rubidium (Rb)-Total		5.39	5.59		mg/kg	3.7	40	05-DEC-16
Selenium (Se)-Total		0.331	0.323		mg/kg	2.5	40	05-DEC-16
Sodium (Na)-Total		10600	10100		mg/kg	4.5	40	05-DEC-16
Strontium (Sr)-Total		152	145		mg/kg	4.7	60	05-DEC-16
Tellurium (Te)-Total		<0.020	<0.020	RPD-NA	mg/kg	N/A	40	05-DEC-16
Thallium (Tl)-Total		0.0147	0.0153		mg/kg	4.5	40	05-DEC-16
Tin (Sn)-Total		0.26	0.24		mg/kg	6.8	40	05-DEC-16
Uranium (U)-Total		0.435	0.432		mg/kg	0.7	40	05-DEC-16
Vanadium (V)-Total		3.00	3.02		mg/kg	0.7	40	05-DEC-16
Zinc (Zn)-Total		40.7	40.8		mg/kg	0.4	40	05-DEC-16
Zirconium (Zr)-Total		0.70	0.71		mg/kg	1.2	40	05-DEC-16
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442751-5 CRM		**VA-NIST-1575A**						
Aluminum (Al)-Total			94.5		%		70-130	30-NOV-16
Arsenic (As)-Total			0.0375		mg/kg wwt		0.019-0.059	30-NOV-16
Barium (Ba)-Total			104.6		%		70-130	30-NOV-16
Boron (B)-Total			87.8		%		70-130	30-NOV-16
Cadmium (Cd)-Total			100.7		%		70-130	30-NOV-16
Calcium (Ca)-Total			100.9		%		70-130	30-NOV-16
Cesium (Cs)-Total			98.8		%		70-130	30-NOV-16
Chromium (Cr)-Total			94.7		%		70-130	30-NOV-16
Cobalt (Co)-Total			0.0594		mg/kg wwt		0.041-0.081	30-NOV-16
Copper (Cu)-Total			102.4		%		70-130	30-NOV-16
Iron (Fe)-Total			97.0		%		70-130	30-NOV-16
Lead (Pb)-Total			101.7		%		70-130	30-NOV-16

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442751-5 CRM		**VA-NIST-1575A**						
Magnesium (Mg)-Total			93.4		%		70-130	30-NOV-16
Manganese (Mn)-Total			89.2		%		70-130	30-NOV-16
Nickel (Ni)-Total			105.8		%		70-130	30-NOV-16
Phosphorus (P)-Total			93.8		%		70-130	30-NOV-16
Potassium (K)-Total			89.7		%		70-130	30-NOV-16
Rubidium (Rb)-Total			94.7		%		70-130	30-NOV-16
Selenium (Se)-Total			0.101		mg/kg wwt		0.049-0.149	30-NOV-16
Sodium (Na)-Total			55.5		mg/kg wwt		43-83	30-NOV-16
Strontium (Sr)-Total			100.1		%		70-130	30-NOV-16
Thallium (Tl)-Total			85.6		%		70-130	30-NOV-16
Uranium (U)-Total			0.00402		mg/kg wwt		0.00203-0.0	30-NOV-16
Vanadium (V)-Total			0.086		mg/kg wwt		0-0.19	30-NOV-16
Zinc (Zn)-Total			100.1		%		70-130	30-NOV-16
WG2442751-8 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.0162		mg/kg wwt		0-0.0177	30-NOV-16
Arsenic (As)-Total			96.6		%		70-130	30-NOV-16
Barium (Ba)-Total			98.2		%		70-130	30-NOV-16
Boron (B)-Total			91.3		%		70-130	30-NOV-16
Cadmium (Cd)-Total			99.5		%		70-130	30-NOV-16
Calcium (Ca)-Total			96.7		%		70-130	30-NOV-16
Chromium (Cr)-Total			87.2		%		70-130	30-NOV-16
Cobalt (Co)-Total			93.5		%		70-130	30-NOV-16
Copper (Cu)-Total			92.3		%		70-130	30-NOV-16
Iron (Fe)-Total			96.1		%		70-130	30-NOV-16
Lead (Pb)-Total			106.6		%		70-130	30-NOV-16
Magnesium (Mg)-Total			87.2		%		70-130	30-NOV-16
Manganese (Mn)-Total			96.5		%		70-130	30-NOV-16
Molybdenum (Mo)-Total			100.7		%		70-130	30-NOV-16
Nickel (Ni)-Total			107.5		%		70-130	30-NOV-16
Phosphorus (P)-Total			96.2		%		70-130	30-NOV-16
Potassium (K)-Total			88.3		%		70-130	30-NOV-16
Rubidium (Rb)-Total			99.4		%		70-130	30-NOV-16
Selenium (Se)-Total			99.6		%		70-130	30-NOV-16
Sodium (Na)-Total			86.7		%		70-130	30-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442751-8 CRM		**VA-NIST-1566B**						
Strontium (Sr)-Total			91.7		%		70-130	30-NOV-16
Uranium (U)-Total			98.9		%		70-130	30-NOV-16
Vanadium (V)-Total			95.4		%		70-130	30-NOV-16
Zinc (Zn)-Total			89.7		%		70-130	30-NOV-16
WG2442751-4 DUP		**L1844974-21**						
Aluminum (Al)-Total		5.28	6.92		mg/kg wwt	27	40	30-NOV-16
Antimony (Sb)-Total		0.0427	0.0497		mg/kg wwt	15	40	30-NOV-16
Arsenic (As)-Total		5.99	7.35		mg/kg wwt	20	40	30-NOV-16
Barium (Ba)-Total		9.38	9.85		mg/kg wwt	4.9	40	30-NOV-16
Beryllium (Be)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	30-NOV-16
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	30-NOV-16
Boron (B)-Total		2.16	2.41		mg/kg wwt	11	40	30-NOV-16
Cadmium (Cd)-Total		0.0118	0.0112		mg/kg wwt	5.3	40	30-NOV-16
Calcium (Ca)-Total		1150	1200		mg/kg wwt	4.2	60	30-NOV-16
Cesium (Cs)-Total		0.0023	0.0023		mg/kg wwt	0.1	40	30-NOV-16
Chromium (Cr)-Total		0.023	0.030		mg/kg wwt	26	40	30-NOV-16
Cobalt (Co)-Total		0.0519	0.0572		mg/kg wwt	9.6	40	30-NOV-16
Copper (Cu)-Total		1.10	1.07		mg/kg wwt	2.9	40	30-NOV-16
Iron (Fe)-Total		98.5	124		mg/kg wwt	23	40	30-NOV-16
Lead (Pb)-Total		0.0213	0.0261		mg/kg wwt	20	40	30-NOV-16
Lithium (Li)-Total		0.15	0.15		mg/kg wwt	1.1	40	30-NOV-16
Magnesium (Mg)-Total		313	321		mg/kg wwt	2.6	40	30-NOV-16
Manganese (Mn)-Total		304	331		mg/kg wwt	8.6	40	30-NOV-16
Molybdenum (Mo)-Total		0.295	0.340		mg/kg wwt	14	40	30-NOV-16
Nickel (Ni)-Total		0.221	0.224		mg/kg wwt	1.1	40	30-NOV-16
Phosphorus (P)-Total		409	422		mg/kg wwt	3.1	40	30-NOV-16
Potassium (K)-Total		3490	3420		mg/kg wwt	2.1	40	30-NOV-16
Rubidium (Rb)-Total		1.70	1.60		mg/kg wwt	6.2	40	30-NOV-16
Selenium (Se)-Total		0.014	0.014		mg/kg wwt	0.3	40	30-NOV-16
Sodium (Na)-Total		67.8	69.2		mg/kg wwt	2.1	40	30-NOV-16
Strontium (Sr)-Total		4.31	4.43		mg/kg wwt	2.7	60	30-NOV-16
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	30-NOV-16
Thallium (Tl)-Total		0.00121	0.00130		mg/kg wwt	7.4	40	30-NOV-16
Tin (Sn)-Total		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	40	30-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442751-4 DUP		**L1844974-21**						
Uranium (U)-Total		0.0169	0.0204		mg/kg wwt	19	40	30-NOV-16
Vanadium (V)-Total		0.024	0.028		mg/kg wwt	17	40	30-NOV-16
Zinc (Zn)-Total		5.32	5.32		mg/kg wwt	0.0	40	30-NOV-16
Zirconium (Zr)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	30-NOV-16
WG2442751-6 LCS								
Aluminum (Al)-Total			92.6		%		70-130	30-NOV-16
Antimony (Sb)-Total			97.5		%		70-130	30-NOV-16
Arsenic (As)-Total			97.7		%		70-130	30-NOV-16
Barium (Ba)-Total			100.7		%		70-130	30-NOV-16
Beryllium (Be)-Total			96.7		%		70-130	30-NOV-16
Bismuth (Bi)-Total			97.5		%		70-130	30-NOV-16
Boron (B)-Total			83.2		%		70-130	30-NOV-16
Cadmium (Cd)-Total			96.1		%		70-130	30-NOV-16
Calcium (Ca)-Total			98.6		%		70-130	30-NOV-16
Cesium (Cs)-Total			97.0		%		70-130	30-NOV-16
Chromium (Cr)-Total			89.2		%		70-130	30-NOV-16
Cobalt (Co)-Total			92.0		%		70-130	30-NOV-16
Copper (Cu)-Total			91.1		%		70-130	30-NOV-16
Iron (Fe)-Total			94.2		%		70-130	30-NOV-16
Lead (Pb)-Total			97.3		%		70-130	30-NOV-16
Lithium (Li)-Total			102.6		%		70-130	30-NOV-16
Magnesium (Mg)-Total			91.8		%		70-130	30-NOV-16
Manganese (Mn)-Total			92.5		%		70-130	30-NOV-16
Molybdenum (Mo)-Total			101.8		%		70-130	30-NOV-16
Nickel (Ni)-Total			92.7		%		70-130	30-NOV-16
Phosphorus (P)-Total			101.0		%		70-130	30-NOV-16
Potassium (K)-Total			90.5		%		70-130	30-NOV-16
Rubidium (Rb)-Total			95.6		%		70-130	30-NOV-16
Selenium (Se)-Total			94.5		%		70-130	30-NOV-16
Sodium (Na)-Total			92.7		%		70-130	30-NOV-16
Strontium (Sr)-Total			103.8		%		70-130	30-NOV-16
Tellurium (Te)-Total			96.8		%		70-130	30-NOV-16
Thallium (Tl)-Total			95.0		%		70-130	30-NOV-16
Tin (Sn)-Total			96.7		%		70-130	30-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442751-6 LCS								
Uranium (U)-Total			101.7		%		70-130	30-NOV-16
Vanadium (V)-Total			89.5		%		70-130	30-NOV-16
Zinc (Zn)-Total			89.1		%		70-130	30-NOV-16
Zirconium (Zr)-Total			92.6		%		70-130	30-NOV-16
WG2442751-7 LCS								
Aluminum (Al)-Total			102.9		%		70-130	30-NOV-16
Antimony (Sb)-Total			96.1		%		70-130	30-NOV-16
Arsenic (As)-Total			101.1		%		70-130	30-NOV-16
Barium (Ba)-Total			105.2		%		70-130	30-NOV-16
Beryllium (Be)-Total			95.4		%		70-130	30-NOV-16
Bismuth (Bi)-Total			95.5		%		70-130	30-NOV-16
Boron (B)-Total			83.8		%		70-130	30-NOV-16
Cadmium (Cd)-Total			98.0		%		70-130	30-NOV-16
Calcium (Ca)-Total			95.7		%		70-130	30-NOV-16
Cesium (Cs)-Total			94.1		%		70-130	30-NOV-16
Chromium (Cr)-Total			95.7		%		70-130	30-NOV-16
Cobalt (Co)-Total			96.3		%		70-130	30-NOV-16
Copper (Cu)-Total			94.4		%		70-130	30-NOV-16
Iron (Fe)-Total			99.0		%		70-130	30-NOV-16
Lead (Pb)-Total			96.0		%		70-130	30-NOV-16
Lithium (Li)-Total			100.4		%		70-130	30-NOV-16
Magnesium (Mg)-Total			101.0		%		70-130	30-NOV-16
Manganese (Mn)-Total			98.2		%		70-130	30-NOV-16
Molybdenum (Mo)-Total			101.4		%		70-130	30-NOV-16
Nickel (Ni)-Total			96.6		%		70-130	30-NOV-16
Phosphorus (P)-Total			106.6		%		70-130	30-NOV-16
Potassium (K)-Total			100.5		%		70-130	30-NOV-16
Rubidium (Rb)-Total			100.3		%		70-130	30-NOV-16
Selenium (Se)-Total			98.1		%		70-130	30-NOV-16
Sodium (Na)-Total			102.1		%		70-130	30-NOV-16
Strontium (Sr)-Total			102.7		%		70-130	30-NOV-16
Tellurium (Te)-Total			96.2		%		70-130	30-NOV-16
Thallium (Tl)-Total			93.8		%		70-130	30-NOV-16
Tin (Sn)-Total			95.0		%		70-130	30-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442751-7 LCS								
Uranium (U)-Total			99.1		%		70-130	30-NOV-16
Vanadium (V)-Total			97.6		%		70-130	30-NOV-16
Zinc (Zn)-Total			92.2		%		70-130	30-NOV-16
Zirconium (Zr)-Total			92.2		%		70-130	30-NOV-16
WG2442751-1 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	30-NOV-16
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	30-NOV-16
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	30-NOV-16
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	30-NOV-16
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	30-NOV-16
Boron (B)-Total			<0.20		mg/kg wwt		0.2	30-NOV-16
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	30-NOV-16
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	30-NOV-16
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	30-NOV-16
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	30-NOV-16
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	30-NOV-16
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	30-NOV-16
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	30-NOV-16
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	30-NOV-16
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	30-NOV-16
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	30-NOV-16
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	30-NOV-16
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	30-NOV-16
Potassium (K)-Total			<4.0		mg/kg wwt		4	30-NOV-16
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Sodium (Na)-Total			<4.0		mg/kg wwt		4	30-NOV-16
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	30-NOV-16
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	30-NOV-16
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	30-NOV-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442751-1 MB								
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	30-NOV-16
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	30-NOV-16
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	30-NOV-16
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	30-NOV-16
WG2442751-2 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	30-NOV-16
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	30-NOV-16
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	30-NOV-16
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	30-NOV-16
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	30-NOV-16
Boron (B)-Total			<0.20		mg/kg wwt		0.2	30-NOV-16
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	30-NOV-16
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	30-NOV-16
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	30-NOV-16
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	30-NOV-16
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	30-NOV-16
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	30-NOV-16
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	30-NOV-16
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	30-NOV-16
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	30-NOV-16
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	30-NOV-16
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	30-NOV-16
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	30-NOV-16
Potassium (K)-Total			<4.0		mg/kg wwt		4	30-NOV-16
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Sodium (Na)-Total			<4.0		mg/kg wwt		4	30-NOV-16
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	30-NOV-16
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	30-NOV-16
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	30-NOV-16
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	30-NOV-16
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	30-NOV-16

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3608169								
WG2442751-2 MB								
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	30-NOV-16
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	30-NOV-16
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	30-NOV-16
Batch R3609346								
WG2442751-2 MB								
Manganese (Mn)-Total			0.014	MB-LOR	mg/kg wwt		0.01	01-DEC-16
Batch R3611802								
WG2442751-3 DUP		**L1844974-1**						
Aluminum (Al)-Total		220	224		mg/kg wwt	1.7	40	05-DEC-16
Antimony (Sb)-Total		6.60	6.54		mg/kg wwt	0.8	40	05-DEC-16
Arsenic (As)-Total		39.9	40.0		mg/kg wwt	0.2	40	05-DEC-16
Barium (Ba)-Total		3.01	3.00		mg/kg wwt	0.2	40	05-DEC-16
Beryllium (Be)-Total		0.0060	0.0062		mg/kg wwt	2.9	40	05-DEC-16
Bismuth (Bi)-Total		0.0037	0.0035		mg/kg wwt	3.5	40	05-DEC-16
Boron (B)-Total		8.25	8.22		mg/kg wwt	0.4	40	05-DEC-16
Cadmium (Cd)-Total		0.0250	0.0249		mg/kg wwt	0.6	40	05-DEC-16
Calcium (Ca)-Total		4170	4060		mg/kg wwt	2.7	60	05-DEC-16
Cesium (Cs)-Total		0.0326	0.0327		mg/kg wwt	0.2	40	05-DEC-16
Chromium (Cr)-Total		0.687	0.739		mg/kg wwt	7.3	40	05-DEC-16
Cobalt (Co)-Total		1.50	1.48		mg/kg wwt	1.4	40	05-DEC-16
Copper (Cu)-Total		4.82	4.58		mg/kg wwt	5.3	40	05-DEC-16
Iron (Fe)-Total		536	530		mg/kg wwt	1.2	40	05-DEC-16
Lead (Pb)-Total		0.652	0.634		mg/kg wwt	2.7	40	05-DEC-16
Lithium (Li)-Total		0.69	0.67		mg/kg wwt	2.5	40	05-DEC-16
Magnesium (Mg)-Total		1180	1110		mg/kg wwt	5.7	40	05-DEC-16
Manganese (Mn)-Total		154	150		mg/kg wwt	2.3	40	05-DEC-16
Molybdenum (Mo)-Total		1.48	1.40		mg/kg wwt	6.0	40	05-DEC-16
Nickel (Ni)-Total		2.89	2.90		mg/kg wwt	0.4	40	05-DEC-16
Phosphorus (P)-Total		520	498		mg/kg wwt	4.3	40	05-DEC-16
Potassium (K)-Total		7110	6960		mg/kg wwt	2.0	40	05-DEC-16
Rubidium (Rb)-Total		1.47	1.53		mg/kg wwt	3.7	40	05-DEC-16
Selenium (Se)-Total		0.090	0.088		mg/kg wwt	2.5	40	05-DEC-16
Sodium (Na)-Total		2880	2760		mg/kg wwt	4.5	40	05-DEC-16
Strontium (Sr)-Total		41.4	39.5		mg/kg wwt	4.7	60	05-DEC-16

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-N-VA	**Tissue**							
Batch R3611802								
WG2442751-3 DUP		**L1844974-1**						
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	05-DEC-16
Thallium (Tl)-Total		0.00400	0.00418		mg/kg wwt	4.5	40	05-DEC-16
Tin (Sn)-Total		0.070	0.066		mg/kg wwt	6.8	40	05-DEC-16
Uranium (U)-Total		0.119	0.118		mg/kg wwt	0.7	40	05-DEC-16
Vanadium (V)-Total		0.819	0.825		mg/kg wwt	0.7	40	05-DEC-16
Zinc (Zn)-Total		11.1	11.1		mg/kg wwt	0.4	40	05-DEC-16
Zirconium (Zr)-Total		0.190	0.193		mg/kg wwt	1.2	40	05-DEC-16
MOISTURE-TISS-VA	**Tissue**							
Batch R3602091								
WG2438269-3 DUP		**L1844974-10**						
% Moisture		53.9	46.8		%	14	20	22-NOV-16
WG2438269-6 DUP		**L1844974-26**						
% Moisture		56.1	59.3		%	5.5	20	22-NOV-16
WG2438269-2 LCS								
% Moisture			99.8		%		90-110	22-NOV-16
WG2438269-5 LCS								
% Moisture			100.0		%		90-110	22-NOV-16
WG2438269-1 MB								
% Moisture			<0.50		%		0.5	22-NOV-16
WG2438269-4 MB								
% Moisture			<0.50		%		0.5	22-NOV-16

Quality Control Report

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Burnaby Laboratory
8081 Lougheed Highway
Burnaby, BC
V5A 1W9
Phone: (604) 235-4188
After hours: (604) 220-4188
Contact: Amber Springer

Q5l240

L1844974-COFC

Pg. 1 of 1

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

	DATE: October 18, 2016	LAB WORK ORDER # L1844974
REPORT TO:	REPORT DISTRIBUTION: ALL FINAL RESULTS WILL BE EMAILED	SERVICE REQUESTED
COMPANY: Golder Associates Ltd.		X REGULAR SERVICE (DEFAULT)
CONTACT: Steven Fiddler	EMAIL 1: Steven_Fiddler@Golder.com	RUSH SERVICE
ADDRESS: 16820 107 Avenue, Edmonton, Alberta	EMAIL 2: lcesh@golder.com	EMERGENCY SERVICE
T5P 4C3	SELECT: pdf X digital X MDD/EDD X	ANALYSIS REQUEST
PHONE: (780) 930-5478 FAX: (780)-483-1574	INDICATE BOTTLES: FILTERED/PRESERVED (F /P)	
INVOICE TO: SAME Y / N	JOB # 13-1377-0044-23000-23003	
COMPANY: Golder Associates Ltd.		
CONTACT: Steven Fiddler		
ADDRESS: 16820 107 Avenue, Edmonton, Alberta		
T5P 4C3	QUOTE BY EMAIL,	
PHONE: (780) 930-5478 FAX: (780) 483-1574		

Golder SAMPLE ID number	SAMPLED BY / DATE / TIME	SAMPLE TYPE	SAMPLE WEIGHT (g)	% Moisture	Total metals in tissues (including silver, mercury and tin)									HAZARDOUS ? (Y/N)	NUMBER OF CONTAINERS	HIGHLY CONTAMINATED ? (Y/N)	LAB SAMPLE #
16-Giant-AP-1	DPTM/23SEP2016	vegetation	-	x	x									N	1	Y	
16-Giant-AP-2	DPTM/23SEP2016	vegetation	-	x	x									N	1	Y	
16-Giant-AP-3	DPTM/23SEP2016	vegetation	-	x	x									N	1	Y	
16-Giant-AP-3-D	DPTM/23SEP2016	vegetation	-	x	x									N	1	Y	
16-Giant-AP-4	DPTM/23SEP2016	vegetation	-	x	x									N	1	Y	
16-Giant-AP-5	DPTM/23SEP2016	vegetation	-	x	x									N	1	Y	
16-Giant-AP-6	DPTM/23SEP2016	vegetation	-	x	x									N	1	Y	
16-Giant-AP-7	DPTM/23SEP2016	vegetation	-	x	x									N	1	Y	
16-Giant-AP-8	DPTM/23SEP2016	vegetation	-	x	x									N	1	Y	
16-Giant-AP-9	DPTM/23SEP2016	vegetation	-	x	x									N	1	Y	
16-Giant-AP-10	DPTM/23SEP2016	vegetation	-	x	x									N	1	Y	
16-Giant-AP-11	DPTM/23SEP2016	vegetation	-	x	x									[illegible]	[illegible]	[illegible]	

ATTACHMENT C

RPD Tables

DQR-SE (L1832598)

Sample Location Sample Name Sample Collection Date Sample Matrix	CAS #	Units	RPD Alert Limit	DF Alert Limit	RDL	5X RDL	Is either result >5X RDL	16-LONGLAKE-SE-4 16-LONGLAKE-SE-4 21/09/2016 Sediment	16-LONGLAKE-SE-4 16-LONGLAKE-SE-DUP 21/09/2016 Sediment	RPD (%)	DF (unitless)
Metals											
Aluminum (Al)	7429-90-5	mg/kg	>50%	>2	50	250	yes	2650	2860	8	n/c
Antimony (Sb)	7440-36-0	mg/kg	>50%	>2	0.10	0.5	no	0.43	0.43	n/c	0
Arsenic (As)	7440-38-2	mg/kg	>50%	>2	0.10	0.5	yes	21.4	21.2	1	n/c
Barium (Ba)	7440-39-3	mg/kg	>50%	>2	0.50	2.5	yes	13.6	14.3	5	n/c
Beryllium (Be)	7440-41-7	mg/kg	>50%	>2	0.10	0.5	no	< 0.10	< 0.10	n/c	0
Bismuth (Bi)	7440-69-9	mg/kg	>50%	>2	0.20	1	no	< 0.20	< 0.20	n/c	0
Boron (B)	7440-42-8	mg/kg	>50%	>2	5.0	25	no	< 5.0	< 5.0	n/c	0
Cadmium (Cd)	7440-43-9	mg/kg	>50%	>2	0.020	0.1	no	0.022	0.020	n/c	0.1
Calcium (Ca)	7440-70-2	mg/kg	>50%	>2	50	250	yes	942	1050	11	n/c
Chromium (Cr)	7440-47-3	mg/kg	>50%	>2	0.50	2.5	yes	7.70	8.76	13	n/c
Cobalt (Co)	7440-48-4	mg/kg	>50%	>2	0.10	0.5	yes	1.62	1.75	8	n/c
Copper (Cu)	7440-50-8	mg/kg	>50%	>2	0.50	2.5	yes	2.97	3.03	2	n/c
Iron (Fe)	7439-89-6	mg/kg	>50%	>2	50	250	yes	3560	3890	9	n/c
Lead (Pb)	7439-92-1	mg/kg	>50%	>2	0.50	2.5	no	1.56	1.75	n/c	0.38
Lithium (Li)	7439-93-2	mg/kg	>50%	>2	2.0	10	no	6.9	7.8	n/c	0.45
Magnesium (Mg)	7439-95-4	mg/kg	>50%	>2	20	100	yes	1480	1620	9	n/c
Manganese (Mn)	7439-96-5	mg/kg	>50%	>2	1.0	5	yes	51.0	55.1	8	n/c
Mercury (Hg)	7439-97-6	mg/kg	>50%	>2	0.0050	0.025	no	< 0.0050	< 0.0050	n/c	0
Molybdenum (Mo)	7439-98-7	mg/kg	>50%	>2	0.10	0.5	no	0.11	0.12	n/c	0.1
Nickel (Ni)	7440-02-0	mg/kg	>50%	>2	0.50	2.5	yes	4.72	5.09	8	n/c
Phosphorus (P)	7723-14-0	mg/kg	>50%	>2	50	250	no	210	214	n/c	0.08
Potassium (K)	7440-09-7	mg/kg	>50%	>2	100	500	no	240	270	n/c	0.3
Selenium (Se)	7782-49-2	mg/kg	>50%	>2	0.20	1	no	< 0.20	< 0.20	n/c	0
Silver (Ag)	7440-22-4	mg/kg	>50%	>2	0.10	0.5	no	< 0.10	< 0.10	n/c	0
Sodium (Na)	7440-23-5	mg/kg	>50%	>2	50	250	no	69	81	n/c	0.24
Strontium (Sr)	7440-24-6	mg/kg	>50%	>2	0.50	2.5	yes	3.13	3.53	12	n/c
Thallium (Tl)	7440-28-0	mg/kg	>50%	>2	0.050	0.25	no	< 0.050	< 0.050	n/c	0
Tin (Sn)	7440-31-5	mg/kg	>50%	>2	2.0	10	no	< 2.0	< 2.0	n/c	0
Titanium (Ti)	7440-32-6	mg/kg	>50%	>2	1.0	5	yes	128	137	7	n/c
Uranium (U)	7440-61-1	mg/kg	>50%	>2	0.050	0.25	yes	0.411	0.481	16	n/c
Vanadium (V)	7440-62-2	mg/kg	>50%	>2	0.20	1	yes	6.71	7.14	6	n/c
Zinc (Zn)	7440-66-6	mg/kg	>50%	>2	2.0	10	yes	10.4	11.1	7	n/c
Zirconium (Zr)	7440-67-7	mg/kg	>50%	>2	1.0	5	no	< 1.0	< 1.0	n/c	0

DQR-SE (L1844932)

Sample Location Sample Name Sample Collection Date Sample Matrix	CAS #	Units	RPD Alert Limit	DF Alert Limit	RDL	5X RDL	Is either result >5X RDL	16-GIANT-S-14-AP 16-GIANT-S-14-AP 23/09/2016 Sediment	16-GIANT-S-14-AP 16-GIANT-S-14-DUP-AP 23/09/2016 Sediment	RPD (%)	DF (unitless)
Metals											
Aluminum (Al)	7429-90-5	mg/kg	>50%	>2	50	250	yes	9460	10500	10	n/c
Antimony (Sb)	7440-36-0	mg/kg	>50%	>2	0.10	0.5	yes	11.7	8.16	36	n/c
Arsenic (As)	7440-38-2	mg/kg	>50%	>2	0.10	0.5	yes	313	216	37	n/c
Barium (Ba)	7440-39-3	mg/kg	>50%	>2	0.50	2.5	yes	93.7	105	11	n/c
Beryllium (Be)	7440-41-7	mg/kg	>50%	>2	0.10	0.5	no	0.41	0.40	n/c	0.1
Bismuth (Bi)	7440-69-9	mg/kg	>50%	>2	0.20	1	no	< 0.20	< 0.20	n/c	0
Boron (B)	7440-42-8	mg/kg	>50%	>2	5.0	25	no	6.7	5.7	n/c	0.2
Cadmium (Cd)	7440-43-9	mg/kg	>50%	>2	0.020	0.1	yes	0.224	0.187	18	n/c
Calcium (Ca)	7440-70-2	mg/kg	>50%	>2	50	250	yes	11800	9710	19	n/c
Chromium (Cr)	7440-47-3	mg/kg	>50%	>2	0.50	2.5	yes	22.4	24.3	8	n/c
Cobalt (Co)	7440-48-4	mg/kg	>50%	>2	0.10	0.5	yes	5.84	6.02	3	n/c
Copper (Cu)	7440-50-8	mg/kg	>50%	>2	0.50	2.5	yes	21.4	21.2	1	n/c
Iron (Fe)	7439-89-6	mg/kg	>50%	>2	50	250	yes	13800	14600	6	n/c
Lead (Pb)	7439-92-1	mg/kg	>50%	>2	0.50	2.5	yes	9.38	7.55	22	n/c
Lithium (Li)	7439-93-2	mg/kg	>50%	>2	2.0	10	yes	14.1	13.9	1	n/c
Magnesium (Mg)	7439-95-4	mg/kg	>50%	>2	20	100	yes	4610	5290	14	n/c
Manganese (Mn)	7439-96-5	mg/kg	>50%	>2	1.0	5	yes	303	315	4	n/c
Mercury (Hg)	7439-97-6	mg/kg	>50%	>2	0.0050	0.025	yes	0.0747	0.0684	9	n/c
Molybdenum (Mo)	7439-98-7	mg/kg	>50%	>2	0.10	0.5	yes	2.61	1.85	34	n/c
Nickel (Ni)	7440-02-0	mg/kg	>50%	>2	0.50	2.5	yes	16.7	17.5	5	n/c
Phosphorus (P)	7723-14-0	mg/kg	>50%	>2	50	250	yes	803	730	10	n/c
Potassium (K)	7440-09-7	mg/kg	>50%	>2	100	500	yes	1110	1270	13	n/c
Selenium (Se)	7782-49-2	mg/kg	>50%	>2	0.20	1	no	0.28	0.28	n/c	0
Silver (Ag)	7440-22-4	mg/kg	>50%	>2	0.10	0.5	no	< 0.10	< 0.10	n/c	0
Sodium (Na)	7440-23-5	mg/kg	>50%	>2	50	250	yes	352	357	1	n/c
Strontium (Sr)	7440-24-6	mg/kg	>50%	>2	0.50	2.5	yes	55.3	46.4	18	n/c
Thallium (Tl)	7440-28-0	mg/kg	>50%	>2	0.050	0.25	no	0.115	0.108	n/c	0.14
Tin (Sn)	7440-31-5	mg/kg	>50%	>2	1.0	5	no	1.8	< 1.0	n/c	0.8
Titanium (Ti)	7440-32-6	mg/kg	>50%	>2	1.0	5	yes	229	261	13	n/c
Uranium (U)	7440-61-1	mg/kg	>50%	>2	0.050	0.25	yes	26.1	22.1	17	n/c
Vanadium (V)	7440-62-2	mg/kg	>50%	>2	0.20	1	yes	23.4	25.4	8	n/c
Zinc (Zn)	7440-66-6	mg/kg	>50%	>2	2.0	10	yes	40.5	39.9	1	n/c
Zirconium (Zr)	7440-67-7	mg/kg	>50%	>2	1.0	5	yes	5.2	4.4	17	n/c

Sample Location Sample Name Sample Collection Date Sample Matrix	CAS #	Units	RPD Alert Limit	DF Alert Limit	RDL	5X RDL	Is either result >5X RDL	16-GIANT-S-23-AP 16-GIANT-S-23-AP 09/23/16 12:00:00 AM Sediment	16-GIANT-S-23-AP 16-GIANT-S-23-DUP-AP 09/23/16 12:00:00 AM Sediment	RPD (%)	DF (unitless)
Metals											
Aluminum (Al)	7429-90-5	mg/kg	>50%	>2	50	250	yes	12100	14800	20	n/c
Antimony (Sb)	7440-36-0	mg/kg	>50%	>2	0.10	0.5	yes	1.41	1.73	20	n/c
Arsenic (As)	7440-38-2	mg/kg	>50%	>2	0.10	0.5	yes	37.5	60.3	47	n/c
Barium (Ba)	7440-39-3	mg/kg	>50%	>2	0.50	2.5	yes	62.7	76.1	19	n/c
Beryllium (Be)	7440-41-7	mg/kg	>50%	>2	0.10	0.5	no	0.47	0.50	n/c	0.3
Bismuth (Bi)	7440-69-9	mg/kg	>50%	>2	0.20	1	no	< 0.20	< 0.20	n/c	0
Boron (B)	7440-42-8	mg/kg	>50%	>2	5.0	25	no	< 5.0	< 5.0	n/c	0
Cadmium (Cd)	7440-43-9	mg/kg	>50%	>2	0.020	0.1	yes	0.173	0.209	19	n/c
Calcium (Ca)	7440-70-2	mg/kg	>50%	>2	50	250	yes	3440	3550	3	n/c
Chromium (Cr)	7440-47-3	mg/kg	>50%	>2	0.50	2.5	yes	28.1	31.9	13	n/c
Cobalt (Co)	7440-48-4	mg/kg	>50%	>2	0.10	0.5	yes	6.96	8.19	16	n/c
Copper (Cu)	7440-50-8	mg/kg	>50%	>2	0.50	2.5	yes	22.4	27.3	20	n/c
Iron (Fe)	7439-89-6	mg/kg	>50%	>2	50	250	yes	10600	12900	20	n/c
Lead (Pb)	7439-92-1	mg/kg	>50%	>2	0.50	2.5	yes	8.59	9.68	12	n/c
Lithium (Li)	7439-93-2	mg/kg	>50%	>2	2.0	10	yes	20.0	19.9	1	n/c
Magnesium (Mg)	7439-95-4	mg/kg	>50%	>2	20	100	yes	5170	5800	11	n/c
Manganese (Mn)	7439-96-5	mg/kg	>50%	>2	1.0	5	yes	142	164	14	n/c
Mercury (Hg)	7439-97-6	mg/kg	>50%	>2	0.0050	0.025	no	0.0177	0.0243	n/c	1.32
Molybdenum (Mo)	7439-98-7	mg/kg	>50%	>2	0.10	0.5	yes	0.82	0.86	5	n/c
Nickel (Ni)	7440-02-0	mg/kg	>50%	>2	0.50	2.5	yes	22.5	27.0	18	n/c
Phosphorus (P)	7723-14-0	mg/kg	>50%	>2	50	250	yes	596	693	15	n/c
Potassium (K)	7440-09-7	mg/kg	>50%	>2	100	500	yes	1470	1770	19	n/c
Selenium (Se)	7782-49-2	mg/kg	>50%	>2	0.20	1	no	< 0.20	< 0.20	n/c	0
Silver (Ag)	7440-22-4	mg/kg	>50%	>2	0.10	0.5	no	< 0.10	< 0.10	n/c	0
Sodium (Na)	7440-23-5	mg/kg	>50%	>2	50	250	yes	222	257	15	n/c
Strontium (Sr)	7440-24-6	mg/kg	>50%	>2	0.50	2.5	yes	22.8	24.9	9	n/c
Thallium (Tl)	7440-28-0	mg/kg	>50%	>2	0.050	0.25	no	0.105	0.124	n/c	0.38
Tin (Sn)	7440-31-5	mg/kg	>50%	>2	1.0	5	no	< 1.0	< 1.0	n/c	0
Titanium (Ti)	7440-32-6	mg/kg	>50%	>2	1.0	5	yes	297	397	29	n/c
Uranium (U)	7440-61-1	mg/kg	>50%	>2	0.050	0.25	yes	8.91	9.63	8	n/c
Vanadium (V)	7440-62-2	mg/kg	>50%	>2	0.20	1	yes	31.9	38.1	18	n/c
Zinc (Zn)	7440-66-6	mg/kg	>50%	>2	2.0	10	yes	42.1	47.3	12	n/c
Zirconium (Zr)	7440-67-7	mg/kg	>50%	>2	1.0	5	no	3.3	3.1	n/c	0.2

Sample Location Sample Name Sample Collection Date Sample Matrix	CAS #	Units	RPD Alert Limit	DF Alert Limit	RDL	5X RDL	Is either result >5X RDL	16-GIANT-S-3-AP 16-GIANT-S-3-AP 09/23/16 12:00:00 AM Sediment	16-GIANT-S-3-AP 16-GIANT-S-3-D-AP 09/23/16 12:00:00 AM Sediment	RPD (%)	DF (unitless)
Metals											
Aluminum (Al)	7429-90-5	mg/kg	>50%	>2	50	250	yes	25600	22600	12	n/c
Antimony (Sb)	7440-36-0	mg/kg	>50%	>2	0.10	0.5	yes	4.28	3.07	33	n/c
Arsenic (As)	7440-38-2	mg/kg	>50%	>2	0.10	0.5	yes	36.3	25.1	36	n/c
Barium (Ba)	7440-39-3	mg/kg	>50%	>2	0.50	2.5	yes	248	225	10	n/c
Beryllium (Be)	7440-41-7	mg/kg	>50%	>2	0.10	0.5	yes	1.00	0.91	9	n/c
Bismuth (Bi)	7440-69-9	mg/kg	>50%	>2	0.20	1	no	0.29	0.28	n/c	0.05
Boron (B)	7440-42-8	mg/kg	>50%	>2	5.0	25	no	15.8	13.7	n/c	0.42
Cadmium (Cd)	7440-43-9	mg/kg	>50%	>2	0.020	0.1	yes	0.163	0.157	4	n/c
Calcium (Ca)	7440-70-2	mg/kg	>50%	>2	50	250	yes	5670	5210	8	n/c
Chromium (Cr)	7440-47-3	mg/kg	>50%	>2	0.50	2.5	yes	51.4	47.9	7	n/c
Cobalt (Co)	7440-48-4	mg/kg	>50%	>2	0.10	0.5	yes	14.1	12.6	11	n/c
Copper (Cu)	7440-50-8	mg/kg	>50%	>2	0.50	2.5	yes	30.1	28.2	7	n/c
Iron (Fe)	7439-89-6	mg/kg	>50%	>2	50	250	yes	30100	27500	9	n/c
Lead (Pb)	7439-92-1	mg/kg	>50%	>2	0.50	2.5	yes	11.1	10.1	9	n/c
Lithium (Li)	7439-93-2	mg/kg	>50%	>2	2.0	10	yes	42.6	40.2	6	n/c
Magnesium (Mg)	7439-95-4	mg/kg	>50%	>2	20	100	yes	11400	10600	7	n/c
Manganese (Mn)	7439-96-5	mg/kg	>50%	>2	1.0	5	yes	418	389	7	n/c
Mercury (Hg)	7439-97-6	mg/kg	>50%	>2	0.0050	0.025	no	0.0152	0.0139	n/c	0.26
Molybdenum (Mo)	7439-98-7	mg/kg	>50%	>2	0.10	0.5	yes	0.75	0.68	10	n/c
Nickel (Ni)	7440-02-0	mg/kg	>50%	>2	0.50	2.5	yes	35.8	32.4	10	n/c
Phosphorus (P)	7723-14-0	mg/kg	>50%	>2	50	250	yes	600	575	4	n/c
Potassium (K)	7440-09-7	mg/kg	>50%	>2	100	500	yes	5550	4720	16	n/c
Selenium (Se)	7782-49-2	mg/kg	>50%	>2	0.20	1	no	< 0.20	< 0.20	n/c	0
Silver (Ag)	7440-22-4	mg/kg	>50%	>2	0.10	0.5	no	0.15	0.13	n/c	0.2
Sodium (Na)	7440-23-5	mg/kg	>50%	>2	50	250	yes	847	717	17	n/c
Strontium (Sr)	7440-24-6	mg/kg	>50%	>2	0.50	2.5	yes	62.4	59.4	5	n/c
Thallium (Tl)	7440-28-0	mg/kg	>50%	>2	0.050	0.25	yes	0.272	0.261	4	n/c
Tin (Sn)	7440-31-5	mg/kg	>50%	>2	1.0	5	no	1.7	< 1.0	n/c	0.7
Titanium (Ti)	7440-32-6	mg/kg	>50%	>2	1.0	5	yes	960	926	4	n/c
Uranium (U)	7440-61-1	mg/kg	>50%	>2	0.050	0.25	yes	2.15	2.32	8	n/c
Vanadium (V)	7440-62-2	mg/kg	>50%	>2	0.20	1	yes	56.8	53.0	7	n/c
Zinc (Zn)	7440-66-6	mg/kg	>50%	>2	2.0	10	yes	73.0	67.0	9	n/c
Zirconium (Zr)	7440-67-7	mg/kg	>50%	>2	1.0	5	yes	23.5	22.8	3	n/c

DQR-SO (L1832653)

Sample Location / Sample Name / Sample Collection Date / Sample Matrix / Sample Depth	CAS #	Units	RPD Alert Limit	DF Alert Limit	RDL	5X RDL	Is either result >5X RDL	16-LONGLAKE-S-6 16-LONGLAKE-S-6 21/09/2016 Soil	16-LONGLAKE-S-6 16-LONGLAKE-S-DUP 21/09/2016 Soil	RPD (%)	DF (unitless)
Metals											
Aluminum (Al)	7429-90-5	mg/kg	>50%	>2	50	250	yes	5470	6400	16	n/c
Antimony (Sb)	7440-36-0	mg/kg	>50%	>2	0.10	0.5	yes	17.6	5.14	**110**	n/c
Arsenic (As)	7440-38-2	mg/kg	>50%	>2	0.10	0.5	yes	28.7	35.6	21	n/c
Barium (Ba)	7440-39-3	mg/kg	>50%	>2	0.50	2.5	yes	56.1	56.4	1	n/c
Beryllium (Be)	7440-41-7	mg/kg	>50%	>2	0.10	0.5	no	0.14	0.13	n/c	0.1
Bismuth (Bi)	7440-69-9	mg/kg	>50%	>2	0.20	1	no	0.48	0.25	n/c	1.15
Boron (B)	7440-42-8	mg/kg	>50%	>2	5.0	25	no	8.0	5.6	n/c	0.48
Cadmium (Cd)	7440-43-9	mg/kg	>50%	>2	0.020	0.1	yes	11.2	4.43	**87**	n/c
Calcium (Ca)	7440-70-2	mg/kg	>50%	>2	50	250	yes	9060	7080	25	n/c
Chromium (Cr)	7440-47-3	mg/kg	>50%	>2	0.50	2.5	yes	104	70.2	39	n/c
Cobalt (Co)	7440-48-4	mg/kg	>50%	>2	0.10	0.5	yes	11.1	9.45	16	n/c
Copper (Cu)	7440-50-8	mg/kg	>50%	>2	0.50	2.5	yes	71.8	50.8	34	n/c
Iron (Fe)	7439-89-6	mg/kg	>50%	>2	50	250	yes	11000	12300	11	n/c
Lead (Pb)	7439-92-1	mg/kg	>50%	>2	0.50	2.5	yes	500	163	**102**	n/c
Lithium (Li)	7439-93-2	mg/kg	>50%	>2	2.0	10	no	8.9	9.1	n/c	0.1
Magnesium (Mg)	7439-95-4	mg/kg	>50%	>2	20	100	yes	3910	4650	17	n/c
Manganese (Mn)	7439-96-5	mg/kg	>50%	>2	1.0	5	yes	663	317	**71**	n/c
Mercury (Hg)	7439-97-6	mg/kg	>50%	>2	0.0050	0.025	yes	0.116	0.130	11	n/c
Molybdenum (Mo)	7439-98-7	mg/kg	>50%	>2	0.10	0.5	yes	2.27	1.31	**54**	n/c
Nickel (Ni)	7440-02-0	mg/kg	>50%	>2	0.50	2.5	yes	45.0	36.2	22	n/c
Phosphorus (P)	7723-14-0	mg/kg	>50%	>2	50	250	yes	672	694	3	n/c
Potassium (K)	7440-09-7	mg/kg	>50%	>2	100	500	yes	1380	1520	10	n/c
Selenium (Se)	7782-49-2	mg/kg	>50%	>2	0.20	1	no	< 0.20	< 0.20	n/c	0
Silver (Ag)	7440-22-4	mg/kg	>50%	>2	0.10	0.5	no	0.25	0.15	n/c	1
Sodium (Na)	7440-23-5	mg/kg	>50%	>2	50	250	no	213	202	n/c	0.22
Strontium (Sr)	7440-24-6	mg/kg	>50%	>2	0.50	2.5	yes	22.4	20.7	8	n/c
Thallium (Tl)	7440-28-0	mg/kg	>50%	>2	0.050	0.25	no	0.061	0.070	n/c	0.18
Tin (Sn)	7440-31-5	mg/kg	>50%	>2	2.0	10	yes	19.4	32.5	50	n/c
Titanium (Ti)	7440-32-6	mg/kg	>50%	>2	1.0	5	yes	212	236	11	n/c
Uranium (U)	7440-61-1	mg/kg	>50%	>2	0.050	0.25	yes	1.27	1.06	18	n/c
Vanadium (V)	7440-62-2	mg/kg	>50%	>2	0.20	1	yes	17.4	20.5	16	n/c
Zinc (Zn)	7440-66-6	mg/kg	>50%	>2	2.0	10	yes	83.8	70.5	17	n/c
Zirconium (Zr)	7440-67-7	mg/kg	>50%	>2	1.0	5	no	1.2	< 1.0	n/c	0.2

DQR-SO (L1842861)

Sample Location Sample Name Sample Collection Date Sample Matrix Sample Depth	CAS #	Units	RPD Alert Limit	DF Alert Limit	RDL	5X RDL	Is either result >5X RDL	16-GIANT-S-41 16-GIANT-S-41 09/09/2016 SO	16-GIANT-S-41 16-GIANT-S-41-DUP 09/09/2016 SO	RPD (%)	DF (unitless)
Metals											
Aluminum (Al)	7429-90-5	mg/kg	>50%	>2	100	500	yes	8010	8490	6	n/c
Antimony (Sb)	7440-36-0	mg/kg	>50%	>2	0.20	1	yes	75.0	62.6	18	n/c
Arsenic (As)	7440-38-2	mg/kg	>50%	>2	0.20	1	yes	623	547	13	n/c
Barium (Ba)	7440-39-3	mg/kg	>50%	>2	1.0	5	yes	183	140	27	n/c
Beryllium (Be)	7440-41-7	mg/kg	>50%	>2	0.20	1	no	< 0.20	< 0.20	n/c	0
Bismuth (Bi)	7440-69-9	mg/kg	>50%	>2	0.40	2	no	< 0.40	< 0.40	n/c	0
Boron (B)	7440-42-8	mg/kg	>50%	>2	10	50	no	< 10	< 10	n/c	0
Cadmium (Cd)	7440-43-9	mg/kg	>50%	>2	0.040	0.2	yes	0.557	0.482	14	n/c
Calcium (Ca)	7440-70-2	mg/kg	>50%	>2	100	500	yes	13400	12900	4	n/c
Chromium (Cr)	7440-47-3	mg/kg	>50%	>2	1.0	5	yes	23.0	23.7	3	n/c
Cobalt (Co)	7440-48-4	mg/kg	>50%	>2	0.20	1	yes	26.3	22.6	15	n/c
Copper (Cu)	7440-50-8	mg/kg	>50%	>2	1.0	5	yes	36.3	33.3	9	n/c
Iron (Fe)	7439-89-6	mg/kg	>50%	>2	100	500	yes	12100	12900	6	n/c
Lead (Pb)	7439-92-1	mg/kg	>50%	>2	1.0	5	yes	61.3	60.9	1	n/c
Lithium (Li)	7439-93-2	mg/kg	>50%	>2	4.0	20	no	8.1	8.9	n/c	0.2
Magnesium (Mg)	7439-95-4	mg/kg	>50%	>2	40	200	yes	5230	5530	6	n/c
Manganese (Mn)	7439-96-5	mg/kg	>50%	>2	2.0	10	yes	1340	1090	21	n/c
Mercury (Hg)	7439-97-6	mg/kg	>50%	>2	0.010	0.05	yes	0.262	0.281	7	n/c
Molybdenum (Mo)	7439-98-7	mg/kg	>50%	>2	0.20	1	no	0.47	0.50	n/c	0.15
Nickel (Ni)	7440-02-0	mg/kg	>50%	>2	1.0	5	yes	28.9	27.1	6	n/c
Phosphorus (P)	7723-14-0	mg/kg	>50%	>2	100	500	yes	920	920	0	n/c
Potassium (K)	7440-09-7	mg/kg	>50%	>2	200	1000	no	810	770	n/c	0.2
Selenium (Se)	7782-49-2	mg/kg	>50%	>2	0.40	2	no	< 0.40	< 0.40	n/c	0
Silver (Ag)	7440-22-4	mg/kg	>50%	>2	0.20	1	no	0.28	0.31	n/c	0.15
Sodium (Na)	7440-23-5	mg/kg	>50%	>2	100	500	no	140	130	n/c	0.1
Strontium (Sr)	7440-24-6	mg/kg	>50%	>2	1.0	5	yes	34.8	33.6	4	n/c
Thallium (Tl)	7440-28-0	mg/kg	>50%	>2	0.10	0.5	no	< 0.10	< 0.10	n/c	0
Tin (Sn)	7440-31-5	mg/kg	>50%	>2	2.0	10	no	2.7	< 2.0	n/c	0.35
Titanium (Ti)	7440-32-6	mg/kg	>50%	>2	2.0	10	yes	189	135	33	n/c
Uranium (U)	7440-61-1	mg/kg	>50%	>2	0.10	0.5	no	0.44	0.43	n/c	0.1
Vanadium (V)	7440-62-2	mg/kg	>50%	>2	0.40	2	yes	29.4	29.2	1	n/c
Zinc (Zn)	7440-66-6	mg/kg	>50%	>2	4.0	20	yes	66.1	64.4	3	n/c
Zirconium (Zr)	7440-67-7	mg/kg	>50%	>2	2.0	10	no	< 2.0	< 2.0	n/c	0

Sample Location Sample Name Sample Collection Date Sample Matrix Sample Depth	CAS #	Units	RPD Alert Limit	DF Alert Limit	RDL	5X RDL	Is either result >5X RDL	16-GIANT-S-51 16-GIANT-S-51 09/10/16 12:00:00 AM SO	16-GIANT-S-51 16-GIANT-S-51-DUP 09/10/16 12:00:00 AM SO	RPD (%)	DF (unitless)
Metals											
Aluminum (Al)	7429-90-5	mg/kg	>50%	>2	50	250	yes	23500	23400	0	n/c
Antimony (Sb)	7440-36-0	mg/kg	>50%	>2	0.10	0.5	yes	42.9	48.7	13	n/c
Arsenic (As)	7440-38-2	mg/kg	>50%	>2	0.50	2.5	yes	1500	1480	1	n/c
Barium (Ba)	7440-39-3	mg/kg	>50%	>2	0.50	2.5	yes	189	189	0	n/c
Beryllium (Be)	7440-41-7	mg/kg	>50%	>2	0.10	0.5	yes	0.92	0.89	3	n/c
Bismuth (Bi)	7440-69-9	mg/kg	>50%	>2	0.20	1	no	0.30	0.29	n/c	0.05
Boron (B)	7440-42-8	mg/kg	>50%	>2	5.0	25	no	7.6	7.8	n/c	0.04
Cadmium (Cd)	7440-43-9	mg/kg	>50%	>2	0.020	0.1	yes	0.679	0.745	9	n/c
Calcium (Ca)	7440-70-2	mg/kg	>50%	>2	50	250	yes	15300	15300	0	n/c
Chromium (Cr)	7440-47-3	mg/kg	>50%	>2	0.50	2.5	yes	44.5	43.6	2	n/c
Cobalt (Co)	7440-48-4	mg/kg	>50%	>2	0.10	0.5	yes	17.6	17.0	3	n/c
Copper (Cu)	7440-50-8	mg/kg	>50%	>2	0.50	2.5	yes	58.0	57.3	1	n/c
Iron (Fe)	7439-89-6	mg/kg	>50%	>2	50	250	yes	29800	28700	4	n/c
Lead (Pb)	7439-92-1	mg/kg	>50%	>2	0.50	2.5	yes	36.8	38.5	5	n/c
Lithium (Li)	7439-93-2	mg/kg	>50%	>2	2.0	10	yes	27.8	26.3	6	n/c
Magnesium (Mg)	7439-95-4	mg/kg	>50%	>2	20	100	yes	9890	9520	4	n/c
Manganese (Mn)	7439-96-5	mg/kg	>50%	>2	1.0	5	yes	855	886	4	n/c
Mercury (Hg)	7439-97-6	mg/kg	>50%	>2	0.0050	0.025	yes	0.180	0.262	37	n/c
Molybdenum (Mo)	7439-98-7	mg/kg	>50%	>2	0.10	0.5	yes	0.53	0.53	0	n/c
Nickel (Ni)	7440-02-0	mg/kg	>50%	>2	0.50	2.5	yes	43.0	42.3	2	n/c
Phosphorus (P)	7723-14-0	mg/kg	>50%	>2	50	250	yes	831	852	2	n/c
Potassium (K)	7440-09-7	mg/kg	>50%	>2	100	500	yes	2620	2540	3	n/c
Selenium (Se)	7782-49-2	mg/kg	>50%	>2	0.20	1	no	0.36	0.39	n/c	0.15
Silver (Ag)	7440-22-4	mg/kg	>50%	>2	0.10	0.5	yes	0.47	0.56	17	n/c
Sodium (Na)	7440-23-5	mg/kg	>50%	>2	50	250	no	223	215	n/c	0.16
Strontium (Sr)	7440-24-6	mg/kg	>50%	>2	0.50	2.5	yes	33.1	33.1	0	n/c
Thallium (Tl)	7440-28-0	mg/kg	>50%	>2	0.050	0.25	no	0.161	0.166	n/c	0.1
Tin (Sn)	7440-31-5	mg/kg	>50%	>2	1.0	5	no	1.2	1.1	n/c	0.1
Titanium (Ti)	7440-32-6	mg/kg	>50%	>2	1.0	5	yes	376	376	0	n/c
Uranium (U)	7440-61-1	mg/kg	>50%	>2	0.050	0.25	yes	4.61	4.53	2	n/c
Vanadium (V)	7440-62-2	mg/kg	>50%	>2	0.20	1	yes	46.7	46.0	2	n/c
Zinc (Zn)	7440-66-6	mg/kg	>50%	>2	2.0	10	yes	86.1	87.9	2	n/c
Zirconium (Zr)	7440-67-7	mg/kg	>50%	>2	1.0	5	no	4.1	3.2	n/c	0.9

Sample Location Sample Name Sample Collection Date Sample Matrix Sample Depth	CAS #	Units	RPD Alert Limit	DF Alert Limit	RDL	5X RDL	Is either result >5X RDL	16-GIANT-S-53 16-GIANT-S-53 09/10/16 12:00:00 AM SO	16-GIANT-S-53 16-GIANT-S-53-DUP 09/10/16 12:00:00 AM SO	RPD (%)	DF (unitless)
Metals											
Aluminum (Al)	7429-90-5	mg/kg	>50%	>2	50	250	yes	17300	15700	10	n/c
Antimony (Sb)	7440-36-0	mg/kg	>50%	>2	0.10	0.5	yes	50.0	58.2	15	n/c
Arsenic (As)	7440-38-2	mg/kg	>50%	>2	0.50	2.5	yes	1120	1260	12	n/c
Barium (Ba)	7440-39-3	mg/kg	>50%	>2	0.50	2.5	yes	71.3	75.9	6	n/c
Beryllium (Be)	7440-41-7	mg/kg	>50%	>2	0.10	0.5	no	0.31	0.29	n/c	0.2
Bismuth (Bi)	7440-69-9	mg/kg	>50%	>2	0.20	1	no	< 0.20	< 0.20	n/c	0
Boron (B)	7440-42-8	mg/kg	>50%	>2	5.0	25	no	< 5.0	5.5	n/c	0.1
Cadmium (Cd)	7440-43-9	mg/kg	>50%	>2	0.020	0.1	yes	0.784	0.954	20	n/c
Calcium (Ca)	7440-70-2	mg/kg	>50%	>2	50	250	yes	10500	13000	21	n/c
Chromium (Cr)	7440-47-3	mg/kg	>50%	>2	0.50	2.5	yes	40.6	37.6	8	n/c
Cobalt (Co)	7440-48-4	mg/kg	>50%	>2	0.10	0.5	yes	37.0	36.6	1	n/c
Copper (Cu)	7440-50-8	mg/kg	>50%	>2	0.50	2.5	yes	40.0	42.3	6	n/c
Iron (Fe)	7439-89-6	mg/kg	>50%	>2	50	250	yes	27800	26000	7	n/c
Lead (Pb)	7439-92-1	mg/kg	>50%	>2	0.50	2.5	yes	67.4	69.4	3	n/c
Lithium (Li)	7439-93-2	mg/kg	>50%	>2	2.0	10	yes	29.8	25.6	15	n/c
Magnesium (Mg)	7439-95-4	mg/kg	>50%	>2	20	100	yes	9850	8960	9	n/c
Manganese (Mn)	7439-96-5	mg/kg	>50%	>2	1.0	5	yes	966	1000	3	n/c
Mercury (Hg)	7439-97-6	mg/kg	>50%	>2	0.0050	0.025	yes	0.244	0.306	23	n/c
Molybdenum (Mo)	7439-98-7	mg/kg	>50%	>2	0.10	0.5	no	0.38	0.40	n/c	0.2
Nickel (Ni)	7440-02-0	mg/kg	>50%	>2	0.50	2.5	yes	37.5	37.5	0	n/c
Phosphorus (P)	7723-14-0	mg/kg	>50%	>2	50	250	yes	348	414	17	n/c
Potassium (K)	7440-09-7	mg/kg	>50%	>2	100	500	yes	730	720	1	n/c
Selenium (Se)	7782-49-2	mg/kg	>50%	>2	0.20	1	no	< 0.20	< 0.20	n/c	0
Silver (Ag)	7440-22-4	mg/kg	>50%	>2	0.10	0.5	no	0.31	0.32	n/c	0.1
Sodium (Na)	7440-23-5	mg/kg	>50%	>2	50	250	no	66	67	n/c	0.02
Strontium (Sr)	7440-24-6	mg/kg	>50%	>2	0.50	2.5	yes	18.4	20.7	12	n/c
Thallium (Tl)	7440-28-0	mg/kg	>50%	>2	0.050	0.25	no	0.113	0.109	n/c	0.08
Tin (Sn)	7440-31-5	mg/kg	>50%	>2	1.0	5	no	< 1.0	1.0	n/c	0
Titanium (Ti)	7440-32-6	mg/kg	>50%	>2	1.0	5	yes	358	319	12	n/c
Uranium (U)	7440-61-1	mg/kg	>50%	>2	0.050	0.25	yes	0.709	0.716	1	n/c
Vanadium (V)	7440-62-2	mg/kg	>50%	>2	0.20	1	yes	51.1	45.6	11	n/c
Zinc (Zn)	7440-66-6	mg/kg	>50%	>2	2.0	10	yes	304	284	7	n/c
Zirconium (Zr)	7440-67-7	mg/kg	>50%	>2	1.0	5	no	1.7	1.5	n/c	0.2

Sample Location Sample Name Sample Collection Date Sample Matrix Sample Depth	CAS #	Units	RPD Alert Limit	DF Alert Limit	RDL	5X RDL	Is either result >5X RDL	16-GIANT-S-03 16-GIANT-S-03B 09/07/16 12:00:00 AM SO	16-GIANT-S-03 16-GIANT-S-03B-DUP 09/07/16 12:00:00 AM SO	RPD (%)	DF (unitless)
Metals											
Aluminum (Al)	7429-90-5	mg/kg	>50%	>2	50	250	yes	5670	5510	3	n/c
Antimony (Sb)	7440-36-0	mg/kg	>50%	>2	0.10	0.5	yes	44.5	41.1	8	n/c
Arsenic (As)	7440-38-2	mg/kg	>50%	>2	0.10	0.5	yes	151	136	10	n/c
Barium (Ba)	7440-39-3	mg/kg	>50%	>2	0.50	2.5	yes	112	103	8	n/c
Beryllium (Be)	7440-41-7	mg/kg	>50%	>2	0.10	0.5	no	0.25	0.23	n/c	0.2
Bismuth (Bi)	7440-69-9	mg/kg	>50%	>2	0.20	1	no	< 0.20	< 0.20	n/c	0
Boron (B)	7440-42-8	mg/kg	>50%	>2	5.0	25	no	9.7	9.9	n/c	0.04
Cadmium (Cd)	7440-43-9	mg/kg	>50%	>2	0.020	0.1	yes	0.359	0.328	9	n/c
Calcium (Ca)	7440-70-2	mg/kg	>50%	>2	50	250	yes	18600	18900	2	n/c
Chromium (Cr)	7440-47-3	mg/kg	>50%	>2	0.50	2.5	yes	12.9	12.3	5	n/c
Cobalt (Co)	7440-48-4	mg/kg	>50%	>2	0.10	0.5	yes	6.03	5.35	12	n/c
Copper (Cu)	7440-50-8	mg/kg	>50%	>2	0.50	2.5	yes	19.4	18.3	6	n/c
Iron (Fe)	7439-89-6	mg/kg	>50%	>2	50	250	yes	8300	7820	6	n/c
Lead (Pb)	7439-92-1	mg/kg	>50%	>2	0.50	2.5	yes	18.7	41.9	**77**	n/c
Lithium (Li)	7439-93-2	mg/kg	>50%	>2	2.0	10	no	7.8	7.5	n/c	0.15
Magnesium (Mg)	7439-95-4	mg/kg	>50%	>2	20	100	yes	5480	5240	4	n/c
Manganese (Mn)	7439-96-5	mg/kg	>50%	>2	1.0	5	yes	326	284	14	n/c
Mercury (Hg)	7439-97-6	mg/kg	>50%	>2	0.0050	0.025	yes	0.166	0.152	9	n/c
Molybdenum (Mo)	7439-98-7	mg/kg	>50%	>2	0.10	0.5	yes	1.48	1.48	0	n/c
Nickel (Ni)	7440-02-0	mg/kg	>50%	>2	0.50	2.5	yes	14.4	13.6	6	n/c
Phosphorus (P)	7723-14-0	mg/kg	>50%	>2	50	250	yes	1030	912	12	n/c
Potassium (K)	7440-09-7	mg/kg	>50%	>2	100	500	yes	2140	2080	3	n/c
Selenium (Se)	7782-49-2	mg/kg	>50%	>2	0.20	1	no	0.21	0.22	n/c	0.05
Silver (Ag)	7440-22-4	mg/kg	>50%	>2	0.10	0.5	no	0.18	0.18	n/c	0
Sodium (Na)	7440-23-5	mg/kg	>50%	>2	50	250	yes	261	263	1	n/c
Strontium (Sr)	7440-24-6	mg/kg	>50%	>2	0.50	2.5	yes	74.9	73.6	2	n/c
Thallium (Tl)	7440-28-0	mg/kg	>50%	>2	0.050	0.25	no	0.055	0.055	n/c	0
Tin (Sn)	7440-31-5	mg/kg	>50%	>2	1.0	5	yes	1.1	39.8	**189**	n/c
Titanium (Ti)	7440-32-6	mg/kg	>50%	>2	1.0	5	yes	129	121	6	n/c
Uranium (U)	7440-61-1	mg/kg	>50%	>2	0.050	0.25	yes	1.62	1.54	5	n/c
Vanadium (V)	7440-62-2	mg/kg	>50%	>2	0.20	1	yes	16.4	15.1	8	n/c
Zinc (Zn)	7440-66-6	mg/kg	>50%	>2	2.0	10	yes	35.8	35.7	0	n/c
Zirconium (Zr)	7440-67-7	mg/kg	>50%	>2	1.0	5	no	3.5	3.5	n/c	0

DQR-SW (L1832598)

Sample Location Sample Name Sample Collection Date Sample Matrix	CAS #	Units	RPD Alert Limit	DF Alert Limit	RDL	5X RDL	Is either result >5X RDL	16-LONGLAKE-SW-4 16-LONGLAKE0SW-4 21/09/2016 Surface Water	16-LONGLAKE-SW-4 16-LONGLAKE0SW-DUP 21/09/2016 Surface Water	RPD (%)	DF (unitless)
Physical Tests											
Hardness	HARDCA	mg/L	>50%	>2	0.13	0.65	yes	131	127	3	n/c
Total Metals											
Aluminum (Al)-Total	7429-90-5	mg/L	>50%	>2	0.0030	0.015	no	0.0090	0.0097	n/c	0.23333333
Antimony (Sb)-Total	7440-36-0	mg/L	>50%	>2	0.00010	0.0005	yes	0.00198	0.00202	2	n/c
Arsenic (As)-Total	7440-38-2	mg/L	>50%	>2	0.00010	0.0005	yes	0.0416	0.0416	0	n/c
Barium (Ba)-Total	7440-39-3	mg/L	>50%	>2	0.000050	0.00025	yes	0.0369	0.0357	3	n/c
Beryllium (Be)-Total	7440-41-7	mg/L	>50%	>2	0.00010	0.0005	no	< 0.00010	< 0.00010	n/c	0
Boron (B)-Total	7440-42-8	mg/L	>50%	>2	0.010	0.05	no	0.017	0.016	n/c	0.1
Cadmium (Cd)-Total	7440-43-9	mg/L	>50%	>2	0.0000050	0.000025	no	< 0.0000050	< 0.0000050	n/c	0
Calcium (Ca)-Total	7440-70-2	mg/L	>50%	>2	0.050	0.25	yes	32.2	30.8	4	n/c
Chromium (Cr)-Total	7440-47-3	mg/L	>50%	>2	0.00010	0.0005	no	< 0.00010	< 0.00010	n/c	0
Cobalt (Co)-Total	7440-48-4	mg/L	>50%	>2	0.00010	0.0005	no	< 0.00010	< 0.00010	n/c	0
Copper (Cu)-Total	7440-50-8	mg/L	>50%	>2	0.00050	0.0025	no	< 0.00050	< 0.00050	n/c	0
Iron (Fe)-Total	7439-89-6	mg/L	>50%	>2	0.010	0.05	no	0.024	0.024	n/c	0
Lead (Pb)-Total	7439-92-1	mg/L	>50%	>2	0.000050	0.00025	no	< 0.000050	< 0.000050	n/c	0
Lithium (Li)-Total	7439-93-2	mg/L	>50%	>2	0.0010	0.005	no	0.0037	0.0033	n/c	0.4
Magnesium (Mg)-Total	7439-95-4	mg/L	>50%	>2	0.0050	0.025	yes	12.2	12.2	0	n/c
Manganese (Mn)-Total	7439-96-5	mg/L	>50%	>2	0.00010	0.0005	yes	0.0160	0.0154	4	n/c
Mercury (Hg)-Total	7439-97-6	mg/L	>50%	>2	0.0000050	0.000025	no	< 0.0000050	< 0.0000050	n/c	0
Molybdenum (Mo)-Total	7439-98-7	mg/L	>50%	>2	0.000050	0.00025	yes	0.000367	0.000350	5	n/c
Nickel (Ni)-Total	7440-02-0	mg/L	>50%	>2	0.00050	0.0025	no	0.00057	0.00054	n/c	0.06
Potassium (K)-Total	7440-09-7	mg/L	>50%	>2	0.050	0.25	yes	3.17	3.26	3	n/c
Selenium (Se)-Total	7782-49-2	mg/L	>50%	>2	0.000050	0.00025	no	< 0.000050	< 0.000050	n/c	0
Silver (Ag)-Total	7440-22-4	mg/L	>50%	>2	0.000010	0.00005	no	< 0.000010	< 0.000010	n/c	0
Sodium (Na)-Total	7440-23-5	mg/L	>50%	>2	0.050	0.25	yes	29.2	28.5	2	n/c
Thallium (Tl)-Total	7440-28-0	mg/L	>50%	>2	0.000010	0.00005	no	< 0.000010	< 0.000010	n/c	0
Tin (Sn)-Total	7440-31-5	mg/L	>50%	>2	0.00010	0.0005	no	< 0.00010	< 0.00010	n/c	0
Titanium (Ti)-Total	7440-32-6	mg/L	>50%	>2	0.00030	0.0015	no	< 0.00030	0.00039	n/c	0.3
Uranium (U)-Total	7440-61-1	mg/L	>50%	>2	0.000010	0.00005	yes	0.000495	0.000484	2	n/c
Vanadium (V)-Total	7440-62-2	mg/L	>50%	>2	0.00050	0.0025	no	< 0.00050	< 0.00050	n/c	0
Zinc (Zn)-Total	7440-66-6	mg/L	>50%	>2	0.0030	0.015	no	< 0.0030	< 0.0030	n/c	0

DQR-SW (L1832598)

Sample Location Sample Name Sample Collection Date Sample Matrix	CAS #	Units	RPD Alert Limit	DF Alert Limit	RDL	5X RDL	Is either result >5X RDL	16-GIANT-AL-02 07/09/2016 TA	16-GIANT-AL-02-DUP 07/09/2016 TA	RPD (%)	DF (unitless)
Metals											
Aluminum (Al)-Total	7429-90-5	mg/kg	>50%	>2	2.0	10	yes	212	173	20	n/c
Aluminum (Al)-Total	7429-90-5	mg/kg wet	>50%	>2	0.40	2	yes	77.2	67.8	13	n/c
Antimony (Sb)-Total	7440-36-0	mg/kg	>50%	>2	0.010	0.05	yes	0.404	0.299	30	n/c
Antimony (Sb)-Total	7440-36-0	mg/kg wet	>50%	>2	0.0020	0.01	yes	0.147	0.117	23	n/c
Arsenic (As)-Total	7440-38-2	mg/kg	>50%	>2	0.020	0.1	yes	3.11	2.47	23	n/c
Arsenic (As)-Total	7440-38-2	mg/kg wet	>50%	>2	0.0040	0.02	yes	1.14	0.968	16	n/c
Barium (Ba)-Total	7440-39-3	mg/kg wet	>50%	>2	0.010	0.05	yes	4.28	4.25	1	n/c
Barium (Ba)-Total	7440-39-3	mg/kg	>50%	>2	0.050	0.25	yes	11.7	10.8	8	n/c
Beryllium (Be)-Total	7440-41-7	mg/kg	>50%	>2	0.010	0.05	no	< 0.010	< 0.010	n/c	0
Beryllium (Be)-Total	7440-41-7	mg/kg wet	>50%	>2	0.0020	0.01	no	0.0031	0.0025	n/c	0.3
Bismuth (Bi)-Total	7440-69-9	mg/kg	>50%	>2	0.010	0.05	no	< 0.010	< 0.010	n/c	0
Bismuth (Bi)-Total	7440-69-9	mg/kg wet	>50%	>2	0.0020	0.01	no	0.0023	< 0.0020	n/c	0.15
Boron (B)-Total	7440-42-8	mg/kg	>50%	>2	1.0	5	yes	18.6	22.8	20	n/c
Boron (B)-Total	7440-42-8	mg/kg wet	>50%	>2	0.20	1	yes	6.80	8.94	27	n/c
Cadmium (Cd)-Total	7440-43-9	mg/kg	>50%	>2	0.0050	0.025	no	0.0058	< 0.0050	n/c	0.16
Cadmium (Cd)-Total	7440-43-9	mg/kg wet	>50%	>2	0.0010	0.005	no	0.0021	0.0013	n/c	0.8
Calcium (Ca)-Total	7440-70-2	mg/kg wet	>50%	>2	4.0	20	yes	4090	4540	10	n/c
Calcium (Ca)-Total	7440-70-2	mg/kg	>50%	>2	20	100	yes	11200	11600	4	n/c
Cesium (Cs)-Total	7440-46-2	mg/kg wet	>50%	>2	0.0010	0.005	yes	0.0150	0.0142	5	n/c
Cesium (Cs)-Total	7440-46-2	mg/kg	>50%	>2	0.0050	0.025	yes	0.0411	0.0361	13	n/c
Chromium (Cr)-Total	7440-47-3	mg/kg wet	>50%	>2	0.010	0.05	yes	0.209	0.203	3	n/c
Chromium (Cr)-Total	7440-47-3	mg/kg	>50%	>2	0.050	0.25	yes	0.573	0.519	10	n/c
Cobalt (Co)-Total	7440-48-4	mg/kg	>50%	>2	0.020	0.1	yes	0.987	0.611	47	n/c
Cobalt (Co)-Total	7440-48-4	mg/kg wet	>50%	>2	0.0040	0.02	yes	0.360	0.240	40	n/c
Copper (Cu)-Total	7440-50-8	mg/kg	>50%	>2	0.10	0.5	yes	3.25	3.07	6	n/c
Copper (Cu)-Total	7440-50-8	mg/kg wet	>50%	>2	0.020	0.1	yes	1.19	1.20	1	n/c
Iron (Fe)-Total	7439-89-6	mg/kg wet	>50%	>2	0.60	3	yes	131	125	5	n/c
Iron (Fe)-Total	7439-89-6	mg/kg	>50%	>2	3.0	15	yes	358	318	12	n/c
Lead (Pb)-Total	7439-92-1	mg/kg	>50%	>2	0.020	0.1	yes	0.394	0.275	36	n/c
Lead (Pb)-Total	7439-92-1	mg/kg wet	>50%	>2	0.0040	0.02	yes	0.144	0.108	29	n/c
Lithium (Li)-Total	7439-93-2	mg/kg	>50%	>2	0.50	2.5	no	0.65	< 0.50	n/c	0.3
Lithium (Li)-Total	7439-93-2	mg/kg wet	>50%	>2	0.10	0.5	no	0.24	0.19	n/c	0.5
Magnesium (Mg)-Total	7439-95-4	mg/kg	>50%	>2	2.0	10	yes	2730	2800	3	n/c
Magnesium (Mg)-Total	7439-95-4	mg/kg wet	>50%	>2	0.40	2	yes	995	1100	10	n/c
Manganese (Mn)-Total	7439-96-5	mg/kg wet	>50%	>2	0.010	0.05	yes	46.6	41.4	12	n/c
Manganese (Mn)-Total	7439-96-5	mg/kg	>50%	>2	0.050	0.25	yes	128	106	19	n/c
Mercury (Hg)-Total	7439-97-6	mg/kg wet	>50%	>2	0.0010	0.005	no	0.0039	0.0036	n/c	0.3
Mercury (Hg)-Total	7439-97-6	mg/kg	>50%	>2	0.0050	0.025	no	0.0108	0.0091	n/c	0.34
Molybdenum (Mo)-Total	7439-98-7	mg/kg wet	>50%	>2	0.0040	0.02	yes	0.158	0.0859	**59**	n/c
Molybdenum (Mo)-Total	7439-98-7	mg/kg	>50%	>2	0.020	0.1	yes	0.434	0.219	**66**	n/c
Nickel (Ni)-Total	7440-02-0	mg/kg	>50%	>2	0.20	1	yes	1.51	2.24	39	n/c
Nickel (Ni)-Total	7440-02-0	mg/kg wet	>50%	>2	0.040	0.2	yes	0.549	0.877	46	n/c
Phosphorus (P)-Total	7723-14-0	mg/kg	>50%	>2	10	50	yes	691	524	27	n/c
Phosphorus (P)-Total	7723-14-0	mg/kg wet	>50%	>2	2.0	10	yes	252	205	21	n/c
Potassium (K)-Total	7440-09-7	mg/kg	>50%	>2	20	100	yes	8310	6950	18	n/c
Potassium (K)-Total	7440-09-7	mg/kg wet	>50%	>2	4.0	20	yes	3030	2720	11	n/c
Rubidium (Rb)-Total	7440-17-7	mg/kg	>50%	>2	0.050	0.25	yes	4.83	3.48	32	n/c
Rubidium (Rb)-Total	7440-17-7	mg/kg wet	>50%	>2	0.010	0.05	yes	1.76	1.36	26	n/c
Selenium (Se)-Total	7782-49-2	mg/kg	>50%	>2	0.050	0.25	no	< 0.050	< 0.050	n/c	0
Selenium (Se)-Total	7782-49-2	mg/kg wet	>50%	>2	0.010	0.05	no	< 0.010	< 0.010	n/c	0
Silver (Ag)-Total	7440-22-4	mg/kg wet	>50%	>2	0.0010	0.005	no	0.0026	0.0013	n/c	1.3
Silver (Ag)-Total	7440-22-4	mg/kg	>50%	>2	0.0050	0.025	no	0.0072	< 0.0050	n/c	0.44
Sodium (Na)-Total	7440-23-5	mg/kg	>50%	>2	20	100	no	26	22	n/c	0.2
Sodium (Na)-Total	7440-23-5	mg/kg wet	>50%	>2	4.0	20	no	9.3	8.5	n/c	0.2
Strontium (Sr)-Total	7440-24-6	mg/kg	>50%	>2	0.050	0.25	yes	34.3	34.1	1	n/c
Strontium (Sr)-Total	7440-24-6	mg/kg wet	>50%	>2	0.010	0.05	yes	12.5	13.4	7	n/c
Tellurium (Te)-Total	13494-80-9	mg/kg wet	>50%	>2	0.0040	0.02	no	< 0.0040	< 0.0040	n/c	0
Tellurium (Te)-Total	13494-80-9	mg/kg	>50%	>2	0.020	0.1	no	< 0.020	< 0.020	n/c	0
Thallium (Tl)-Total	7440-28-0	mg/kg wet	>50%	>2	0.00040	0.002	no	0.00126	0.00117	n/c	0.225
Thallium (Tl)-Total	7440-28-0	mg/kg	>50%	>2	0.0020	0.01	no	0.0035	0.0030	n/c	0.25
Tin (Sn)-Total	7440-31-5	mg/kg	>50%	>2	0.10	0.5	no	< 0.10	< 0.10	n/c	0
Tin (Sn)-Total	7440-31-5	mg/kg wet	>50%	>2	0.020	0.1	no	< 0.020	< 0.020	n/c	0
Uranium (U)-Total	7440-61-1	mg/kg wet	>50%	>2	0.00040	0.002	yes	0.0152	0.0157	3	n/c
Uranium (U)-Total	7440-61-1	mg/kg	>50%	>2	0.0020	0.01	yes	0.0416	0.0401	4	n/c
Vanadium (V)-Total	7440-62-2	mg/kg	>50%	>2	0.10	0.5	yes	0.61	0.56	9	n/c
Vanadium (V)-Total	7440-62-2	mg/kg wet	>50%	>2	0.020	0.1	yes	0.223	0.218	2	n/c
Zinc (Zn)-Total	7440-66-6	mg/kg	>50%	>2	0.50	2.5	yes	12.9	14.8	14	n/c
Zinc (Zn)-Total	7440-66-6	mg/kg wet	>50%	>2	0.10	0.5	yes	4.71	5.80	21	n/c
Zirconium (Zr)-Total	7440-67-7	mg/kg wet	>50%	>2	0.040	0.2	no	0.069	0.059	n/c	0.25
Zirconium (Zr)-Total	7440-67-7	mg/kg	>50%	>2	0.20	1	no	< 0.20	< 0.20	n/c	0
% Moisture	MOIST	%	>50%	>2	0.50	2.5	yes	63.5	60.8	4	n/c

Sample Location Sample Name Sample Collection Date Sample Matrix	CAS #	Units	RPD Alert Limit	DF Alert Limit	RDL	5X RDL	Is either result >5X RDL	16-GIANT-AL-41 09/09/2016 TA	16-GIANT-AL-41-DUP 09/09/2016 TA	RPD (%)	DF (unitless)
Metals											
Aluminum (Al)-Total	7429-90-5	mg/kg wet	>50%	>2	0.40	2	yes	50.6	50.3	1	n/c
Aluminum (Al)-Total	7429-90-5	mg/kg	>50%	>2	2.0	10	yes	116	120	3	n/c
Antimony (Sb)-Total	7440-36-0	mg/kg wet	>50%	>2	0.0020	0.01	yes	0.0172	0.0216	23	n/c
Antimony (Sb)-Total	7440-36-0	mg/kg	>50%	>2	0.010	0.05	yes	0.040	0.052	26	n/c
Arsenic (As)-Total	7440-38-2	mg/kg	>50%	>2	0.020	0.1	yes	0.881	0.933	6	n/c
Arsenic (As)-Total	7440-38-2	mg/kg wet	>50%	>2	0.0040	0.02	yes	0.384	0.390	2	n/c
Barium (Ba)-Total	7440-39-3	mg/kg	>50%	>2	0.050	0.25	yes	6.68	6.75	1	n/c
Barium (Ba)-Total	7440-39-3	mg/kg wet	>50%	>2	0.010	0.05	yes	2.91	2.83	3	n/c
Beryllium (Be)-Total	7440-41-7	mg/kg wet	>50%	>2	0.0020	0.01	yes	0.0157	0.0133	17	n/c
Beryllium (Be)-Total	7440-41-7	mg/kg	>50%	>2	0.010	0.05	no	0.036	0.032	n/c	0.4
Bismuth (Bi)-Total	7440-69-9	mg/kg	>50%	>2	0.010	0.05	no	< 0.010	< 0.010	n/c	0
Bismuth (Bi)-Total	7440-69-9	mg/kg wet	>50%	>2	0.0020	0.01	no	< 0.0020	< 0.0020	n/c	0
Boron (B)-Total	7440-42-8	mg/kg	>50%	>2	1.0	5	no	2.9	3.2	n/c	0.3
Boron (B)-Total	7440-42-8	mg/kg wet	>50%	>2	0.20	1	yes	1.25	1.34	7	n/c
Cadmium (Cd)-Total	7440-43-9	mg/kg wet	>50%	>2	0.0010	0.005	no	0.0012	< 0.0010	n/c	0.2
Cadmium (Cd)-Total	7440-43-9	mg/kg	>50%	>2	0.0050	0.025	no	< 0.0050	< 0.0050	n/c	0
Calcium (Ca)-Total	7440-70-2	mg/kg	>50%	>2	20	100	yes	6880	6400	7	n/c
Calcium (Ca)-Total	7440-70-2	mg/kg wet	>50%	>2	4.0	20	yes	3000	2680	11	n/c
Cesium (Cs)-Total	7440-46-2	mg/kg wet	>50%	>2	0.0010	0.005	yes	0.0372	0.0342	8	n/c
Cesium (Cs)-Total	7440-46-2	mg/kg	>50%	>2	0.0050	0.025	yes	0.0853	0.0817	4	n/c
Chromium (Cr)-Total	7440-47-3	mg/kg wet	>50%	>2	0.010	0.05	yes	0.125	0.127	2	n/c
Chromium (Cr)-Total	7440-47-3	mg/kg	>50%	>2	0.050	0.25	yes	0.286	0.303	6	n/c
Cobalt (Co)-Total	7440-48-4	mg/kg	>50%	>2	0.020	0.1	yes	7.17	6.75	6	n/c
Cobalt (Co)-Total	7440-48-4	mg/kg wet	>50%	>2	0.0040	0.02	yes	3.13	2.83	10	n/c
Copper (Cu)-Total	7440-50-8	mg/kg wet	>50%	>2	0.020	0.1	yes	1.69	1.70	1	n/c
Copper (Cu)-Total	7440-50-8	mg/kg	>50%	>2	0.10	0.5	yes	3.88	4.05	4	n/c
Iron (Fe)-Total	7439-89-6	mg/kg	>50%	>2	3.0	15	yes	177	186	5	n/c
Iron (Fe)-Total	7439-89-6	mg/kg wet	>50%	>2	0.60	3	yes	77.1	77.7	1	n/c
Lead (Pb)-Total	7439-92-1	mg/kg	>50%	>2	0.020	0.1	yes	0.127	0.104	20	n/c
Lead (Pb)-Total	7439-92-1	mg/kg wet	>50%	>2	0.0040	0.02	yes	0.0555	0.0436	24	n/c
Lithium (Li)-Total	7439-93-2	mg/kg	>50%	>2	0.50	2.5	no	< 0.50	< 0.50	n/c	0
Lithium (Li)-Total	7439-93-2	mg/kg wet	>50%	>2	0.10	0.5	no	< 0.10	< 0.10	n/c	0
Magnesium (Mg)-Total	7439-95-4	mg/kg wet	>50%	>2	0.40	2	yes	1210	1160	4	n/c
Magnesium (Mg)-Total	7439-95-4	mg/kg	>50%	>2	2.0	10	yes	2780	2760	1	n/c
Manganese (Mn)-Total	7439-96-5	mg/kg wet	>50%	>2	0.010	0.05	yes	66.5	60.4	10	n/c
Manganese (Mn)-Total	7439-96-5	mg/kg	>50%	>2	0.050	0.25	yes	152	144	5	n/c
Mercury (Hg)-Total	7439-97-6	mg/kg wet	>50%	>2	0.0010	0.005	no	0.0039	0.0034	n/c	0.5
Mercury (Hg)-Total	7439-97-6	mg/kg	>50%	>2	0.0050	0.025	no	0.0090	0.0081	n/c	0.18
Molybdenum (Mo)-Total	7439-98-7	mg/kg	>50%	>2	0.020	0.1	no	< 0.020	< 0.020	n/c	0
Molybdenum (Mo)-Total	7439-98-7	mg/kg wet	>50%	>2	0.0040	0.02	no	0.0063	0.0070	n/c	0.175
Nickel (Ni)-Total	7440-02-0	mg/kg wet	>50%	>2	0.040	0.2	yes	2.60	2.38	9	n/c
Nickel (Ni)-Total	7440-02-0	mg/kg	>50%	>2	0.20	1	yes	5.95	5.70	4	n/c
Phosphorus (P)-Total	7723-14-0	mg/kg wet	>50%	>2	2.0	10	yes	340	348	2	n/c
Phosphorus (P)-Total	7723-14-0	mg/kg	>50%	>2	10	50	yes	780	831	6	n/c
Potassium (K)-Total	7440-09-7	mg/kg	>50%	>2	20	100	yes	2010	2110	5	n/c
Potassium (K)-Total	7440-09-7	mg/kg wet	>50%	>2	4.0	20	yes	879	884	1	n/c
Rubidium (Rb)-Total	7440-17-7	mg/kg wet	>50%	>2	0.010	0.05	yes	3.37	3.42	1	n/c
Rubidium (Rb)-Total	7440-17-7	mg/kg	>50%	>2	0.050	0.25	yes	7.72	8.17	6	n/c
Selenium (Se)-Total	7782-49-2	mg/kg	>50%	>2	0.050	0.25	no	< 0.050	< 0.050	n/c	0
Selenium (Se)-Total	7782-49-2	mg/kg wet	>50%	>2	0.010	0.05	no	< 0.010	< 0.010	n/c	0
Silver (Ag)-Total	7440-22-4	mg/kg	>50%	>2	0.0050	0.025	no	< 0.0050	< 0.0050	n/c	0
Silver (Ag)-Total	7440-22-4	mg/kg wet	>50%	>2	0.0010	0.005	no	< 0.0010	< 0.0010	n/c	0
Sodium (Na)-Total	7440-23-5	mg/kg wet	>50%	>2	4.0	20	no	< 4.0	6.2	n/c	0.55
Sodium (Na)-Total	7440-23-5	mg/kg	>50%	>2	20	100	no	< 20	< 20	n/c	0
Strontium (Sr)-Total	7440-24-6	mg/kg wet	>50%	>2	0.010	0.05	yes	7.12	6.40	11	n/c
Strontium (Sr)-Total	7440-24-6	mg/kg	>50%	>2	0.050	0.25	yes	16.3	15.3	6	n/c
Tellurium (Te)-Total	13494-80-9	mg/kg	>50%	>2	0.020	0.1	no	< 0.020	< 0.020	n/c	0
Tellurium (Te)-Total	13494-80-9	mg/kg wet	>50%	>2	0.0040	0.02	no	< 0.0040	< 0.0040	n/c	0
Thallium (Tl)-Total	7440-28-0	mg/kg wet	>50%	>2	0.00040	0.002	no	0.00048	0.00043	n/c	0.125
Thallium (Tl)-Total	7440-28-0	mg/kg	>50%	>2	0.0020	0.01	no	< 0.0020	< 0.0020	n/c	0
Tin (Sn)-Total	7440-31-5	mg/kg	>50%	>2	0.10	0.5	no	< 0.10	< 0.10	n/c	0
Tin (Sn)-Total	7440-31-5	mg/kg wet	>50%	>2	0.020	0.1	no	< 0.020	< 0.020	n/c	0
Uranium (U)-Total	7440-61-1	mg/kg	>50%	>2	0.0020	0.01	no	0.0069	0.0061	n/c	0.4
Uranium (U)-Total	7440-61-1	mg/kg wet	>50%	>2	0.00040	0.002	yes	0.00300	0.00257	15	n/c
Vanadium (V)-Total	7440-62-2	mg/kg	>50%	>2	0.10	0.5	no	0.29	0.29	n/c	0
Vanadium (V)-Total	7440-62-2	mg/kg wet	>50%	>2	0.020	0.1	yes	0.125	0.122	2	n/c
Zinc (Zn)-Total	7440-66-6	mg/kg	>50%	>2	0.50	2.5	yes	7.16	7.57	6	n/c
Zinc (Zn)-Total	7440-66-6	mg/kg wet	>50%	>2	0.10	0.5	yes	3.12	3.17	2	n/c
Zirconium (Zr)-Total	7440-67-7	mg/kg wet	>50%	>2	0.040	0.2	no	< 0.040	< 0.040	n/c	0
Zirconium (Zr)-Total	7440-67-7	mg/kg	>50%	>2	0.20	1	no	< 0.20	< 0.20	n/c	0
% Moisture	MOIST	%	>50%	>2	0.50	2.5	yes	56.4	58.1	3	n/c

Sample Location Sample Name Sample Collection Date Sample Matrix	CAS #	Units	RPD Alert Limit	DF Alert Limit	RDL	5X RDL	Is either result >5X RDL	16-GIANT-AL-51 10/09/2016 TA	16-GIANT-AL-51-DUP 10/09/2016 TA	RPD (%)	DF (unitless)
Metals											
Aluminum (Al)-Total	7429-90-5	mg/kg wet	>50%	>2	0.40	2	yes	93.0	94.9	2	n/c
Aluminum (Al)-Total	7429-90-5	mg/kg	>50%	>2	2.0	10	yes	214	237	10	n/c
Antimony (Sb)-Total	7440-36-0	mg/kg	>50%	>2	0.010	0.05	yes	1.36	1.54	12	n/c
Antimony (Sb)-Total	7440-36-0	mg/kg wet	>50%	>2	0.0020	0.01	yes	0.593	0.614	3	n/c
Arsenic (As)-Total	7440-38-2	mg/kg	>50%	>2	0.020	0.1	yes	15.6	17.9	14	n/c
Arsenic (As)-Total	7440-38-2	mg/kg wet	>50%	>2	0.0040	0.02	yes	6.80	7.17	5	n/c
Barium (Ba)-Total	7440-39-3	mg/kg wet	>50%	>2	0.010	0.05	yes	2.94	2.30	24	n/c
Barium (Ba)-Total	7440-39-3	mg/kg	>50%	>2	0.050	0.25	yes	6.76	5.75	16	n/c
Beryllium (Be)-Total	7440-41-7	mg/kg	>50%	>2	0.010	0.05	no	< 0.010	< 0.010	n/c	0
Beryllium (Be)-Total	7440-41-7	mg/kg wet	>50%	>2	0.0020	0.01	no	< 0.0020	< 0.0020	n/c	0
Bismuth (Bi)-Total	7440-69-9	mg/kg	>50%	>2	0.010	0.05	no	< 0.010	< 0.010	n/c	0
Bismuth (Bi)-Total	7440-69-9	mg/kg wet	>50%	>2	0.0020	0.01	no	< 0.0020	< 0.0020	n/c	0
Boron (B)-Total	7440-42-8	mg/kg	>50%	>2	1.0	5	yes	12.3	8.2	40	n/c
Boron (B)-Total	7440-42-8	mg/kg wet	>50%	>2	0.20	1	yes	5.36	3.29	48	n/c
Cadmium (Cd)-Total	7440-43-9	mg/kg	>50%	>2	0.0050	0.025	no	0.0101	0.0095	n/c	0.12
Cadmium (Cd)-Total	7440-43-9	mg/kg wet	>50%	>2	0.0010	0.005	no	0.0044	0.0038	n/c	0.6
Calcium (Ca)-Total	7440-70-2	mg/kg	>50%	>2	20	100	yes	14300	13300	7	n/c
Calcium (Ca)-Total	7440-70-2	mg/kg wet	>50%	>2	4.0	20	yes	6200	5340	15	n/c
Cesium (Cs)-Total	7440-46-2	mg/kg	>50%	>2	0.0050	0.025	no	0.0243	0.0242	n/c	0.02
Cesium (Cs)-Total	7440-46-2	mg/kg wet	>50%	>2	0.0010	0.005	yes	0.0106	0.0097	9	n/c
Chromium (Cr)-Total	7440-47-3	mg/kg	>50%	>2	0.050	0.25	yes	0.607	0.799	27	n/c
Chromium (Cr)-Total	7440-47-3	mg/kg wet	>50%	>2	0.010	0.05	yes	0.264	0.319	19	n/c
Cobalt (Co)-Total	7440-48-4	mg/kg wet	>50%	>2	0.0040	0.02	yes	0.293	0.357	20	n/c
Cobalt (Co)-Total	7440-48-4	mg/kg	>50%	>2	0.020	0.1	yes	0.675	0.893	28	n/c
Copper (Cu)-Total	7440-50-8	mg/kg wet	>50%	>2	0.020	0.1	yes	1.63	1.36	18	n/c
Copper (Cu)-Total	7440-50-8	mg/kg	>50%	>2	0.10	0.5	yes	3.76	3.41	10	n/c
Iron (Fe)-Total	7439-89-6	mg/kg	>50%	>2	3.0	15	yes	598	732	20	n/c
Iron (Fe)-Total	7439-89-6	mg/kg wet	>50%	>2	0.60	3	yes	260	293	12	n/c
Lead (Pb)-Total	7439-92-1	mg/kg	>50%	>2	0.020	0.1	yes	0.858	0.949	10	n/c
Lead (Pb)-Total	7439-92-1	mg/kg wet	>50%	>2	0.0040	0.02	yes	0.373	0.379	2	n/c
Lithium (Li)-Total	7439-93-2	mg/kg	>50%	>2	0.50	2.5	no	< 0.50	< 0.50	n/c	0
Lithium (Li)-Total	7439-93-2	mg/kg wet	>50%	>2	0.10	0.5	no	0.13	0.14	n/c	0.1
Magnesium (Mg)-Total	7439-95-4	mg/kg	>50%	>2	2.0	10	yes	2650	2900	9	n/c
Magnesium (Mg)-Total	7439-95-4	mg/kg wet	>50%	>2	0.40	2	yes	1150	1160	1	n/c
Manganese (Mn)-Total	7439-96-5	mg/kg wet	>50%	>2	0.010	0.05	yes	33.2	34.3	3	n/c
Manganese (Mn)-Total	7439-96-5	mg/kg	>50%	>2	0.050	0.25	yes	76.5	85.7	11	n/c
Mercury (Hg)-Total	7439-97-6	mg/kg wet	>50%	>2	0.0010	0.005	no	0.0040	0.0039	n/c	0.1
Mercury (Hg)-Total	7439-97-6	mg/kg	>50%	>2	0.0050	0.025	no	0.0092	0.0098	n/c	0.12
Molybdenum (Mo)-Total	7439-98-7	mg/kg	>50%	>2	0.020	0.1	no	0.026	0.025	n/c	0.05
Molybdenum (Mo)-Total	7439-98-7	mg/kg wet	>50%	>2	0.0040	0.02	no	0.0111	0.0099	n/c	0.3
Nickel (Ni)-Total	7440-02-0	mg/kg	>50%	>2	0.20	1	yes	2.41	1.57	42	n/c
Nickel (Ni)-Total	7440-02-0	mg/kg wet	>50%	>2	0.040	0.2	yes	1.05	0.628	50	n/c
Phosphorus (P)-Total	7723-14-0	mg/kg wet	>50%	>2	2.0	10	yes	398	293	30	n/c
Phosphorus (P)-Total	7723-14-0	mg/kg	>50%	>2	10	50	yes	916	733	22	n/c
Potassium (K)-Total	7440-09-7	mg/kg	>50%	>2	20	100	yes	7880	5200	41	n/c
Potassium (K)-Total	7440-09-7	mg/kg wet	>50%	>2	4.0	20	yes	3430	2080	49	n/c
Rubidium (Rb)-Total	7440-17-7	mg/kg wet	>50%	>2	0.010	0.05	yes	4.10	2.65	43	n/c
Rubidium (Rb)-Total	7440-17-7	mg/kg	>50%	>2	0.050	0.25	yes	9.42	6.63	35	n/c
Selenium (Se)-Total	7782-49-2	mg/kg	>50%	>2	0.050	0.25	no	< 0.050	< 0.050	n/c	0
Selenium (Se)-Total	7782-49-2	mg/kg wet	>50%	>2	0.010	0.05	no	< 0.010	< 0.010	n/c	0
Silver (Ag)-Total	7440-22-4	mg/kg wet	>50%	>2	0.0010	0.005	no	0.0028	0.0032	n/c	0.4
Silver (Ag)-Total	7440-22-4	mg/kg	>50%	>2	0.0050	0.025	no	0.0064	0.0080	n/c	0.32
Sodium (Na)-Total	7440-23-5	mg/kg wet	>50%	>2	4.0	20	no	9.2	8.1	n/c	0.275
Sodium (Na)-Total	7440-23-5	mg/kg	>50%	>2	20	100	no	21	20	n/c	0.05
Strontium (Sr)-Total	7440-24-6	mg/kg wet	>50%	>2	0.010	0.05	yes	6.55	6.21	5	n/c
Strontium (Sr)-Total	7440-24-6	mg/kg	>50%	>2	0.050	0.25	yes	15.1	15.5	3	n/c
Tellurium (Te)-Total	13494-80-9	mg/kg	>50%	>2	0.020	0.1	no	< 0.020	< 0.020	n/c	0
Tellurium (Te)-Total	13494-80-9	mg/kg wet	>50%	>2	0.0040	0.02	no	< 0.0040	< 0.0040	n/c	0
Thallium (Tl)-Total	7440-28-0	mg/kg	>50%	>2	0.0020	0.01	no	< 0.0020	< 0.0020	n/c	0
Thallium (Tl)-Total	7440-28-0	mg/kg wet	>50%	>2	0.00040	0.002	no	0.00073	0.00078	n/c	0.125
Tin (Sn)-Total	7440-31-5	mg/kg	>50%	>2	0.10	0.5	no	< 0.10	< 0.10	n/c	0
Tin (Sn)-Total	7440-31-5	mg/kg wet	>50%	>2	0.020	0.1	no	< 0.020	< 0.020	n/c	0
Uranium (U)-Total	7440-61-1	mg/kg wet	>50%	>2	0.00040	0.002	yes	0.00310	0.00297	4	n/c
Uranium (U)-Total	7440-61-1	mg/kg	>50%	>2	0.0020	0.01	no	0.0071	0.0074	n/c	0.15
Vanadium (V)-Total	7440-62-2	mg/kg wet	>50%	>2	0.020	0.1	yes	0.372	0.426	14	n/c
Vanadium (V)-Total	7440-62-2	mg/kg	>50%	>2	0.10	0.5	yes	0.86	1.07	22	n/c
Zinc (Zn)-Total	7440-66-6	mg/kg	>50%	>2	0.50	2.5	yes	14.2	17.4	20	n/c
Zinc (Zn)-Total	7440-66-6	mg/kg wet	>50%	>2	0.10	0.5	yes	6.18	6.94	12	n/c
Zirconium (Zr)-Total	7440-67-7	mg/kg wet	>50%	>2	0.040	0.2	no	< 0.040	0.050	n/c	0.25
Zirconium (Zr)-Total	7440-67-7	mg/kg	>50%	>2	0.20	1	no	< 0.20	< 0.20	n/c	0
% Moisture	MOIST	%	>50%	>2	0.50	2.5	yes	56.5	60.0	6	n/c

Sample Location Sample Name Sample Collection Date Sample Matrix	CAS #	Units	RPD Alert Limit	DF Alert Limit	RDL	5X RDL	Is either result >5X RDL	16-GIANT-AL-53 10/09/2016 TA	16-GIANT-AL-53-DUP 10/09/2016 TA	RPD (%)	DF (unitless)
Metals											
Aluminum (Al)-Total	7429-90-5	mg/kg wet	>50%	>2	0.40	2	yes	33.1	46.0	33	n/c
Aluminum (Al)-Total	7429-90-5	mg/kg	>50%	>2	2.0	10	yes	96.1	118	20	n/c
Antimony (Sb)-Total	7440-36-0	mg/kg wet	>50%	>2	0.0020	0.01	yes	0.232	0.370	46	n/c
Antimony (Sb)-Total	7440-36-0	mg/kg	>50%	>2	0.010	0.05	yes	0.676	0.949	34	n/c
Arsenic (As)-Total	7440-38-2	mg/kg	>50%	>2	0.020	0.1	yes	6.47	8.72	30	n/c
Arsenic (As)-Total	7440-38-2	mg/kg wet	>50%	>2	0.0040	0.02	yes	2.23	3.40	42	n/c
Barium (Ba)-Total	7440-39-3	mg/kg	>50%	>2	0.050	0.25	yes	4.60	4.35	6	n/c
Barium (Ba)-Total	7440-39-3	mg/kg wet	>50%	>2	0.010	0.05	yes	1.58	1.70	7	n/c
Beryllium (Be)-Total	7440-41-7	mg/kg	>50%	>2	0.010	0.05	no	< 0.010	< 0.010	n/c	0
Beryllium (Be)-Total	7440-41-7	mg/kg wet	>50%	>2	0.0020	0.01	no	< 0.0020	< 0.0020	n/c	0
Bismuth (Bi)-Total	7440-69-9	mg/kg	>50%	>2	0.010	0.05	no	< 0.010	< 0.010	n/c	0
Bismuth (Bi)-Total	7440-69-9	mg/kg wet	>50%	>2	0.0020	0.01	no	< 0.0020	< 0.0020	n/c	0
Boron (B)-Total	7440-42-8	mg/kg	>50%	>2	1.0	5	no	3.6	4.5	n/c	0.9
Boron (B)-Total	7440-42-8	mg/kg wet	>50%	>2	0.20	1	yes	1.23	1.74	34	n/c
Cadmium (Cd)-Total	7440-43-9	mg/kg wet	>50%	>2	0.0010	0.005	yes	0.0042	0.0101	**83**	n/c
Cadmium (Cd)-Total	7440-43-9	mg/kg	>50%	>2	0.0050	0.025	yes	0.0122	0.0260	**72**	n/c
Calcium (Ca)-Total	7440-70-2	mg/kg	>50%	>2	20	100	yes	12900	15700	20	n/c
Calcium (Ca)-Total	7440-70-2	mg/kg wet	>50%	>2	4.0	20	yes	4440	6110	32	n/c
Cesium (Cs)-Total	7440-46-2	mg/kg wet	>50%	>2	0.0010	0.005	yes	0.0147	0.0190	26	n/c
Cesium (Cs)-Total	7440-46-2	mg/kg	>50%	>2	0.0050	0.025	yes	0.0426	0.0487	13	n/c
Chromium (Cr)-Total	7440-47-3	mg/kg wet	>50%	>2	0.010	0.05	yes	0.092	0.139	41	n/c
Chromium (Cr)-Total	7440-47-3	mg/kg	>50%	>2	0.050	0.25	yes	0.267	0.357	29	n/c
Cobalt (Co)-Total	7440-48-4	mg/kg	>50%	>2	0.020	0.1	yes	2.72	2.86	5	n/c
Cobalt (Co)-Total	7440-48-4	mg/kg wet	>50%	>2	0.0040	0.02	yes	0.935	1.11	17	n/c
Copper (Cu)-Total	7440-50-8	mg/kg	>50%	>2	0.10	0.5	yes	3.25	3.55	9	n/c
Copper (Cu)-Total	7440-50-8	mg/kg wet	>50%	>2	0.020	0.1	yes	1.12	1.38	21	n/c
Iron (Fe)-Total	7439-89-6	mg/kg wet	>50%	>2	0.60	3	yes	84.5	125	39	n/c
Iron (Fe)-Total	7439-89-6	mg/kg	>50%	>2	3.0	15	yes	246	320	26	n/c
Lead (Pb)-Total	7439-92-1	mg/kg	>50%	>2	0.020	0.1	yes	0.809	1.39	**53**	n/c
Lead (Pb)-Total	7439-92-1	mg/kg wet	>50%	>2	0.0040	0.02	yes	0.278	0.541	**64**	n/c
Lithium (Li)-Total	7439-93-2	mg/kg	>50%	>2	0.50	2.5	no	< 0.50	< 0.50	n/c	0
Lithium (Li)-Total	7439-93-2	mg/kg wet	>50%	>2	0.10	0.5	no	< 0.10	< 0.10	n/c	0
Magnesium (Mg)-Total	7439-95-4	mg/kg wet	>50%	>2	0.40	2	yes	1220	1580	26	n/c
Magnesium (Mg)-Total	7439-95-4	mg/kg	>50%	>2	2.0	10	yes	3540	4060	14	n/c
Manganese (Mn)-Total	7439-96-5	mg/kg wet	>50%	>2	0.010	0.05	yes	86.3	75.1	14	n/c
Manganese (Mn)-Total	7439-96-5	mg/kg	>50%	>2	0.050	0.25	yes	251	193	26	n/c
Mercury (Hg)-Total	7439-97-6	mg/kg wet	>50%	>2	0.0010	0.005	no	0.0031	0.0035	n/c	0.4
Mercury (Hg)-Total	7439-97-6	mg/kg	>50%	>2	0.0050	0.025	no	0.0089	0.0089	n/c	0
Molybdenum (Mo)-Total	7439-98-7	mg/kg wet	>50%	>2	0.0040	0.02	no	0.0101	0.0094	n/c	0.175
Molybdenum (Mo)-Total	7439-98-7	mg/kg	>50%	>2	0.020	0.1	no	0.029	0.024	n/c	0.25
Nickel (Ni)-Total	7440-02-0	mg/kg	>50%	>2	0.20	1	yes	3.97	3.70	7	n/c
Nickel (Ni)-Total	7440-02-0	mg/kg wet	>50%	>2	0.040	0.2	yes	1.36	1.44	6	n/c
Phosphorus (P)-Total	7723-14-0	mg/kg	>50%	>2	10	50	yes	536	434	21	n/c
Phosphorus (P)-Total	7723-14-0	mg/kg wet	>50%	>2	2.0	10	yes	184	169	8	n/c
Potassium (K)-Total	7440-09-7	mg/kg	>50%	>2	20	100	yes	1660	999	50	n/c
Potassium (K)-Total	7440-09-7	mg/kg wet	>50%	>2	4.0	20	yes	571	389	38	n/c
Rubidium (Rb)-Total	7440-17-7	mg/kg wet	>50%	>2	0.010	0.05	yes	1.71	1.99	15	n/c
Rubidium (Rb)-Total	7440-17-7	mg/kg	>50%	>2	0.050	0.25	yes	4.99	5.10	2	n/c
Selenium (Se)-Total	7782-49-2	mg/kg	>50%	>2	0.050	0.25	no	< 0.050	< 0.050	n/c	0
Selenium (Se)-Total	7782-49-2	mg/kg wet	>50%	>2	0.010	0.05	no	< 0.010	< 0.010	n/c	0
Silver (Ag)-Total	7440-22-4	mg/kg	>50%	>2	0.0050	0.025	no	< 0.0050	0.0052	n/c	0.04
Silver (Ag)-Total	7440-22-4	mg/kg wet	>50%	>2	0.0010	0.005	no	0.0012	0.0020	n/c	0.8
Sodium (Na)-Total	7440-23-5	mg/kg wet	>50%	>2	4.0	20	no	< 4.0	7.4	n/c	0.85
Sodium (Na)-Total	7440-23-5	mg/kg	>50%	>2	20	100	no	< 20	< 20	n/c	0
Strontium (Sr)-Total	7440-24-6	mg/kg wet	>50%	>2	0.010	0.05	yes	3.84	5.49	35	n/c
Strontium (Sr)-Total	7440-24-6	mg/kg	>50%	>2	0.050	0.25	yes	11.2	14.1	23	n/c
Tellurium (Te)-Total	13494-80-9	mg/kg	>50%	>2	0.020	0.1	no	< 0.020	< 0.020	n/c	0
Tellurium (Te)-Total	13494-80-9	mg/kg wet	>50%	>2	0.0040	0.02	no	< 0.0040	< 0.0040	n/c	0
Thallium (Tl)-Total	7440-28-0	mg/kg wet	>50%	>2	0.00040	0.002	yes	0.00180	0.00268	39	n/c
Thallium (Tl)-Total	7440-28-0	mg/kg	>50%	>2	0.0020	0.01	no	0.0052	0.0069	n/c	0.85
Tin (Sn)-Total	7440-31-5	mg/kg wet	>50%	>2	0.020	0.1	no	< 0.020	< 0.020	n/c	0
Tin (Sn)-Total	7440-31-5	mg/kg	>50%	>2	0.10	0.5	no	< 0.10	< 0.10	n/c	0
Uranium (U)-Total	7440-61-1	mg/kg	>50%	>2	0.0020	0.01	no	0.0041	0.0080	n/c	1.95
Uranium (U)-Total	7440-61-1	mg/kg wet	>50%	>2	0.00040	0.002	yes	0.00140	0.00310	**76**	n/c
Vanadium (V)-Total	7440-62-2	mg/kg	>50%	>2	0.10	0.5	no	0.34	0.44	n/c	1
Vanadium (V)-Total	7440-62-2	mg/kg wet	>50%	>2	0.020	0.1	yes	0.115	0.173	40	n/c
Zinc (Zn)-Total	7440-66-6	mg/kg	>50%	>2	0.50	2.5	yes	30.5	49.4	47	n/c
Zinc (Zn)-Total	7440-66-6	mg/kg wet	>50%	>2	0.10	0.5	yes	10.5	19.2	**59**	n/c
Zirconium (Zr)-Total	7440-67-7	mg/kg wet	>50%	>2	0.040	0.2	no	< 0.040	0.094	n/c	1.35
Zirconium (Zr)-Total	7440-67-7	mg/kg	>50%	>2	0.20	1	no	< 0.20	0.24	n/c	0.2
% Moisture	MOIST	%	>50%	>2	0.50	2.5	yes	65.6	61.0	7	n/c

Sample Location Sample Name Sample Collection Date Sample Matrix	CAS #	Units	RPD Alert Limit	DF Alert Limit	RDL	5X RDL	Is either result >5X RDL	16-GIANT-AP-14 23/09/2016 Aquatic Plant	16-GIANT-AP-14-D 23/09/2016 Aquatic Plant	RPD (%)	DF (unitless)
Metals											
Aluminum (Al)-Total	7429-90-5	mg/kg wet	>50%	>2	0.40	2	yes	3.30	4.42	29	n/c
Aluminum (Al)-Total	7429-90-5	mg/kg	>50%	>2	2.0	10	no	6.6	7.8	n/c	0.6
Antimony (Sb)-Total	7440-36-0	mg/kg wet	>50%	>2	0.0020	0.01	yes	0.0135	0.0221	48	n/c
Antimony (Sb)-Total	7440-36-0	mg/kg	>50%	>2	0.010	0.05	no	0.027	0.039	n/c	1.2
Arsenic (As)-Total	7440-38-2	mg/kg	>50%	>2	0.020	0.1	yes	1.70	1.69	1	n/c
Arsenic (As)-Total	7440-38-2	mg/kg wet	>50%	>2	0.0040	0.02	yes	0.855	0.958	11	n/c
Barium (Ba)-Total	7440-39-3	mg/kg	>50%	>2	0.050	0.25	yes	25.8	30.7	17	n/c
Barium (Ba)-Total	7440-39-3	mg/kg wet	>50%	>2	0.010	0.05	yes	13.0	17.4	29	n/c
Beryllium (Be)-Total	7440-41-7	mg/kg	>50%	>2	0.010	0.05	no	< 0.010	< 0.010	n/c	0
Beryllium (Be)-Total	7440-41-7	mg/kg wet	>50%	>2	0.0020	0.01	no	< 0.0020	< 0.0020	n/c	0
Bismuth (Bi)-Total	7440-69-9	mg/kg	>50%	>2	0.010	0.05	no	< 0.010	< 0.010	n/c	0
Bismuth (Bi)-Total	7440-69-9	mg/kg wet	>50%	>2	0.0020	0.01	no	< 0.0020	< 0.0020	n/c	0
Boron (B)-Total	7440-42-8	mg/kg	>50%	>2	1.0	5	yes	13.2	15.6	17	n/c
Boron (B)-Total	7440-42-8	mg/kg wet	>50%	>2	0.20	1	yes	6.67	8.86	28	n/c
Cadmium (Cd)-Total	7440-43-9	mg/kg wet	>50%	>2	0.0010	0.005	no	0.0011	< 0.0010	n/c	0.1
Cadmium (Cd)-Total	7440-43-9	mg/kg	>50%	>2	0.0050	0.025	no	< 0.0050	< 0.0050	n/c	0
Calcium (Ca)-Total	7440-70-2	mg/kg wet	>50%	>2	4.0	20	yes	3550	4520	24	n/c
Calcium (Ca)-Total	7440-70-2	mg/kg	>50%	>2	20	100	yes	7060	7970	12	n/c
Cesium (Cs)-Total	7440-46-2	mg/kg wet	>50%	>2	0.0010	0.005	yes	0.0367	0.0688	**61**	n/c
Cesium (Cs)-Total	7440-46-2	mg/kg	>50%	>2	0.0050	0.025	yes	0.0728	0.121	50	n/c
Chromium (Cr)-Total	7440-47-3	mg/kg wet	>50%	>2	0.010	0.05	no	0.014	0.026	n/c	1.2
Chromium (Cr)-Total	7440-47-3	mg/kg	>50%	>2	0.050	0.25	no	< 0.050	< 0.050	n/c	0
Cobalt (Co)-Total	7440-48-4	mg/kg	>50%	>2	0.020	0.1	no	< 0.020	< 0.020	n/c	0
Cobalt (Co)-Total	7440-48-4	mg/kg wet	>50%	>2	0.0040	0.02	no	0.0099	0.0103	n/c	0.1
Copper (Cu)-Total	7440-50-8	mg/kg	>50%	>2	0.10	0.5	yes	0.61	0.56	9	n/c
Copper (Cu)-Total	7440-50-8	mg/kg wet	>50%	>2	0.020	0.1	yes	0.308	0.318	3	n/c
Iron (Fe)-Total	7439-89-6	mg/kg	>50%	>2	3.0	15	yes	72.1	74.1	3	n/c
Iron (Fe)-Total	7439-89-6	mg/kg wet	>50%	>2	0.60	3	yes	36.3	42.1	15	n/c
Lead (Pb)-Total	7439-92-1	mg/kg wet	>50%	>2	0.0040	0.02	no	0.0068	0.0104	n/c	0.9
Lead (Pb)-Total	7439-92-1	mg/kg	>50%	>2	0.020	0.1	no	< 0.020	< 0.020	n/c	0
Lithium (Li)-Total	7439-93-2	mg/kg wet	>50%	>2	0.10	0.5	yes	0.52	0.63	19	n/c
Lithium (Li)-Total	7439-93-2	mg/kg	>50%	>2	0.50	2.5	no	1.03	1.11	n/c	0.16
Magnesium (Mg)-Total	7439-95-4	mg/kg wet	>50%	>2	0.40	2	yes	1390	1600	14	n/c
Magnesium (Mg)-Total	7439-95-4	mg/kg	>50%	>2	2.0	10	yes	2770	2820	2	n/c
Manganese (Mn)-Total	7439-96-5	mg/kg wet	>50%	>2	0.010	0.05	yes	245	199	21	n/c
Manganese (Mn)-Total	7439-96-5	mg/kg	>50%	>2	0.050	0.25	yes	486	350	33	n/c
Mercury (Hg)-Total	7439-97-6	mg/kg	>50%	>2	0.0050	0.025	no	0.0065	0.0072	n/c	0.14
Mercury (Hg)-Total	7439-97-6	mg/kg wet	>50%	>2	0.0010	0.005	no	0.0033	0.0041	n/c	0.8
Molybdenum (Mo)-Total	7439-98-7	mg/kg	>50%	>2	0.020	0.1	yes	0.865	0.563	42	n/c
Molybdenum (Mo)-Total	7439-98-7	mg/kg wet	>50%	>2	0.0040	0.02	yes	0.435	0.320	30	n/c
Nickel (Ni)-Total	7440-02-0	mg/kg wet	>50%	>2	0.040	0.2	no	< 0.040	< 0.040	n/c	0
Nickel (Ni)-Total	7440-02-0	mg/kg	>50%	>2	0.20	1	no	< 0.20	< 0.20	n/c	0
Phosphorus (P)-Total	7723-14-0	mg/kg	>50%	>2	10	50	yes	720	680	6	n/c
Phosphorus (P)-Total	7723-14-0	mg/kg wet	>50%	>2	2.0	10	yes	363	386	6	n/c
Potassium (K)-Total	7440-09-7	mg/kg	>50%	>2	20	100	yes	6370	6480	2	n/c
Potassium (K)-Total	7440-09-7	mg/kg wet	>50%	>2	4.0	20	yes	3210	3680	14	n/c
Rubidium (Rb)-Total	7440-17-7	mg/kg wet	>50%	>2	0.010	0.05	yes	3.77	5.41	36	n/c
Rubidium (Rb)-Total	7440-17-7	mg/kg	>50%	>2	0.050	0.25	yes	7.48	9.53	24	n/c
Selenium (Se)-Total	7782-49-2	mg/kg	>50%	>2	0.050	0.25	no	< 0.050	< 0.050	n/c	0
Selenium (Se)-Total	7782-49-2	mg/kg wet	>50%	>2	0.010	0.05	no	< 0.010	< 0.010	n/c	0
Silver (Ag)-Total	7440-22-4	mg/kg	>50%	>2	0.0050	0.025	no	< 0.0050	< 0.0050	n/c	0
Silver (Ag)-Total	7440-22-4	mg/kg wet	>50%	>2	0.0010	0.005	no	< 0.0010	< 0.0010	n/c	0
Sodium (Na)-Total	7440-23-5	mg/kg wet	>50%	>2	4.0	20	yes	116	172	39	n/c
Sodium (Na)-Total	7440-23-5	mg/kg	>50%	>2	20	100	yes	231	303	27	n/c
Strontium (Sr)-Total	7440-24-6	mg/kg wet	>50%	>2	0.010	0.05	yes	11.8	14.9	23	n/c
Strontium (Sr)-Total	7440-24-6	mg/kg	>50%	>2	0.050	0.25	yes	23.5	26.3	11	n/c
Tellurium (Te)-Total	13494-80-9	mg/kg wet	>50%	>2	0.0040	0.02	no	< 0.0040	< 0.0040	n/c	0
Tellurium (Te)-Total	13494-80-9	mg/kg	>50%	>2	0.020	0.1	no	< 0.020	< 0.020	n/c	0
Thallium (Tl)-Total	7440-28-0	mg/kg	>50%	>2	0.0020	0.01	no	< 0.0020	0.0030	n/c	0.5
Thallium (Tl)-Total	7440-28-0	mg/kg wet	>50%	>2	0.00040	0.002	no	0.00093	0.00170	n/c	1.925
Tin (Sn)-Total	7440-31-5	mg/kg	>50%	>2	0.10	0.5	no	< 0.10	< 0.10	n/c	0
Tin (Sn)-Total	7440-31-5	mg/kg wet	>50%	>2	0.020	0.1	no	< 0.020	< 0.020	n/c	0
Uranium (U)-Total	7440-61-1	mg/kg	>50%	>2	0.0020	0.01	no	0.0024	0.0020	n/c	0.2
Uranium (U)-Total	7440-61-1	mg/kg wet	>50%	>2	0.00040	0.002	no	0.00121	0.00116	n/c	0.125
Vanadium (V)-Total	7440-62-2	mg/kg	>50%	>2	0.10	0.5	no	< 0.10	< 0.10	n/c	0
Vanadium (V)-Total	7440-62-2	mg/kg wet	>50%	>2	0.020	0.1	no	< 0.020	< 0.020	n/c	0
Zinc (Zn)-Total	7440-66-6	mg/kg	>50%	>2	0.50	2.5	yes	15.8	11.8	29	n/c
Zinc (Zn)-Total	7440-66-6	mg/kg wet	>50%	>2	0.10	0.5	yes	7.95	6.73	17	n/c
Zirconium (Zr)-Total	7440-67-7	mg/kg wet	>50%	>2	0.040	0.2	no	0.071	< 0.040	n/c	0.775
Zirconium (Zr)-Total	7440-67-7	mg/kg	>50%	>2	0.20	1	no	< 0.20	< 0.20	n/c	0
% Moisture	MOIST	%	>50%	>2	0.50	2.5	yes	49.7	43.2	14	n/c

Sample Location Sample Name Sample Collection Date Sample Matrix	CAS #	Units	RPD Alert Limit	DF Alert Limit	RDL	5X RDL	Is either result >5X RDL	16-GIANT-AP-23 23/09/2016 TA	16-GIANT-AP-23-DUP 23/09/2016 TA	RPD (%)	DF (unitless)
Metals											
Aluminum (Al)-Total	7429-90-5	mg/kg	>50%	>2	2.0	10	yes	14.4	20.0	33	n/c
Aluminum (Al)-Total	7429-90-5	mg/kg wet	>50%	>2	0.40	2	yes	7.61	8.76	14	n/c
Antimony (Sb)-Total	7440-36-0	mg/kg	>50%	>2	0.010	0.05	no	< 0.010	< 0.010	n/c	0
Antimony (Sb)-Total	7440-36-0	mg/kg wet	>50%	>2	0.0020	0.01	no	< 0.0020	< 0.0020	n/c	0
Arsenic (As)-Total	7440-38-2	mg/kg	>50%	>2	0.020	0.1	yes	0.662	0.917	32	n/c
Arsenic (As)-Total	7440-38-2	mg/kg wet	>50%	>2	0.0040	0.02	yes	0.349	0.402	14	n/c
Barium (Ba)-Total	7440-39-3	mg/kg	>50%	>2	0.050	0.25	yes	36.5	45.3	22	n/c
Barium (Ba)-Total	7440-39-3	mg/kg wet	>50%	>2	0.010	0.05	yes	19.2	19.9	4	n/c
Beryllium (Be)-Total	7440-41-7	mg/kg	>50%	>2	0.010	0.05	no	< 0.010	< 0.010	n/c	0
Beryllium (Be)-Total	7440-41-7	mg/kg wet	>50%	>2	0.0020	0.01	no	0.0026	0.0033	n/c	0.35
Bismuth (Bi)-Total	7440-69-9	mg/kg	>50%	>2	0.010	0.05	no	< 0.010	< 0.010	n/c	0
Bismuth (Bi)-Total	7440-69-9	mg/kg wet	>50%	>2	0.0020	0.01	no	< 0.0020	< 0.0020	n/c	0
Boron (B)-Total	7440-42-8	mg/kg wet	>50%	>2	0.20	1	yes	7.61	8.01	5	n/c
Boron (B)-Total	7440-42-8	mg/kg	>50%	>2	1.0	5	yes	14.4	18.3	24	n/c
Cadmium (Cd)-Total	7440-43-9	mg/kg	>50%	>2	0.0050	0.025	no	0.0089	0.0140	n/c	1.02
Cadmium (Cd)-Total	7440-43-9	mg/kg wet	>50%	>2	0.0010	0.005	yes	0.0047	0.0061	26	n/c
Calcium (Ca)-Total	7440-70-2	mg/kg	>50%	>2	20	100	yes	5990	7750	26	n/c
Calcium (Ca)-Total	7440-70-2	mg/kg wet	>50%	>2	4.0	20	yes	3150	3400	8	n/c
Cesium (Cs)-Total	7440-46-2	mg/kg	>50%	>2	0.0050	0.025	yes	0.0988	0.115	15	n/c
Cesium (Cs)-Total	7440-46-2	mg/kg wet	>50%	>2	0.0010	0.005	yes	0.0520	0.0503	3	n/c
Chromium (Cr)-Total	7440-47-3	mg/kg	>50%	>2	0.050	0.25	no	< 0.050	0.073	n/c	0.46
Chromium (Cr)-Total	7440-47-3	mg/kg wet	>50%	>2	0.010	0.05	no	0.018	0.032	n/c	1.4
Cobalt (Co)-Total	7440-48-4	mg/kg wet	>50%	>2	0.0040	0.02	yes	0.390	0.579	39	n/c
Cobalt (Co)-Total	7440-48-4	mg/kg	>50%	>2	0.020	0.1	yes	0.741	1.32	**56**	n/c
Copper (Cu)-Total	7440-50-8	mg/kg	>50%	>2	0.10	0.5	yes	1.44	2.48	**53**	n/c
Copper (Cu)-Total	7440-50-8	mg/kg wet	>50%	>2	0.020	0.1	yes	0.761	1.09	36	n/c
Iron (Fe)-Total	7439-89-6	mg/kg wet	>50%	>2	0.60	3	yes	113	179	45	n/c
Iron (Fe)-Total	7439-89-6	mg/kg	>50%	>2	3.0	15	yes	215	408	**62**	n/c
Lead (Pb)-Total	7439-92-1	mg/kg	>50%	>2	0.020	0.1	no	0.030	0.057	n/c	1.35
Lead (Pb)-Total	7439-92-1	mg/kg wet	>50%	>2	0.0040	0.02	yes	0.0159	0.0252	45	n/c
Lithium (Li)-Total	7439-93-2	mg/kg	>50%	>2	0.50	2.5	no	< 0.50	0.60	n/c	0.2
Lithium (Li)-Total	7439-93-2	mg/kg wet	>50%	>2	0.10	0.5	no	0.25	0.26	n/c	0.1
Magnesium (Mg)-Total	7439-95-4	mg/kg	>50%	>2	2.0	10	yes	1500	1940	26	n/c
Magnesium (Mg)-Total	7439-95-4	mg/kg wet	>50%	>2	0.40	2	yes	792	851	7	n/c
Manganese (Mn)-Total	7439-96-5	mg/kg wet	>50%	>2	0.010	0.05	yes	103	112	8	n/c
Manganese (Mn)-Total	7439-96-5	mg/kg	>50%	>2	0.050	0.25	yes	195	255	27	n/c
Mercury (Hg)-Total	7439-97-6	mg/kg	>50%	>2	0.0050	0.025	no	0.0057	0.0071	n/c	0.28
Mercury (Hg)-Total	7439-97-6	mg/kg wet	>50%	>2	0.0010	0.005	no	0.0030	0.0031	n/c	0.1
Molybdenum (Mo)-Total	7439-98-7	mg/kg	>50%	>2	0.020	0.1	yes	0.567	0.749	28	n/c
Molybdenum (Mo)-Total	7439-98-7	mg/kg wet	>50%	>2	0.0040	0.02	yes	0.298	0.328	10	n/c
Nickel (Ni)-Total	7440-02-0	mg/kg	>50%	>2	0.20	1	yes	1.16	1.73	39	n/c
Nickel (Ni)-Total	7440-02-0	mg/kg wet	>50%	>2	0.040	0.2	yes	0.612	0.760	22	n/c
Phosphorus (P)-Total	7723-14-0	mg/kg	>50%	>2	10	50	yes	1120	1260	12	n/c
Phosphorus (P)-Total	7723-14-0	mg/kg wet	>50%	>2	2.0	10	yes	588	554	6	n/c
Potassium (K)-Total	7440-09-7	mg/kg wet	>50%	>2	4.0	20	yes	7020	6630	6	n/c
Potassium (K)-Total	7440-09-7	mg/kg	>50%	>2	20	100	yes	13300	15100	13	n/c
Rubidium (Rb)-Total	7440-17-7	mg/kg wet	>50%	>2	0.010	0.05	yes	10.6	10.7	1	n/c
Rubidium (Rb)-Total	7440-17-7	mg/kg	>50%	>2	0.050	0.25	yes	20.0	24.5	20	n/c
Selenium (Se)-Total	7782-49-2	mg/kg	>50%	>2	0.050	0.25	no	< 0.050	< 0.050	n/c	0
Selenium (Se)-Total	7782-49-2	mg/kg wet	>50%	>2	0.010	0.05	no	< 0.010	< 0.010	n/c	0
Silver (Ag)-Total	7440-22-4	mg/kg	>50%	>2	0.0050	0.025	no	< 0.0050	< 0.0050	n/c	0
Silver (Ag)-Total	7440-22-4	mg/kg wet	>50%	>2	0.0010	0.005	no	< 0.0010	< 0.0010	n/c	0
Sodium (Na)-Total	7440-23-5	mg/kg wet	>50%	>2	4.0	20	yes	42.0	87.5	**70**	n/c
Sodium (Na)-Total	7440-23-5	mg/kg	>50%	>2	20	100	yes	80	199	**85**	n/c
Strontium (Sr)-Total	7440-24-6	mg/kg wet	>50%	>2	0.010	0.05	yes	14.0	15.8	12	n/c
Strontium (Sr)-Total	7440-24-6	mg/kg	>50%	>2	0.050	0.25	yes	26.6	35.9	30	n/c
Tellurium (Te)-Total	13494-80-9	mg/kg	>50%	>2	0.020	0.1	no	< 0.020	< 0.020	n/c	0
Tellurium (Te)-Total	13494-80-9	mg/kg wet	>50%	>2	0.0040	0.02	no	< 0.0040	< 0.0040	n/c	0
Thallium (Tl)-Total	7440-28-0	mg/kg	>50%	>2	0.0020	0.01	no	0.0038	0.0063	n/c	1.25
Thallium (Tl)-Total	7440-28-0	mg/kg wet	>50%	>2	0.00040	0.002	yes	0.00201	0.00277	32	n/c
Tin (Sn)-Total	7440-31-5	mg/kg	>50%	>2	0.10	0.5	no	< 0.10	< 0.10	n/c	0
Tin (Sn)-Total	7440-31-5	mg/kg wet	>50%	>2	0.020	0.1	no	< 0.020	< 0.020	n/c	0
Uranium (U)-Total	7440-61-1	mg/kg	>50%	>2	0.0020	0.01	yes	0.0047	0.0149	**104**	n/c
Uranium (U)-Total	7440-61-1	mg/kg wet	>50%	>2	0.00040	0.002	yes	0.00249	0.00654	**90**	n/c
Vanadium (V)-Total	7440-62-2	mg/kg wet	>50%	>2	0.020	0.1	no	< 0.020	0.034	n/c	0.7
Vanadium (V)-Total	7440-62-2	mg/kg	>50%	>2	0.10	0.5	no	< 0.10	< 0.10	n/c	0
Zinc (Zn)-Total	7440-66-6	mg/kg	>50%	>2	0.50	2.5	yes	11.4	15.7	32	n/c
Zinc (Zn)-Total	7440-66-6	mg/kg wet	>50%	>2	0.10	0.5	yes	5.98	6.89	14	n/c
Zirconium (Zr)-Total	7440-67-7	mg/kg	>50%	>2	0.20	1	no	< 0.20	< 0.20	n/c	0
Zirconium (Zr)-Total	7440-67-7	mg/kg wet	>50%	>2	0.040	0.2	no	< 0.040	< 0.040	n/c	0
% Moisture	MOIST	%	>50%	>2	0.50	2.5	yes	47.3	56.1	17	n/c

Sample Location Sample Name Sample Collection Date Sample Matrix	CAS #	Units	RPD Alert Limit	DF Alert Limit	RDL	5X RDL	Is either result >5X RDL	16-GIANT-AP-3 23/09/2016 TA	16-GIANT-AP-3-D 23/09/2016 TA	RPD (%)	DF (unitless)
Metals											
Aluminum (Al)-Total	7429-90-5	mg/kg	>50%	>2	2.0	10	yes	28.6	23.3	20	n/c
Aluminum (Al)-Total	7429-90-5	mg/kg wet	>50%	>2	0.40	2	yes	9.38	7.34	24	n/c
Antimony (Sb)-Total	7440-36-0	mg/kg	>50%	>2	0.010	0.05	yes	0.892	0.636	34	n/c
Antimony (Sb)-Total	7440-36-0	mg/kg wet	>50%	>2	0.0020	0.01	yes	0.292	0.200	37	n/c
Arsenic (As)-Total	7440-38-2	mg/kg	>50%	>2	0.020	0.1	yes	5.59	4.29	26	n/c
Arsenic (As)-Total	7440-38-2	mg/kg wet	>50%	>2	0.0040	0.02	yes	1.83	1.35	30	n/c
Barium (Ba)-Total	7440-39-3	mg/kg	>50%	>2	0.050	0.25	yes	3.52	3.18	10	n/c
Barium (Ba)-Total	7440-39-3	mg/kg wet	>50%	>2	0.010	0.05	yes	1.16	1.00	15	n/c
Beryllium (Be)-Total	7440-41-7	mg/kg wet	>50%	>2	0.0020	0.01	no	< 0.0020	< 0.0020	n/c	0
Beryllium (Be)-Total	7440-41-7	mg/kg	>50%	>2	0.010	0.05	no	< 0.010	< 0.010	n/c	0
Bismuth (Bi)-Total	7440-69-9	mg/kg	>50%	>2	0.010	0.05	no	< 0.010	< 0.010	n/c	0
Bismuth (Bi)-Total	7440-69-9	mg/kg wet	>50%	>2	0.0020	0.01	no	< 0.0020	< 0.0020	n/c	0
Boron (B)-Total	7440-42-8	mg/kg wet	>50%	>2	0.20	1	yes	3.98	2.46	47	n/c
Boron (B)-Total	7440-42-8	mg/kg	>50%	>2	1.0	5	yes	12.2	7.8	44	n/c
Cadmium (Cd)-Total	7440-43-9	mg/kg	>50%	>2	0.0050	0.025	no	0.0092	< 0.0050	n/c	0.84
Cadmium (Cd)-Total	7440-43-9	mg/kg wet	>50%	>2	0.0010	0.005	no	0.0030	0.0011	n/c	1.9
Calcium (Ca)-Total	7440-70-2	mg/kg wet	>50%	>2	4.0	20	yes	2060	1750	16	n/c
Calcium (Ca)-Total	7440-70-2	mg/kg	>50%	>2	20	100	yes	6280	5570	12	n/c
Cesium (Cs)-Total	7440-46-2	mg/kg	>50%	>2	0.0050	0.025	no	0.0107	0.0096	n/c	0.22
Cesium (Cs)-Total	7440-46-2	mg/kg wet	>50%	>2	0.0010	0.005	no	0.0035	0.0030	n/c	0.5
Chromium (Cr)-Total	7440-47-3	mg/kg	>50%	>2	0.050	0.25	no	0.116	0.095	n/c	0.42
Chromium (Cr)-Total	7440-47-3	mg/kg wet	>50%	>2	0.010	0.05	no	0.038	0.030	n/c	0.8
Cobalt (Co)-Total	7440-48-4	mg/kg	>50%	>2	0.020	0.1	yes	0.099	0.107	8	n/c
Cobalt (Co)-Total	7440-48-4	mg/kg wet	>50%	>2	0.0040	0.02	yes	0.0324	0.0338	4	n/c
Copper (Cu)-Total	7440-50-8	mg/kg	>50%	>2	0.10	0.5	yes	2.92	2.94	1	n/c
Copper (Cu)-Total	7440-50-8	mg/kg wet	>50%	>2	0.020	0.1	yes	0.955	0.926	3	n/c
Iron (Fe)-Total	7439-89-6	mg/kg wet	>50%	>2	0.60	3	yes	30.0	24.4	21	n/c
Iron (Fe)-Total	7439-89-6	mg/kg	>50%	>2	3.0	15	yes	91.6	77.6	17	n/c
Lead (Pb)-Total	7439-92-1	mg/kg wet	>50%	>2	0.0040	0.02	yes	0.0227	0.0187	19	n/c
Lead (Pb)-Total	7439-92-1	mg/kg	>50%	>2	0.020	0.1	no	0.069	0.059	n/c	0.5
Lithium (Li)-Total	7439-93-2	mg/kg wet	>50%	>2	0.10	0.5	no	0.22	0.16	n/c	0.6
Lithium (Li)-Total	7439-93-2	mg/kg	>50%	>2	0.50	2.5	no	0.69	0.50	n/c	0.38
Magnesium (Mg)-Total	7439-95-4	mg/kg wet	>50%	>2	0.40	2	yes	868	745	15	n/c
Magnesium (Mg)-Total	7439-95-4	mg/kg	>50%	>2	2.0	10	yes	2650	2370	11	n/c
Manganese (Mn)-Total	7439-96-5	mg/kg wet	>50%	>2	0.010	0.05	yes	51.9	38.7	29	n/c
Manganese (Mn)-Total	7439-96-5	mg/kg	>50%	>2	0.050	0.25	yes	158	123	25	n/c
Mercury (Hg)-Total	7439-97-6	mg/kg	>50%	>2	0.0050	0.025	no	< 0.0050	< 0.0050	n/c	0
Mercury (Hg)-Total	7439-97-6	mg/kg wet	>50%	>2	0.0010	0.005	no	0.0015	0.0013	n/c	0.2
Molybdenum (Mo)-Total	7439-98-7	mg/kg	>50%	>2	0.020	0.1	yes	0.705	0.565	22	n/c
Molybdenum (Mo)-Total	7439-98-7	mg/kg wet	>50%	>2	0.0040	0.02	yes	0.231	0.178	26	n/c
Nickel (Ni)-Total	7440-02-0	mg/kg wet	>50%	>2	0.040	0.2	yes	0.207	0.232	11	n/c
Nickel (Ni)-Total	7440-02-0	mg/kg	>50%	>2	0.20	1	no	0.63	0.74	n/c	0.55
Phosphorus (P)-Total	7723-14-0	mg/kg wet	>50%	>2	2.0	10	yes	455	456	0	n/c
Phosphorus (P)-Total	7723-14-0	mg/kg	>50%	>2	10	50	yes	1390	1450	4	n/c
Potassium (K)-Total	7440-09-7	mg/kg	>50%	>2	20	100	yes	12900	15600	19	n/c
Potassium (K)-Total	7440-09-7	mg/kg wet	>50%	>2	4.0	20	yes	4240	4930	15	n/c
Rubidium (Rb)-Total	7440-17-7	mg/kg wet	>50%	>2	0.010	0.05	yes	2.14	2.28	6	n/c
Rubidium (Rb)-Total	7440-17-7	mg/kg	>50%	>2	0.050	0.25	yes	6.54	7.24	10	n/c
Selenium (Se)-Total	7782-49-2	mg/kg	>50%	>2	0.050	0.25	no	0.078	0.067	n/c	0.22
Selenium (Se)-Total	7782-49-2	mg/kg wet	>50%	>2	0.010	0.05	no	0.025	0.021	n/c	0.4
Silver (Ag)-Total	7440-22-4	mg/kg	>50%	>2	0.0050	0.025	no	< 0.0050	< 0.0050	n/c	0
Silver (Ag)-Total	7440-22-4	mg/kg wet	>50%	>2	0.0010	0.005	no	< 0.0010	< 0.0010	n/c	0
Sodium (Na)-Total	7440-23-5	mg/kg wet	>50%	>2	4.0	20	yes	142	123	14	n/c
Sodium (Na)-Total	7440-23-5	mg/kg	>50%	>2	20	100	yes	433	390	10	n/c
Strontium (Sr)-Total	7440-24-6	mg/kg	>50%	>2	0.050	0.25	yes	51.3	47.4	8	n/c
Strontium (Sr)-Total	7440-24-6	mg/kg wet	>50%	>2	0.010	0.05	yes	16.8	14.9	12	n/c
Tellurium (Te)-Total	13494-80-9	mg/kg	>50%	>2	0.020	0.1	no	0.020	< 0.020	n/c	0
Tellurium (Te)-Total	13494-80-9	mg/kg wet	>50%	>2	0.0040	0.02	no	0.0066	< 0.0040	n/c	0.65
Thallium (Tl)-Total	7440-28-0	mg/kg	>50%	>2	0.0020	0.01	no	< 0.0020	< 0.0020	n/c	0
Thallium (Tl)-Total	7440-28-0	mg/kg wet	>50%	>2	0.00040	0.002	no	< 0.00040	< 0.00040	n/c	0
Tin (Sn)-Total	7440-31-5	mg/kg wet	>50%	>2	0.020	0.1	no	0.030	< 0.020	n/c	0.5
Tin (Sn)-Total	7440-31-5	mg/kg	>50%	>2	0.10	0.5	no	< 0.10	< 0.10	n/c	0
Uranium (U)-Total	7440-61-1	mg/kg	>50%	>2	0.0020	0.01	no	0.0031	0.0025	n/c	0.3
Uranium (U)-Total	7440-61-1	mg/kg wet	>50%	>2	0.00040	0.002	no	0.00101	0.00078	n/c	0.575
Vanadium (V)-Total	7440-62-2	mg/kg	>50%	>2	0.10	0.5	no	0.12	< 0.10	n/c	0.2
Vanadium (V)-Total	7440-62-2	mg/kg wet	>50%	>2	0.020	0.1	no	0.039	0.031	n/c	0.4
Zinc (Zn)-Total	7440-66-6	mg/kg wet	>50%	>2	0.10	0.5	yes	7.41	6.77	9	n/c
Zinc (Zn)-Total	7440-66-6	mg/kg	>50%	>2	0.50	2.5	yes	22.6	21.5	5	n/c
Zirconium (Zr)-Total	7440-67-7	mg/kg	>50%	>2	0.20	1	no	< 0.20	< 0.20	n/c	0
Zirconium (Zr)-Total	7440-67-7	mg/kg wet	>50%	>2	0.040	0.2	no	< 0.040	< 0.040	n/c	0
% Moisture	MOIST	%	>50%	>2	0.50	2.5	yes	67.2	68.5	2	n/c

APPENDIX C

DEVELOPMENT OF BACKGROUND CONCENTRATIONS

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APPENDIX C: DEVELOPMENT OF BACKGROUND CONCENTRATIONS

C.1 Introduction

This overview provides the development of background concentrations in soil, surface water, and sediment for use in the Human Health Risk Assessment (HHRA) and Ecological Risk Assessment (ERA).

C.1.1 Background

Many jurisdictions use an upper confidence level (95^{th} or 98^{th} percentile) to represent background as these percentiles encompass a large portion of variation in background whilst excluding extremes. These upper confidence levels represent the highest concentration that is likely to represent background. Regulatory agencies such as the British Columbia Ministry of Environment (BC MOE) and Ontario Ministry of the Environment and Climate Change (MOECC) use this definition of background for setting cleanup standards/criteria.

The Canadian Council of Ministers of the Environment (CCME) in developing more recent soil guidelines for nickel (2015), beryllium (2015), and barium (2013) have used an arithmetic average for defining background.

The Federal Contaminated Sites Action Plan (FCSAP) background document (FCSAP 2015) refers to guidance from the United States Environmental Protection Agency (U.S. EPA 2002) for developing an appropriate background concentration. This guidance uses an average concentration for background when comparing to exposure areas to determine the difference between background and exposure areas. In the Exposure Section of the FCSAP document (2015), they indicate that if there is a suitable sample size (N>10) then conditions within the background area should be based on the 95% upper confidence level of the mean (95% UCLM).

The Giant Mine risk assessment follows the FCSAP (2015) guidance and use an average statistic to describe background in the screening for selection of COPC (see Appendix D) and the 95% UCLM to describe background within the risk assessment calculations.

C.1.2 Review of Selected COPC

During the COPC selection process (Appendix D), measured concentrations were compared to average background concentrations to determine which constituents are elevated above natural levels. The constituents that were above criteria and identified as constituents of potential concern (COPC) in the stage of the HHRA (discussed in Appendix F) and ERA (discussed in Appendix K) are as follows:

Table C.1 Soil, surface water, and sediment COPCs identified in the ERA

COPC	Soil	Surface Water	Sediment
Antimony	✓	✓[ab]	✓[d]
Arsenic	✓	✓[ab]	✓[ab]
Chloride		✓[c]	
Chromium			✓[ab]
Copper	✓	X	✓[ab]
Lead			✓[b]
Manganese	✓	X	
Mercury			✓[b]
Sulphate		✓[c]	
Zinc	✓	x	✓[b]

Note: x – although constituent not identified as a COPC in this media, background concentrations were calculated to determine total intakes based on the receptor diet/ habitat.
a – This is a COPC identified in Yellowknife Bay.
b – This is a COPC identified in Baker Creek.
c – This is a COPC identified in Baker Creek and Yellowknife Bay in the future.
d – Carried through as identified as a COPC in surface water.

Table C.2 Soil and surface water COPCs identified in the HHRA

COPC	Soil	Surface Water
Antimony	✓	x
Arsenic	✓	✓[a]
Cadmium	✓	NA
Lead	✓	NA
Manganese	✓	x
Vanadium	✓	NA

Note: No human health guidelines available for sediment, so the COPC identified in soil were selected as sediment COPCs.
a – arsenic was not identified as a COPC in surface water but was evaluated due to community concerns.
x – although constituent is not a COPC in this media, background concentrations were calculated to determine total intakes based on the receptor diet.
NA – background surface water concentrations not needed for these COPC as a qualitative assessment was carried. Please refer to Appendix F for details.

C.1.3 Previous Discussions of Background for Soils in Yellowknife Area

Risklogic (2002) used data available from the GSC, as well as other data around Yellowknife to develop an average natural background concentration of arsenic of 150 mg/kg with an upper limit of normal (90th percentile of the distribution) of 300 mg/kg. The average arsenic concentration was based on data from Kerr (2001) which included samples from the Giant Mine as well as in the City of Yellowknife.

Ollson (2000) in his Master's thesis used principal component analysis and determined that the background range of arsenic concentrations in Yellowknife soils ranged from 4 to 70 mg/kg with a median of 32 mg/kg. Ollson (2003) in his PhD thesis again used principal component analysis and determined that the natural background concentration for arsenic in Yellowknife ranged from 3 to 150 mg/kg although it could be as high as 300 mg/kg. He also indicated that 99.5 % of the samples had concentrations less than 150 mg/kg. The median concentration for background was 32 mg/kg with an average concentration of 58 mg/kg. Table 2-1 in the thesis indicated that four samples collected from the Grace Lake area had concentrations ranging from 54 to 110 mg/kg with an average arsenic concentration of 81 mg/kg and a standard deviation of 30 mg/kg.

Bromstad (2011) provides the following discussion "Kerr (2006) has determined regional background values for the Yellowknife area that are significantly lower than 150 ppm (3 - 79 ppm As depending on the underlying bedrock type)".

Kerr (2006) provides a table (Table 20-2) summarizing the regional background concentrations of antimony and arsenic in till samples. He indicated that regional till samples over volcanics had background antimony concentrations in the range of 0.1 to 0.5 mg/kg and arsenic concentrations in the range of 10 to 30 mg/kg. For till samples over metasediments and over granite, regional background concentrations range from 0.1 to 0.2 mg/kg and arsenic concentrations range from 5 to 10 mg/kg. However, it should be noted that *in situ* weathered volcanics and meta sediments can have antimony concentrations as high as 11 mg/kg and arsenic concentrations as high as 1500 mg/kg and Kerr indicates that these samples are "anomalies with concentrations significantly above estimated background values for till".

The data from Kerr (2006) as well as the information provided in the two theses by Ollson (2000, 2003) support the assertion that the average background arsenic concentration in soil for the Yellowknife area is less than 150 mg/kg.

C.2 Background Concentrations in Soil

The FCSAP guidance (2015) indicates that background is representative of the true range of concentrations associated with the geographic area of the site. Thus, the background soil samples selected for use in the risk assessment were for areas in the local area around the Giant Mine but outside of the area of influence.

The Geological Survey of Canada (GSC) has compiled till soil data (Kerr 1999, 2000, 2001) associated with the geographical area of the Giant Mine and this dataset was used to determine the background soil concentrations for use in the risk assessment. It should be noted that this dataset has also been used to develop the background concentrations in support of the GNWT clean-up criteria for arsenic and is considered to be appropriate for use to establish background for the risk assessment. There are samples collected from various programs in and around the Yellowknife area (City of Yellowknife, Ndilo, Dettah etc.) that fall within the range of the concentrations found in the GSC dataset. These data could be used to augment the GSC database; however, as these are areas that are considered to be exposure locations in the HHRA, a decision was made not to consider these data for the determination of background. Appendix O provides concentrations in all the samples that were considered as background.

The GSC dataset has samples present in the Yellowknife Greenstone Belt (YGB), which is considered to reflect a mineralogy that is similar to the Giant Mine, as well as locations around Yellowknife and the Giant Mine Site. Data obtained from the GSC database were analysed using instrumental neutron activation analysis (INAA) technique. However, this analytical technique was not used for several COPC (i.e., lead, manganese, and vanadium); consequently, inductively coupled plasma atomic emission spectrometry (ICP-AES) analyses from the GSC database were also considered to establish background conditions. The INAA analysis technique considers larger sieved fractions of 0.063 mm or less while the ICP-EAS soil samples were sieved into particle fractions of 0.002 mm or less.

A comparison of the concentrations of the COPC within the regional and YGB only datasets was conducted to determine whether the data between these two areas are statistically different. This comparison was completed for antimony and arsenic as only these two COPC have analytical data in both the regional and YGB area.

C.2.1 Development of Background Soil Concentrations

The development of the statistics for background was as follows:

1. Soil samples from the GSC collected at depth (10 cm to 60 cm) were included in the datasets for establishing background concentrations representative of current conditions. Samples collected as these depths would be unimpacted by any possible aerial deposition from the Giant Mine. This dataset was infilled with some more recent data from Stantec (2014a), Stevens (2015), and Golder (2016a). Although these samples were not explicitly collected at depth (i.e., from the top 20 cm), the samples are also not strictly surficial soil samples and could therefore include surficial soil mixed with undisturbed soil. Furthermore, the inclusion of these samples is conservative as the mean arsenic concentration decreased from 69 mg/kg to 66 mg/kg.

2. Samples associated with the Giant Mine site and the City of Yellowknife were excluded from the dataset as they were considered to be affected by mining activities.

3. For developing the background concentration (95% UCLM), the MDL was used in the dataset and input into ProUCL. ProUCL is a statistical program that provides 95% UCLM recommendations (based on data distribution, dataset size, skewness, and percentage of non-detect observations) on how to obtain an accurate 95% UCLM. ProUCL may suggest more than one 95% UCLM estimate, in these cases, the highest appropriate 95% UCLM was selected. It is noted that the CCME (2016) suggest that the BCA bootstrap approach from ProUCL can be used for the majority of datasets, the selection of the highest 95% UCLM, that may be greater than the BCA bootstrap recommendation, is therefore a conservative approach.

C.2.1.1 Regional Background Soil Concentrations

The sample locations used to develop the regional background soil concentrations are shown in Figure C.1. The regional background is a combination of the Stevens (2015), Stantec (2014a) and Golder data (2016a) and the entire GSC database with the exception of samples from the Giant Mine and the City of Yellowknife (i.e., all locations shown in Figure C.1 with the exception of those shown in purple). Table C.3 provides a summary of the regional background statistics for the identified human health COPC.

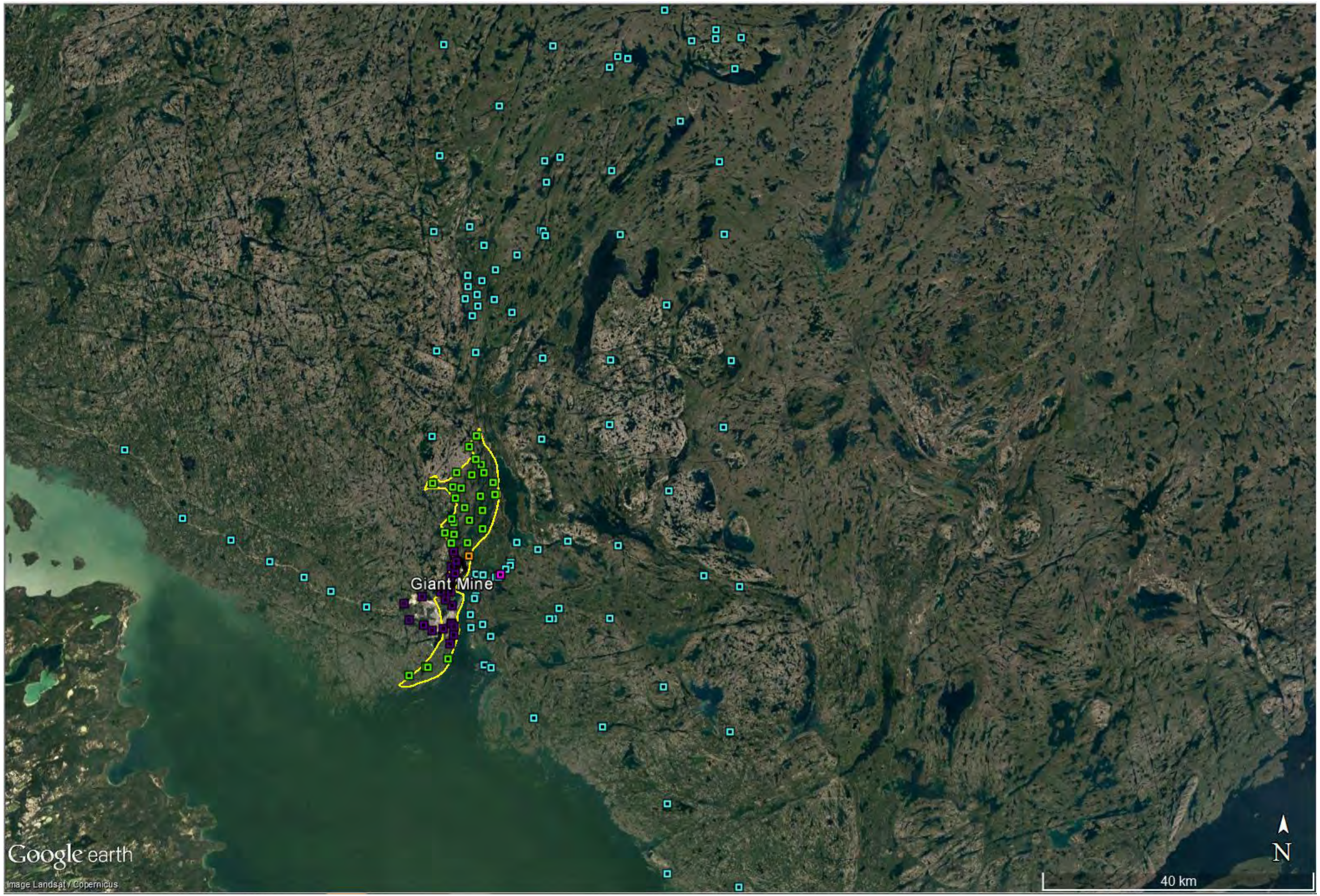
It should be noted that the GSC database analysed the soils using two different techniques:

- For antimony, arsenic, and zinc, data were available for soils analysed using the INNA technique which captures particles <0.063 mm.
- For cadmium, copper, lead, manganese, and vanadium, data were available for soils based on the ICP-EAS technique which captures smaller particles of soil <0.002 mm.

The other samples included in the database of regional background are as follows:

- Data from nine (9) samples from Stevens (2015) were included (arsenic only). It is stated that samples were analyzed by Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES) of an acid digested matrix.
- Data from one (1) sample from Golder (2016a) was included (arsenic only). It is stated that samples were analyzed by Inductively Coupled Plasma Mass Spectrometry (ICP-MS).
- Data from one (1) sample from Stantec (2014a) was included (arsenic only). It is stated that samples were analyzed by Inductively Coupled Plasma Mass Spectrometry (ICP-MS).

Figure C.1 Background soil sampling locations



- GSC data collected from outside of the Yellowknife Greenstone Belt
- GSC data collected from the city of Yellowknife and the Giant Mine site (not included in background data set)
- GSC data collected from the Yellowknife Greenstone Belt
- Golder (2016a) and Stantec (2014a) sampling location
- Approximate vicinity of Stevens (2015) sampling (exact locations not known)
- Yellowknife Greenstone Belt

Table C.3 Summary statistics for regional background soils

COPC	N	N < MDL	Soil Concentration (mg/kg) [c]						
			Min	Max	Mean	SD	Geo Mean	95th Percentile	95% UCLM
Antimony[a]	120	25	0.05	11	0.65	1.3	0.3	3.0	1.2
Arsenic[a]	131	0	2.4	1500	66	199	22	181	142
Cadmium[b]	54	54	2.5	2.5	NA	NA	NA	NA	NA
Copper[b]	54	0	5	128	27	20	22	59	31
Lead[b]	54	0	15	31	20	3.2	20	26	21
Manganese[b]	54	0	165	1505	316	221	285	452	369
Vanadium[b]	54	0	25	193	68	31	63	118	75
Zinc[a]	119	66	25	299	78	61	62	224	95

Note: COPC = constituent of potential concern; N = sample size; N<MDL = number of samples less than the method detection limit; NA = not applicable – this statistic could not be calculated due to insufficient data; SD = standard deviation of the mean; Geomean = geometric mean; 95% UCLM = 95th upper confidence level of the mean.

a – Soil samples were analysed primarily using the INAA technique (<0.063 mm fraction).

b – Soil samples were analysed using the ICP- EAS technique (<0.002 mm fraction).

c – Summary statistics for Min, Max, Mean, SD, Geomean, and 95th percentile were calculated using one half the method detection limit.

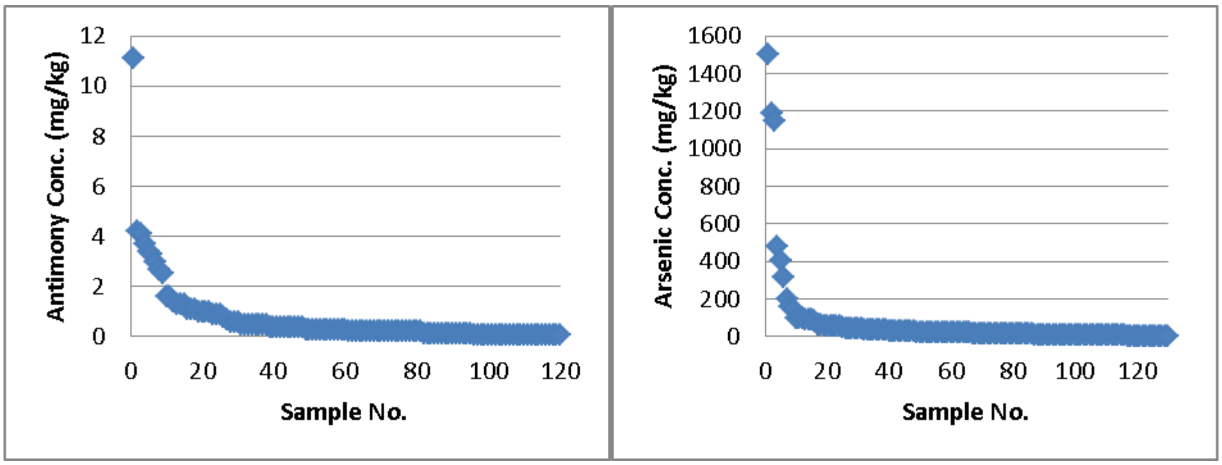
As seen from Table C.3, all samples of cadmium were reported at levels below the MDL, therefore a background concentration could not be confidently calculated for this COPC.

There are elevated concentrations of manganese in the ICP-EAS analysed soil data. The ICP-EAS soil samples were sieved into particle fractions of 0.002 mm or less. According to the World Health Organization (WHO 2004) an estimated 80% of the manganese in suspended particulate matter is associated with particles of 0.005 mm or less. Thus, the smaller particles of sieved soils in the ICP-EAS dataset could explain the elevated concentrations of manganese in background samples.

As seen from Table C.3, there is a significant difference in the (arithmetic) mean and geometric mean in the antimony and arsenic datasets suggesting that the data are skewed and there is a potential for outliers. The geometric mean or median can be taken as the best representation of the central tendency of a skewed distribution. Unlike an arithmetic mean, the geometric mean tends to lessen the effect of very high or low values, which might bias the arithmetic mean. Consideration was given to using an upper confidence limit of the geometric mean rather than the 95% UCLM as a measure of background but the use of this statistic has not been discussed in any guidance documents. Therefore further investigation was given to the underlying data as discussed below.

The antimony and arsenic datasets were plotted to visually inspect the sample distribution (Figure C.2). Additionally, a skew test was conducted on these datasets resulting in values of 5.3 mg/kg and 5.7 mg/kg for antimony and arsenic, respectively, indicating that the datasets are positively skewed and further investigations were warranted.

Figure C.2 Concentrations of antimony (left) and arsenic (right) in regional background soils



It is apparent from Figure C.2 that the samples at high concentrations seem to be a different population from the bulk of the dataset. To investigate whether these samples represented outliers in the dataset, the data was log transformed and z-scores were calculated. A z-score is a standard score that indicates how many standard deviations a sample is from the mean. Any observation with a z-score less than -2.5 or greater than +2.5 is considered an outlier (PennState 2016). For arsenic, the z-scores for the three maximums (i.e., 1500, 1190, and 1150 mg/kg) all were greater than 3. For antimony, the maximum (i.e., 11.1 mg/kg) also had a z-score greater than 3. It should be noted that the maximum antimony sample is the same as the sample where arsenic was measured at a concentration of 1190 mg/kg. An additional test, the interquartile range (IQR), confirmed that the maximums were outliers. Therefore, these outliers may not be representative of typical background conditions and were omitted from the datasets.

Table C.4 provides the updated summary statistics for background regional soils for antimony and arsenic with the outliers omitted. As seen from Table C.4, the range of background concentrations for antimony is 0.05 mg/kg to 4.2 mg/kg and the range of background concentrations for arsenic are 2.4 to 482 mg/kg. The mean concentrations of antimony and arsenic are 0.56 mg/kg and 37 mg/kg respectively and the 95% UCLM concentrations are 0.91 mg/kg and 41 mg/kg, respectively. This demonstrates that the three samples that are from a different population representing weathered rock had a strong influence on the mean and 95% UCLM. The mean background concentrations in Table C.4 are similar to the range of concentrations provided in Kerr (2006) as representative of regional till background.

Table C.4 Summary statistics for antimony and arsenic in background regional soils – outliers removed

COPC	N	N < MDL	Soil Concentration (mg/kg) [a]						
			Min	Max	Mean	SD	Geo Mean	95^{th} Percentile	95% UCLM
Antimony	119	25	0.05	4.2	0.56	0.9	0.26	2.7	0.91
Arsenic	128	0	2.4	482	37	64	20	100	41

Note: COPC = constituent of potential concern; N = sample size; N<MDL = number of samples less than the method detection limit; NA = not applicable – this statistic could not be calculated due to insufficient data; SD = standard deviation of the mean; Geomean = geometric mean; 95% UCLM = 95^{th} upper confidence level of the mean.
a – Summary statistics for Min, Max, Mean, SD, Geomean, and 95^{th} percentile were calculated using one half the method detection limit.

C.2.1.2 Yellowknife Greenstone Belt (YGB) Soil Concentrations

There are 28 samples for antimony, 37 samples for arsenic, and 27 for zinc from the YGB. The dataset includes GSC data and that from Stevens (2015). No data exist for the other COPC. Figure C.3 shows the sampling locations while the summary statistics are provided in Table C.5.

Figure C.3 Background soil sampling locations within the Yellowknife Greenstone Belt

Table C.5 Summary statistics for antimony and arsenic in YGB soils (mg/kg)

COPC	N	N < MDL	Soil Concentration (mg/kg) [a]						
			Min	Max	Mean	SD	Geo Mean	95th Percentile	95% UCLM
Antimony	28	1	0.05	11	1.9	2.2	1.1	4.2	2.9
Arsenic	37	0	5	1500	134	310	42	624	185
Zinc	27	13	25	299	99	89	67	284	137

Note: COPC = constituent of potential concern; N = sample size; N<MDL = number of samples less than the method detection limit; NA = not applicable – this statistic could not be calculated due to insufficient data; SD = standard deviation of the mean; Geomean = geometric mean; 95% UCLM = 95th upper confidence level of the mean.

a – Summary statistics for Min, Max, Mean, SD, Geomean, and 95th percentile were calculated using one half the method detection limit.

Similar to regional background soils, there is a significant difference in the (arithmetic) mean and geometric mean, particularly in the arsenic dataset, suggesting that the data are skewed and there is potential for outliers. A skew test was conducted on the datasets resulting in values of 3.0 and 3.7 for antimony and arsenic, respectively, indicating that the datasets are positively skewed and further investigations are warranted. Additionally, the datasets were plotted to visually inspect the distribution (Figure C.4).

To investigate whether there were outliers in the YGB datasets z-scores were calculated. For antimony, the maximum (i.e., 11.1 mg/kg) had a z-score greater than 3. For arsenic, the z-scores for the two maximums (i.e., 1500, and 1190 mg/kg) were greater than 3. An additional two statistical tests, the IQR and the three times the standard deviation plus the mean, confirmed that the maximums were outliers. Therefore, these outliers may not be representative of typical background conditions and were removed from the dataset.

Table C.6 provides the summary statistics in background YGB soils for antimony and arsenic with the outliers omitted. As seen from this table, the antimony and arsenic background concentrations are higher in the YGB.

Figure C.4 Concentrations of antimony (left) and arsenic (right) in background Yellowknife Greenstone Belt soil

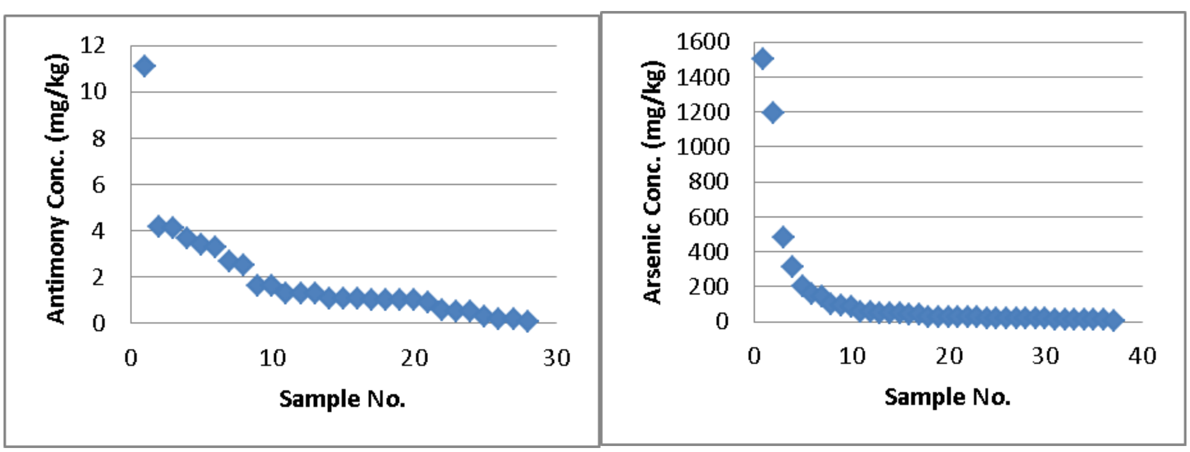


Table C.6 Summary statistics for Yellowknife Greenstone Belt background soils – outliers removed (mg/kg)

COPC	N	N < MDL	Soil Concentration (mg/kg) [a]						
			Min	Max	Mean	SD	Geo Mean	95th Percentile	95% UCLM
Antimony	27	1	0.05	4.2	1.5	1.2	1.0	4.0	2.2
Arsenic	35	0	5	482	65	97	35	236	94

Note: COPC = constituent of potential concern; N = sample size; N<MDL = number of samples less than the method detection limit; NA = not applicable – this statistic could not be calculated due to insufficient data; SD = standard deviation of the mean; Geomean = geometric mean; 95% UCLM = 95th upper confidence level of the mean.

a – Summary statistics for Min, Max, Mean, SD, Geomean, and 95th percentile were calculated using one half the method detection limit.

Table C.7 provides a summary of the mean and 95% UCLM for antimony and arsenic for the different datasets that were described above. As seen from the table, the outlier concentrations do not significantly affect the mean or the 95% UCLM for antimony. However, for arsenic, the outliers (3 samples) have a strong influence on the mean and 95% UCLM. From a risk assessment standpoint, it was determined that the dataset that had the outliers removed provides a better representation of the background for arsenic and antimony.

Table C.7 Summary of the mean and 95%UCLM for arsenic and antimony at regional and YGB locations (mg/kg)

COPC	Statistic	Soil Concentration (mg/kg)			
		Regional		Yellowknife Greenstone Belt	
		Entire Dataset	Without Outliers	Entire Dataset	Without Outliers
Antimony	Mean	0.65	0.56	1.9	1.5
	95%UCLM	1.2	0.91	2.9	2.2
Arsenic	Mean	66	37	134	65
	95%UCLM	142	41	185	94

C.2.2 Summary

Table C.8 provides a summary for the background concentrations for soil used in the risk assessment. The 95% UCLM was used to describe background as indicated in the FCSAP (2015) guidance document.

All the data for cadmium were non-detect and thus a background soil concentration could not be developed. This does represent a data gap; however, the fact that cadmium is a non-carcinogen, the total measured concentrations, which include background, are what are considered in the risk assessment. In addition, additional screening for the various exposure areas indicates that measured concentrations of cadmium are generally low and below criteria with the exception of the City of Yellowknife.

For manganese, the minimum concentration of 165 mg/kg was used to describe background, as the range of background concentrations (especially the minimum concentration) seem high in comparison to the measured data at the exposure locations. This represents a conservative approach.

As seen from Table C.8, only regional samples are available for lead, manganese, and vanadium; therefore the 95% UCLM of the regional background data were used in the risk calculations. For antimony and arsenic, background derived from the Greenstone Belt was used for exposure locations at the Giant Mine, Ndilo, Latham Island, Ingraham Trail, Former Townsite, and the City of Yellowknife as these locations are all within the Greenstone Belt. For Dettah, which is outside the Greenstone Belt, the regional background concentrations for antimony and arsenic were used.

Table C.8 Summary of background concentrations for use in the risk assessment

COPC	Soil Concentration (mg/kg)		
	CCME Soil Quality Guideline	Regional Background 95% UCLM	Yellowknife Greenstone Belt Background 95% UCLM
Antimony	20	0.91	2.2
Arsenic	12	**41**	**94**
Cadmium	1.4	ND	ND
Copper	63	31	ND
Lead	70	21	ND
Manganese	-	165*	ND
Vanadium	130	75	ND
Zinc	200	94	137

Note: ND – No data available for this COPC. No soil guideline is available for this COPC
* The minimum concentration is being used for background as the manganese concentrations are higher than at exposure locations.
Values highlighted in grey exceed the CCME (Agricultural land use) guideline.

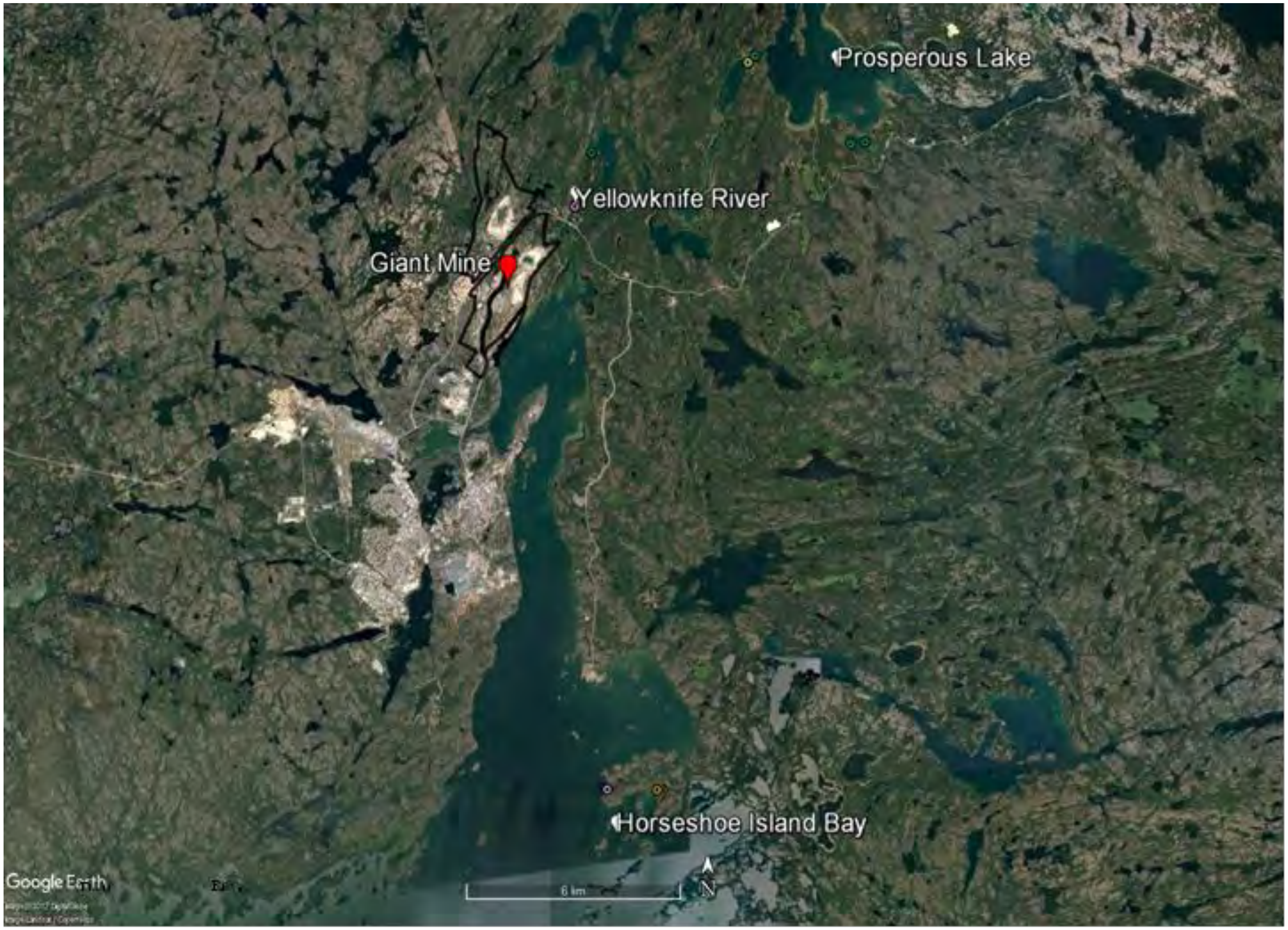
C.3 Surface Water Background Concentrations

The background locations that were considered for surface water are presented in Figure C.5. There have been four surface water studies in recent years where sampling was carried out at background locations (DCNJV 2012; Golder 2012, 2013; Stantec 2014b).

The background locations were based on the ones generally used for the aquatic studies related to the Giant Mine Project and have been identified as Yellowknife River and Horseshoe Island located in Yellowknife Bay. However, there have been a few studies that have used Prosperous Lake as a background location. It should be noted that Prosperous Lake is located approximately 12 km northeast of Giant Mine and away from the direction of prevailing winds. Given that Prosperous Lake has not been used a background location in many of the aquatic reports, a comparison of surface water data from Prosperous Lake to surface water data from other background locations was conducted to determine if it should be included as a background location. Additionally, a statistical analysis (Student's t-test, alpha = 0.05) was conducted to determine if there was a significant difference between COPC levels in different background locations.

The surface water ecological COPCs include antimony, arsenic, chloride, and sulphate. Arsenic is also considered for human health. The COPCs identified in ecological soil screening were also considered in the development of background for surface water (antimony, arsenic, copper, manganese, and zinc).

Figure C.5 Background surface water sampling locations



C.3.1 Development of Background Surface Water Concentrations

Similar to the soils, the 95% UCLM was used to describe background in surface waters following FCSAP guidance. Surface water samples from recent years (e.g., 2011 to present) were considered representative of current background conditions. Since the JoJo Tailings release occurred in May 2011, only data after this time were used in the assessment. Appendix O provides concentrations in all the samples that were considered as background.

The approach for developing surface water background for COPC was as follows:

- For estimating the 95%UCLM: The MDL was used (and identified as such) in the dataset used in ProUCL. ProUCL is a statistical program that provides 95% UCLM recommendations (based on data distribution, dataset size, skewness, and percentage of non-detect observations) on how to obtain an accurate 95% UCLM. ProUCL may suggest more than one 95% UCLM estimate, in these cases, the highest appropriate 95% UCLM was selected.

To determine if the concentrations of COPC were similar from Horseshoe Island in South Yellowknife Bay and Yellowknife River, the following approach was used for statistical comparisons of the datasets:

1. An F-test was conducted on the Horseshoe Island and Yellowknife River datasets to determine if the variances were equal or unequal. If the F-Statistic is greater than the F critical value (one-tail), then the variances are considered unequal. If the F-test statistic is less than the F critical value (one-tail), then the variances are considered equal.

2. Based on the conclusion of the F-test, a Student's t-test was conducted assuming either equal or unequal variances. If the t-test statistic is greater than the t-distribution critical value (two-tail), the null hypothesis is rejected and the datasets are considered significantly different. If the t-test statistic is less than the t-distribution critical value (two-tail), the null hypothesis cannot be rejected and the datasets are not considered significantly different.

C.3.1.1 Selection of Appropriate Dataset for Background Surface Water Concentrations

Summary statistics were calculated to determine if Prosperous Lake differed from Horseshoe Island and Yellowknife River and to evaluate its suitability for inclusion in surface water background. Due to a small sample size for all COPC, a full statistical analysis could not be conducted reliably; therefore a simple comparison of summary statistics was used. A summary is provided in Table C.9.

Table C.9 Summary statistics for COPC concentrations in surface water from background locations

COPC	Location	N	N<MDL	Water Concentration (mg/L) [a]				
				Min	Max	Mean	SD	Geomean
Antimony	Prosperous Lake	3	3	$2.0x10^{-4}$	$2.0x10^{-4}$	NA	NA	NA
	Horseshoe Island	8	7	$1.5x10^{-4}$	$2.0x10^{-4}$	$1.9x10^{-4}$	$1.8x10^{-5}$	$1.9x10^{-4}$
	Yellowknife River	8	8	$2.5x10^{-5}$	$2.0x10^{-4}$	$1.2x10^{-4}$	$8.7x10^{-5}$	$8.4x10^{-5}$
Arsenic	Prosperous Lake	3	1	$2.0x10^{-4}$	$4.6x10^{-4}$	$3.7x10^{-4}$	$1.5x10^{-4}$	$3.5x10^{-4}$
	Horseshoe Island	8	0	$3.7x10^{-4}$	$7.6x10^{-4}$	$5.0x10^{-4}$	$1.2x10^{-4}$	$4.8x10^{-4}$
	Yellowknife River	8	0	$3.3x10^{-4}$	0.0013	$4.9x10^{-4}$	$2.9x10^{-4}$	$4.5x10^{-4}$
Chloride	Prosperous Lake	3	0	1.9	2.2	2.1	0.12	2.1
	Horseshoe Island	8	0	2.3	6.4	5.5	1.4	5.2
	Yellowknife River	8	0	1.6	2.6	2.0	0.26	2.0
Copper	Prosperous Lake	3	2	0.005	0.0011	$7.0x10^{-4}$	$3.5x10^{-4}$	$6.5x10^{-4}$
	Horseshoe Island	8	2	0.005	0.0017	0.0011	$4.2x10^{-4}$	$1.0x10^{-3}$
	Yellowknife River	8	4	$5.0x10^{-4}$	$1.3x10^{-3}$	$7.4x10^{-4}$	$3.1x10^{-4}$	$6.9x10^{-4}$
Manganese	Prosperous Lake	3	1	0.001	0.0043	0.0029	0.0017	0.0025
	Horseshoe Island	8	8	0.001	0.0025	0.0016	7.8×10^{-4}	0.0014
	Yellowknife River	8	3	0.001	0.009	0.003	0.0025	0.0025
Sulphate	Prosperous Lake	3	0	3.1	3.2	3.1	0.067	3.1
	Horseshoe Island	8	0	4.3	21	17	5.4	16
	Yellowknife River	9	0	2.7	3.8	3.3	0.3	3.3
Zinc	Prosperous Lake	3	3	0.002	0.002	NA	NA	NA
	Horseshoe Island	8	6	0.002	0.011	0.0035	0.0032	0.0028
	Yellowknife River	8	8	0.0015	0.002	0.0018	$2.6x10^{-4}$	0.0018

Note: Note: COPC = constituent of potential concern; N = sample size; N<MDL = number of samples less than the method detection limit; NA = not applicable – this statistic could not be calculated due to insufficient data; SD = standard deviation of the mean; Geomean = geometric mean.

a – Summary statistics for Min, Max, Mean, SD, Geomean, and 95th percentile were calculated using one half the method detection limit.

As seen from Table C.9, COPC concentration ranges (i.e., minimum and maximum concentrations) in Prosperous Lake were similar to other background locations. The majority of surface water samples of antimony and cyanide were below the MDL in both Prosperous Lake and other background locations. This comparison demonstrates that Prosperous Lake can be included in the determination of background.

Statistical analyses were then conducted for Horseshoe Island and Yellowknife River datasets to determine if these datasets were similar (Table C.10). There were enough data to carry out the comparison for arsenic, chloride and copper. Inferences were made for the other COPC. Since arsenic was the primary COPC, the analysis was considered to be appropriate.

Table C.10 Statistical comparison of surface water COPC concentrations in Horseshoe Island and Yellowknife River

COPC	Comparison	F-test Statistic > F-distribution Critical Value (one-tail)	*t*-test Statistic > *t*-distribution Critical Value (two-tailed)	Conclusion
Arsenic	Horseshoe Island vs. Yellowknife River	Yes, the variances are not equal	No, cannot reject the null hypothesis	Arsenic levels in Horseshoe Island surface waters are not statistically different than Yellowknife River.
Chloride	Horseshoe Island vs. Yellowknife River	Yes, the variances are not equal	Yes, reject the null hypothesis	Chloride levels in Horseshoe Island surface waters are statistically different than Yellowknife River.
Copper	Horseshoe Island vs. Yellowknife River	No, the variances are equal	No, cannot reject the null hypothesis	Copper levels in Horseshoe Island surface waters are not statistically different than Yellowknife River.

Note: Antimony, manganese, sulphate, and zinc could not be included due to small sample sizes and/or datasets that did not have many detected samples.

The table indicates that concentrations of arsenic were statistically similar in Horseshoe Island and Yellowknife River. Concentrations of chloride were only slightly different in Horseshoe Island and Yellowknife River. It should be noted that the concentrations of chloride were higher at the Horseshoe Island location than the Yellowknife River location. Given the similarities between the three background locations, background concentrations were developed based on all locations combined (i.e., Prosperous Lake, Horseshoe Island, and Yellowknife River) (Table C.11). As seen from the table, there is only one measured sample for arsenic and thus a 95% UCLM value was not appropriate to calculate. It should be noted that all background concentrations were below available water quality guidelines.

Table C.11 Summary statistics for concentrations of COPCs in surface water from all background locations

COPC	Guideline	N	N < MDL	Water Concentration (mg/L) [d]						
				Min	Max	Mean	SD	Geomean	95th Percentile	95% UCLM
Antimony	-	19	18	2.5×10^{-5}	2.0×10^{-4}	1.6×10^{-4}	6.8×10^{-5}	1.4×10^{-4}	2.0×10^{-4}	NA
Arsenic	0.005[a]/ 0.01[b]	19	1	2.0×10^{-4}	0.0012	4.8×10^{-4}	2.1×10^{-4}	4.4×10^{-4}	8.0×10^{-4}	5.6×10^{-4}
Chloride	120[a]	19	0	1.6	6.4	3.5	1.9	3.01	6.2	5.4
Copper	0.002[a]	19	8	0.001	0.002	0.001	4.0×10^{-4}	8.1×10^{-4}	0.001	0.0011
Manganese	0.81[c]	19	12	0.001	0.0093	0.0024	0.0019	0.0020	0.0048	0.0035
Sulphate	218[c]	20	0	2.7	21	8.9	7.8	6.1	20	16
Zinc	0.03[a]	19	17	0.0015	0.011	0.0026	0.0022	0.0022	0.0061	0.0046

Note: COPC = constituent of potential concern; N = sample size; N<MDL = number of samples less than the method detection limit; NA = not applicable – this statistic could not be calculated due to insufficient data; SD = standard deviation of the mean; Geomean = geometric mean; 95% UCLM = 95th upper confidence level of the mean. No surface water guideline is available for this COPC.

a – CCME surface water quality guideline for the protection of freshwater aquatic life. Copper is based on a hardness of 47 mg/L (Yellowknife Bay).

b – Health Canada Drinking water guideline.

c – B.C. Aquatic guidelines based on hardness (47 mg/L for Yellowknife Bay).

d – Summary statistics for Min, Max, mean, SD, Geomean, and 95th percentile were calculated using one half the method detection limit.

C.3.1.2Summary

Table C.12 presents the summary of concentrations selected to represent background surface waters used in the ecological and human health risk assessment.

Table C.12 Summary of the selected concentrations for background surface water used in the ecological and human health risk assessment

COPC	N	Statistic	Background Concentration (mg/L)
Antimony	19	95th Percentile	2.0×10^{-4}
Arsenic	19	95% UCLM	5.6×10^{-4}
Chloride	19	95% UCLM	5.4
Copper	19	95% UCLM	0.0011
Manganese	19	95% UCLM	0.0035
Sulphate	20	95% UCLM	16
Zinc	19	95% UCLM	0.0046

Note: COPC = constituent of potential concern; N = sample size; 95% UCLM = 95th upper confidence level of the mean.

C.3.2 Establishing Baseline Surface Water Concentrations in Baker Creek

Due to the fact that there are inputs from the watershed upstream of the Giant Mine that influence concentrations in Baker Creek, baseline concentrations were developed to represent this condition.

The surface water quality station SNP 43-11 as well as surrounding stations in Upper Baker Creek (Reaches 7-11) were used for establishing baseline concentrations for ecological risk assessment in Baker Creek (Figure C.6). The reference site SNP 43-11 is located upstream of effluent discharge inputs from the Giant Mine and is historically used as reference station for downstream Baker Creek (Golder 2016b). There have been several surface water studies in recent years collected in reaches 7-11 (DCNJV 2014; Golder 2013, 2015a, 2015b, 2016c; Stantec 2014c). Appendix O provides concentrations for all the samples that were considered as baseline.

Antimony, arsenic, chloride and sulphate were all in exceedance of the applicable surface water guidelines in Baker Creek.

Table C.13 provides the summary statistics for COPC in surface water at baseline locations in Baker Creek.

Table C.13 Summary statistics for concentrations of COPCs in surface water from Baker Creek baseline locations

COPC	Guideline	N	N < MDL	Water Concentration (mg/L) [d]						
				Min	Max	Mean	SD	Geo Mean	95th Percentile	95% UCLM
Antimony	-	28	1	$7.0x10^{-4}$	0.30	0.01	0.06	$1.5x10^{-3}$	$5.0x10^{-3}$	$2.5x10^{-3}$
Arsenic	0.005[a]/ 0.01[b]	30	0	0.02	0.10	0.04	0.02	0.04	0.08	0.05
Chloride	120[a]	24	0	2.5	6.6	3.7	1.1	3.5	5.1	4.1
Copper	0.004[a]	30	9	$2.5x10^{-4}$	$6.8x10^{-3}$	$1.2x10^{-3}$	$1.3x10^{-3}$	$7.4x10^{-4}$	$2.9x10^{-3}$	$1.8x10^{-3}$
Cyanide	0.005[a]/0.2[b]	20	17	$5.0x10^{-4}$	$8.5x10^{-3}$	$2.7x10^{-3}$	$1.9x10^{-3}$	$2.2x10^{-3}$	$5.8x10^{-3}$	$6.3x10^{-3}$
Manganese	1.96[c]	28	0	$2.9x10^{-3}$	1.3	0.10	0.24	0.04	0.31	0.17
Sulphate	309[c]	24	0	2.2	72	13	17	7.4	47	28
Zinc	0.03[a]	30	19	$1.4x10^{-3}$	$7.9x10^{-3}$	$2.5x10^{-3}$	$1.5x10^{-3}$	$2.2x10^{-3}$	$4.6x10^{-3}$	$3.7x10^{-3}$

Note: COPC = constituent of potential concern; N = sample size; N<MDL = number of samples less than the method detection limit; NA = not applicable – this statistic could not be calculated due to insufficient data; SD = standard deviation of the mean; Geomean = geometric mean; 95% UCLM = 95th upper confidence level of the mean. No surface water guideline is available for this COPC

a – CCME surface water quality guideline for the protection of freshwater aquatic life. Copper based on hardness 80 mg/L for upper Baker Creek

b – Health Canada Drinking water guideline

c – B.C. Aquatic guidelines based on hardness (80 mg/L for upper Baker Creek)

d – Summary statistics for Min, Max, Mean, SD, Geomean, and 95th percentile were calculated using one half the method detection limit.

Figure C.6 Baseline surface water sampling locations in Upper Baker Creek

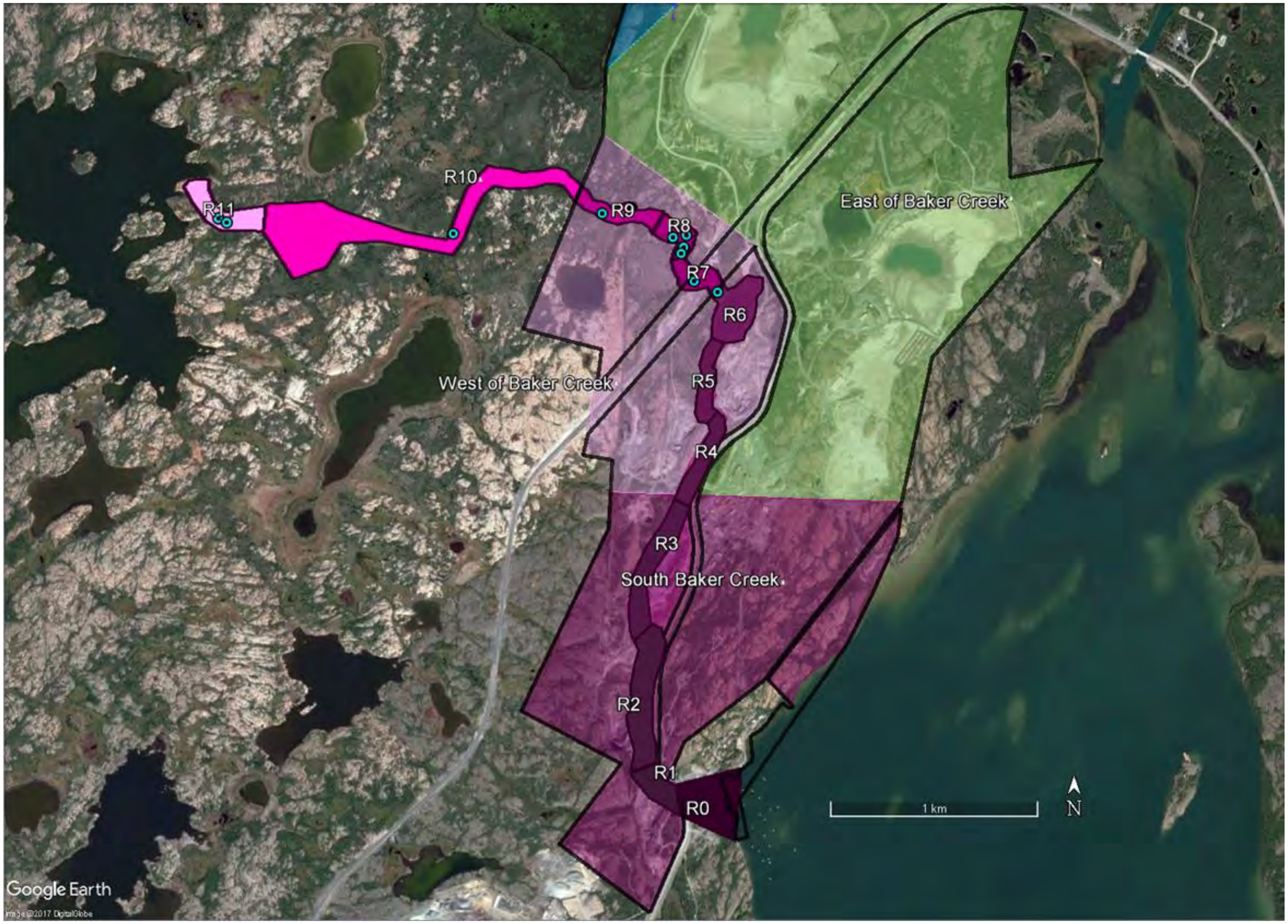


Table C.14 presents the summary of concentrations selected to represent baseline surface water in Baker Creek.

Table C.14 Summary of baseline surface water concentrations for Baker Creek

COPC	N	Statistic	Background Concentration (mg/L)
Antimony	28	95% UCLM	2.5×10^{-3}
Arsenic	30	95% UCLM	0.05
Chloride	24	95% UCLM	4.1
Copper	30	95% UCLM	1.8×10^{-3}
Cyanide	20	95% UCLM	6.3×10^{-3}
Manganese	28	95% UCLM	0.17
Sulphate	24	95% UCLM	28
Zinc	30	95% UCLM	3.7×10^{-3}

Note: COPC = constituent of potential concern; N = sample size; 95% UCLM = 95th upper confidence level of the mean.

C.4 Sediment Background Concentrations

There have been two sediment studies in recent years carried out at background locations (Golder 2013; Stantec 2014b) related to the Giant Mine Project. These background locations were used to develop sediment background and are Yellowknife River and Horseshoe Island located in South Yellowknife Bay (Figure C.7). A comparison of these background locations was conducted to determine whether they are similar.

The ecological COPCs for sediment include antimony, arsenic, chromium, copper, lead, manganese, mercury, and zinc. No screening guidelines have been developed to evaluate exposure of humans to contaminated sediments; therefore, the COPCs identified in the human health soil screening were considered to be the same for sediments. Background sediment concentrations were developed for antimony, arsenic, and manganese for the HHRA.

C.4.1 Development of Background Sediment Concentrations

In order to develop background sediment concentrations (95% UCLM), samples from recent years (e.g., 2011 to present) were used and considered to be representative of current conditions. Since the JoJo Tailings release occurred in May 2011 only data after this time were used in the assessment. Appendix O provides concentrations in all the samples that were considered as background.

The approach for developing sediment background for COPC was as follows:

- For estimating the 95% UCLM: The MDL was used (and identified as such) in the dataset used in ProUCL. ProUCL is a statistical program that provides 95% UCLM recommendations (based on data distribution, dataset size, skewness, and percentage of non-detect observations) on how to obtain an accurate 95% UCLM. ProUCL may suggest more than one 95% UCLM estimate, in these cases, the highest appropriate 95% UCLM was selected.

C.4.1.1 Selection of Appropriate Dataset for Background Sediment Concentrations

A comparison of sediment samples from Horseshoe Island and sediment samples from Yellowknife River was conducted to ensure similarity between concentrations in a body of water and river and to evaluate their suitability for inclusion in background. Due to a small sample size for all COPC, a full statistical analysis could not be conducted reliably; therefore a simple comparison of summary statistics was used to determine if concentrations of COPC at Horseshoe Island and Yellowknife River were similar (Table C.15).

Table C.15 Summary statistics for background sediment concentrations of COPCs

COPC	Location	N	N<MDL	Sediment Concentration (mg/kg dw)[c]					
				Min	Max	Mean	SD	Geomean	95th Percentile
Antimony[a]	Horseshoe Island	5	0	1.0	1.1	1.0	0.1	1.0	1.1
	Yellowknife River	6	0	0.1	1.0	0.44	0.37	0.31	0.95
Arsenic[a,b]	Horseshoe Island	5	0	20	43	27	9.1	26	40
	Yellowknife River	6	0	2.5	10	6.4	2.6	5.9	9.6
Chromium[b]	Horseshoe Island	5	0	46	50	48	1.6	48	50
	Yellowknife River	6	0	16	41	27	12	25	41
Copper[b]	Horseshoe Island	5	0	38	44	40	2.1	40	43
	Yellowknife River	6	0	7.7	22	15	6.7	14	22
Manganese[a]	Horseshoe Island	5	0	448	627	516	71	512	606
	Yellowknife River	6	0	108	249	178	64	168	249

Note: COPC = constituent of potential concern; N = sample size; N<MDL = number of samples less than the method detection limit; NA = not applicable – this statistic could not be calculated due to insufficient data; SD = standard deviation of the mean; Geomean = geometric mean.

a – this is a human Health Soil COPC.

b – this is an ecological Sediment COPC identified in Yellowknife Bay.

c – Summary statistics for Min, Max, Mean, SD, Geomean, and 95th percentile were calculated using one half the method detection limit.

Figure C.7 Background sediment sample locations

As seen from Table C.15, sediment COPC concentrations are higher around Horseshoe Island than in Yellowknife River.

From an ERA point of view, receptors were evaluated in both the lake and river environments and therefore the datasets were combined. From a human heath standpoint the combining of the datasets would result in a lower estimation of background concentrations and therefore represents a conservative estimate of background, especially for arsenic exposure which is evaluated incrementally (i.e., total minus background). Background concentrations for the combined locations (Horseshoe Island and Yellowknife River) are provided in Table C.16. As seen from the table, background concentrations for arsenic and chromium exceed sediment quality guidelines. There are no sediment quality guidelines for antimony and manganese.

Table C.16 Summary statistics for concentrations of COPCs in sediment from all background locations

Constituent	Guideline[c]	Background Concentration (mg/kg dw)[d]								
		N	N < MDL	Min	Max	Mean	SD	Geo Mean	95th Percentile	95% UCLM
Antimony[b]	-	11	0	0.1	1.1	0.7	0.4	0.5	1.1	1.2
Arsenic[ab]	5.9	11	0	2.5	43	16	13	12	35	23
Chromium[b]	37.3	11	0	16	50	36.8	14	34	50	44
Copper[a]	35.7	11	0	7.7	44	26	14	22	42	34
Manganese[b]	-	11	0	19	168	86	59	66	163	434

Note: COPC = constituent of potential concern; N = sample size; N<MDL = number of samples less than the method detection limit; NA = not applicable – this statistic could not be calculated due to insufficient data; SD = standard deviation of the mean; Geomean = geometric mean; 95% UCLM = 95th upper confidence level of the mean.

- no ecological sediment guideline is available for this COPC.

a – this is an Ecological Sediment COPC.

b – this is a Human Health Sediment COPC.

c – CCME sediment guideline for protection of aquatic life Interim Sediment Quality Guideline (ISQG).

d – Summary statistics for Min, Max, Mean, SD, Geomean, and 95th percentile were calculated using one half the method detection limit.

For the evaluation of benthic organisms in Back Bay, the average sediment concentrations of the samples from Horseshoe Island were used. It should be noted that the average concentrations from Horseshoe Island are similar to the 95% UCLM values from the combined dataset of river and bay.

C.4.1.2 Summary

In general, concentrations of COPC in South Yellowknife Bay and Yellowknife River were similar. Therefore, all background locations were combined to determine the background concentrations used in the HHERA (Table C.17).

Table C.17 Summary of the background sediment concentrations for combined river and bay locations

COPC	N	Statistic	Background Sediment Concentration (mg/kg dw)
Antimony	11	95% UCLM	1.2
Arsenic	11	95% UCLM	23
Chromium	11	95% UCLM	44
Copper	11	95% UCLM	34
Manganese	11	95% UCLM	434

Note: COPC = constituent of potential concern; N = sample size; 95% UCLM = 95th upper confidence level of the mean.

Table C.18 Summary of the background sediment concentrations for Yellowknife Bay

COPC	N	Statistic	Background Sediment Concentration (mg/kg dw)
Antimony	5	Average	1.0
Arsenic	5	Average	27
Chromium	5	Average	48
Copper	5	Average	40
Manganese	5	Average	516

Note: COPC = constituent of potential concern; N = sample size; 95% UCLM = 95th upper confidence level of the mean.
This Table only used for weight of evidence for benthic organisms in Back Bay

C.4.2 Establishing Baseline Sediment Concentrations in Baker Creek

The sediment samples obtained within proximity to the surface water reference station SNP 43-11 in Reaches 7 to 11 was used for establishing baseline concentrations in Baker Creek (Figure C.8). The reference location is upstream of effluent discharge inputs from the Giant Mine and is historically used as reference station for downstream Baker Creek (Golder 2016b). There have been four sediment studies collecting data in Reaches 7 to 11

(Golder 2013, 2015a, 2016d; Stantec 2014c). Appendix O provides concentrations for all the samples that were considered as baseline.

Antimony, arsenic, chromium, lead, mercury, and zinc were identified as ecological COPC in sediments in Baker Creek. Table C.19 provides summary statistics for baseline sediment samples in Baker Creek. As seen from Table C.19, baseline sediment concentrations of arsenic and chromium are above the CCME sediment quality guidelines.

Table C.20 provides a summary of the baseline sediment concentrations in Baker Creek.

Figure C.8 Baseline sediment sampling locations in Baker Creek

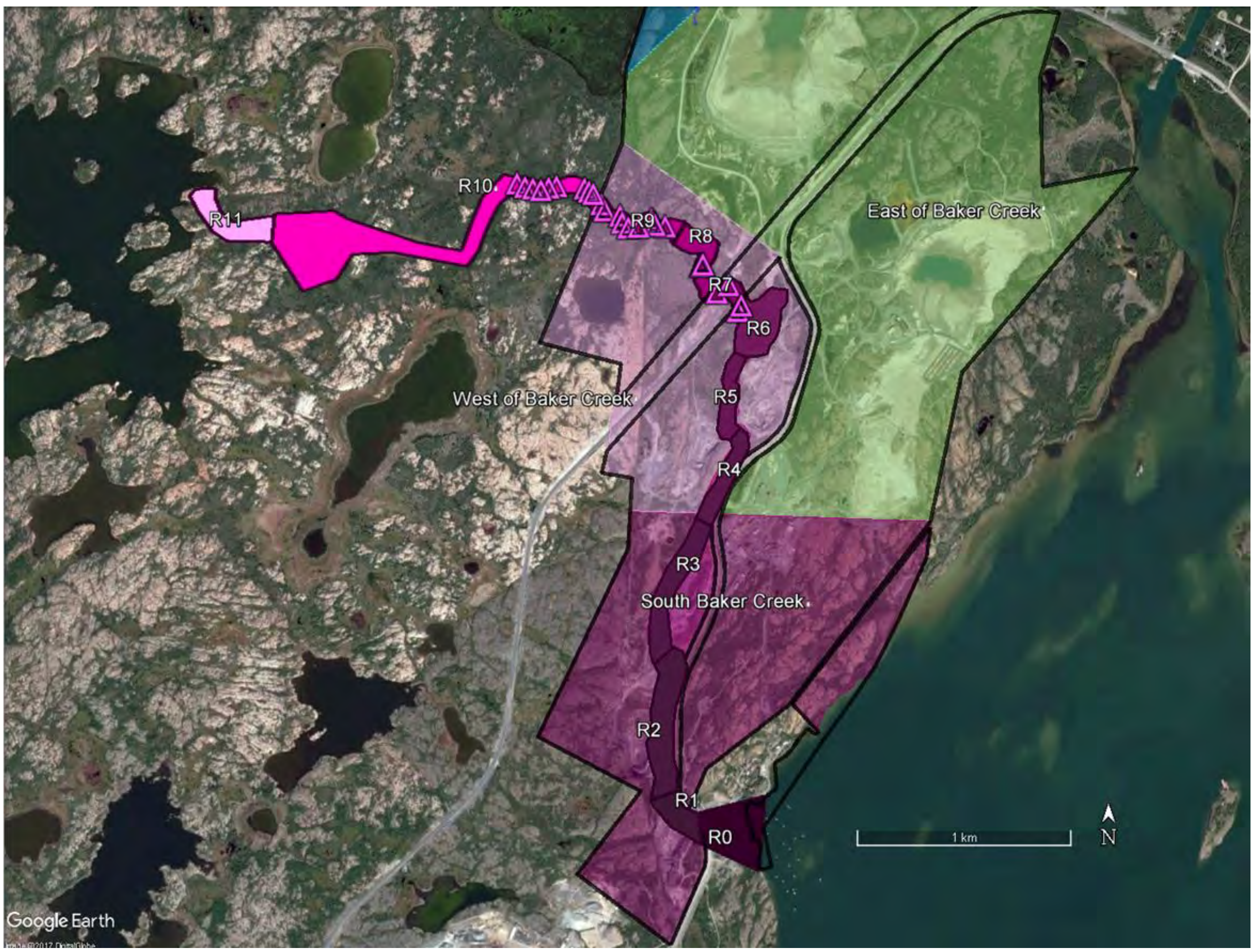


Table C.19 Summary statistics for concentrations of COPCs in sediment from baseline locations in Upper Baker Creek

COPC	Guideline[a]	N	N< MDL	Sediment Concentration (mg/kg dw)[b]						
				Min	Max	Mean	SD	GeoMean	95th Percentile	95% UCLM
Antimony	-	27	0	0	12	4.1	3	3.0	10	5.0
Arsenic	5.9	27	0	16	440	152	96	119	294	183
Chromium	37.3	28	0	21	135	33	23	30	69	41
Lead	35	27	1	2.5	11	5.9	2.0	5.6	9.2	6.7
Mercury	0.17	27	2	0.01	0.13	0.03	0.03	0.03	0.08	0.05
Zinc	123	36	0	0	486	49	77	25	79	42

Note: COPC = constituent of potential concern; N = sample size; N<MDL = number of samples less than the method detection limit; NA = not applicable – this statistic could not be calculated due to insufficient data; SD = standard deviation of the mean; Geomean = geometric mean; 95% UCLM = 95^{th} upper confidence level of the mean.

a – CCME sediment guideline for protection of aquatic life Interim Sediment Quality Guideline (ISQG).

b – Summary statistics for Min, Max, Mean, SD, Geomean, and 95^{th} percentile were calculated using one half the method detection limit.

Table C.20 Summary of baseline sediments concentrations in Baker Creek

COPC	Statistic	Background Sediment Concentration (mg/kg dw)
Antimony	95% UCLM	5
Arsenic	95% UCLM	183
Chromium	95% UCLM	41
Lead	95% UCLM	6.7
Mercury	95% UCLM	0.05
Zinc	95% UCLM	42

Note: COPC = constituent of potential concern; N = sample size; 95% UCLM = 95th upper confidence level of the mean.

C.5 Background Food Concentrations for the Human Health Risk Assessment

Background country food concentrations associated with samples from the country food study were discussed in the main document. This section focuses on background fish samples and mushroom samples that were collected from other scientific studies. Background fish and mushroom concentrations were developed for antimony, arsenic and manganese which were the three COPC identified for a quantitative evaluation in the HHRA.

C.5.1 Fish Muscle Background Concentrations

Background fish muscle samples were collected from two studies in 2010 and 2011 (Cott et al. 2016; Stantec 2014d). Fish muscle samples for consumable fish were obtained from Horseshoe Island, MacKenzie Island, and Great Slave Lake and are summarized in Table C.21. Appendix O provides concentrations in all the samples that were considered as background.

As seen from Table C.21, data were sufficient to calculate a 95% UCLM for arsenic in inconnu, lake whitefish, and northern pike, and for manganese in lake whitefish. In the absence of a 95% UCLM, the 95th percentile was selected to represent background fish concentrations for antimony and manganese. This represents a conservative estimate of fish background. Background concentrations are summarized in Table C.22.

Table C.21 Summary of background concentrations in consumable fish muscle

Fish Species	COPC	N	N < MDL	Fish Muscle Concentration (mg/kg ww)[a]						
				Min	Max	Mean	SD	Geomean	95th Percentile	95% UCLM
Inconnu	Antimony	47	44	0.025	0.12	0.028	0.015	0.027	0.042	NA
	Arsenic	47	0	0.08	0.56	0.182	0.078	0.170	0.274	0.201
	Manganese	47	47	0.15	0.15	NA	NA	NA	NA	NA
Lake Whitefish	Antimony	38	37	0.0005	0.025	0.016	0.010	0.011	0.025	NA
	Arsenic	38	1	0.025	0.641	0.150	0.120	0.117	0.321	0.235
	Manganese	38	21	0.111	1.44	0.223	0.226	0.185	0.506	0.262
Northern Pike	Antimony	41	41	0.025	0.025	NA	NA	NA	NA	NA
	Arsenic	41	0	0.06	0.22	0.105	0.036	0.100	0.170	0.115
	Manganese	41	41	0.15	0.15	NA	NA	NA	NA	NA

Note: COPC = constituent of potential concern; N = sample size; N<MDL = number of samples less than the method detection limit; NA = not applicable – this statistic could not be calculated due to insufficient data; SD = standard deviation of the mean; Geomean = geometric mean; 95% UCLM = 95th upper confidence level of the mean.
a – Summary statistics for Min, Max, mean, SD, Geomean, and 95th percentile were calculated using one half the method detection limit.

Table C.22 Summary of selected background concentrations for consumable fish muscle

Fish Species	COPC	Statistic	Background Fish Concentration (mg/kg ww)
Inconnu	Antimony	95th Percentile	0.042
	Arsenic	95% UCLM	0.201
	Manganese	Maximum	0.15
Lake Whitefish	Antimony	95th Percentile	0.025
	Arsenic	95% UCLM	0.235
	Manganese	95% UCLM	0.26
Northern Pike	Antimony	Maximum	0.025
	Arsenic	95% UCLM	0.115
	Manganese	Maximum	0.15

C.5.2 Mushroom Background Concentrations

All of the data used to determine background mushroom concentrations were obtained from a study conducted by Obst (2014). Mushroom sample locations from more than 50 km away from the Giant Mine, were selected to represent background. Table C.23 presents the summary statistics for background mushroom concentrations. Appendix O provides concentrations in all the samples that were considered as background. As seen from Table C.23, data were sufficient to calculate a 95% UCLM for antimony, arsenic, and manganese, which were selected as the background mushroom concentrations in the HHRA.

Table C.23 Summary statistics for concentration of COPCs in mushrooms from background locations

COPC	N	N<MDL	Mushroom Concentrations (mg/kg ww)[a]						
			Min	Max	Average	SD	GeoMean	95th Percentile	95% UCLM
Antimony	58	32	0.0075	0.20	0.033	0.045	0.017	0.14	**0.062**
Arsenic	58	25	0.015	15	0.6	2.3	0.09	3.3	**2.0**
Manganese	58	0	0.27	0.27	4.6	4.9	2.6	16	**5.8**

Note: COPC = constituent of potential concern; N = sample size; N<MDL = number of samples less than the method detection limit; NA = not applicable – this statistic could not be calculated due to insufficient data; SD = standard deviation of the mean; Geomean = geometric mean; 95% UCLM = 95th upper confidence level of the mean.

a – Summary statistics for Min, Max, mean, SD, Geomean, and 95th percentile were calculated using one half the method detection limit. **Bold** values selected as background concentrations for the HHRA.

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APPENDIX D

SELECTION OF CONSTITUENTS OF POTENTIAL CONCERN

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APPENDIX D: SELECTION OF CONSTITUENTS OF POTENTIAL CONCERN

D.1 Overview

A tiered process was carried out to identify constituents of potential concern (COPC) in surface water, soil, and sediment in the general vicinity of Yellowknife and the Giant Mine and involved an evaluation of measured environmental data. The general tiered approach that was followed for the COPC selection process, based on measured water and soil concentrations, is illustrated in Figure D.1 (a different approach was followed for the sediment screen, as detailed in Section D.4) and is described below. More details on the screening for each of the media are provided in the following sections. In general, the steps in the screening process were:

1. If 90% or more of the measurements for a constituent were non-detectable (i.e., below the method detection limit [MDL]), then the data were considered to be essentially not measured and the constituent was dropped from further assessment. The treatment of MDLs is discussed in the various sections below.

2. The maximum (or 95th percentile, where there were more than 90 samples) measured concentrations were then compared to the appropriate screening criteria (as discussed below). Constituents with concentrations lower than the screening criteria were dropped from further assessment, while those with concentrations exceeding the screening criteria, or with no criteria available, were carried forward to Step 3.

3. The maximum (or 95th percentile, where there were more than 90 samples) measured concentrations were compared to average background concentrations as discussed in more detail below. ATTACHMENT D.1 discusses background concentrations. If the measured concentration was below the background average, then the constituent was considered to be present at background levels and was not considered to be a COPC. This preliminary comparison to background is meant to provide a general indication of differences to eliminate the need for detailed statistical test on every parameter. Comparison to background is explored more rigorously in a subsequent stage.

4. Constituents remaining as potential COPC after steps 1 through 3 were then checked to see if corresponding human health and/or ecological toxicity data were available. Constituents with available toxicity data were selected as COPC, while

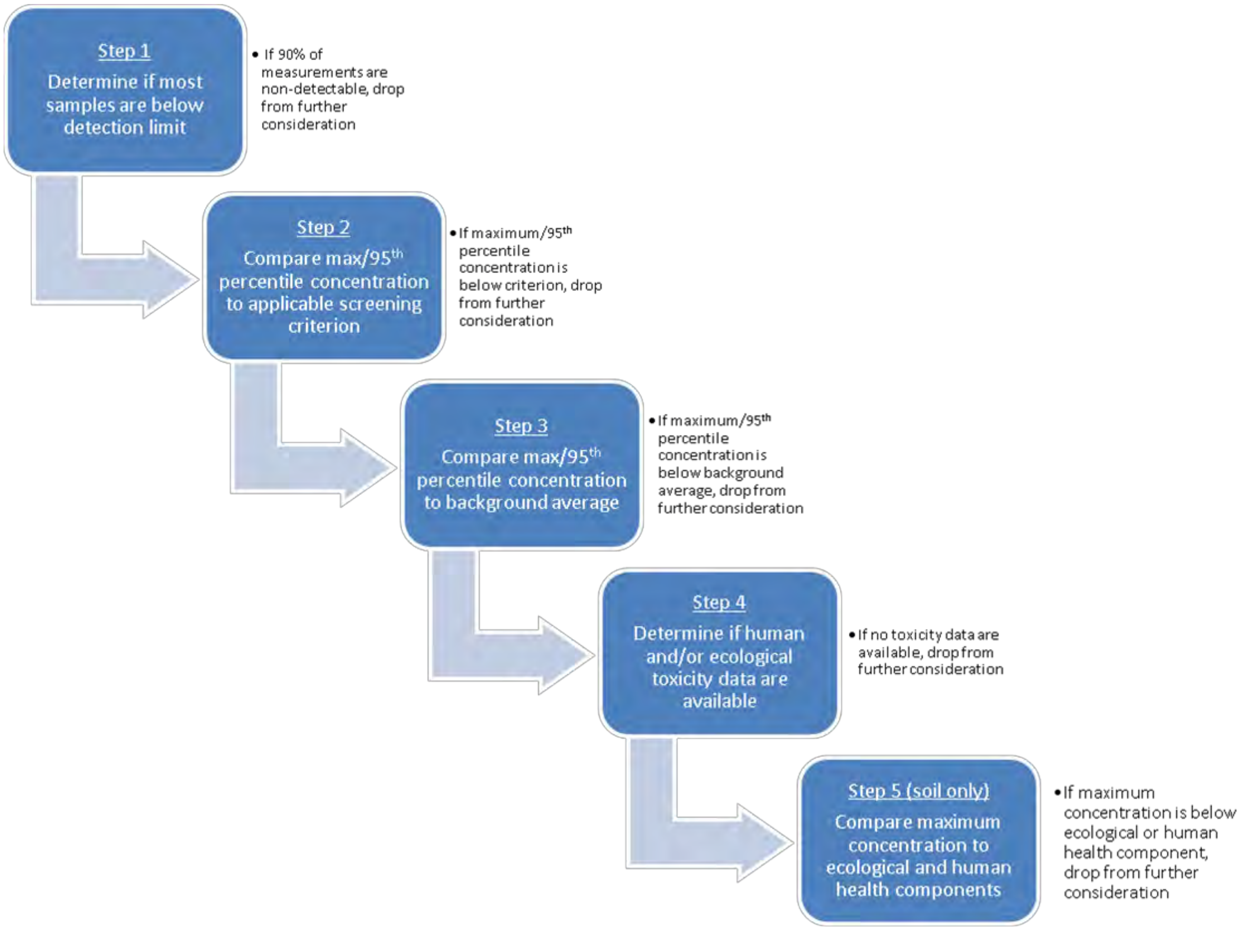
those without toxicity data were not further assessed. Although this adds some uncertainty to the assessment, the lack of toxicity data generally denotes constituents that cannot be evaluated quantitatively.

5. For the soil screen, the final step involved determining which constituents would be evaluated in the human health risk assessment (HHRA) and the ecological risk assessment (ERA). This was already completed in Step 2 for surface water as separate guidelines specific to human and ecological protection were considered. For soil, given that there were more than 90 samples, the 95th percentile measured concentrations of remaining constituents were then compared to the most restrictive of the human health and ecological components of the appropriate screening criteria in order to identify those COPC for further consideration in the HHRA and ERA, respectively.

Values below the MDL were converted to ½ the MDL before calculating summary statistics (e.g., average, 95th percentile, and standard deviation) for the COPC screen. This approach was only used for the screening step. In the risk assessment, the detection limits were handled within the ProUCL program and no adjustments were made.

Antweiler (2015) and Ogden (2010) indicate that, for datasets with a low degree of censoring (i.e., less than 25% of measurements below the MDL) and a total number of observations between 20 and 100, the substitution of non-detects with a value of ½ the MDL shows "fairly modest bias in the 95th percentile or the mean, and the imprecisions of these estimates are only slightly worse than the optimum method of data treatment" (Ogden 2010). This approach was adopted for data analysis at the screening stage. Given that for some constituents there were a high number of MDLs in the considered dataset, additional examination of both the soil and surface water datasets was conducted to ensure that the MDLs were handled appropriately. This is discussed in more detail in the applicable sections below. In addition, a sensitivity analysis was carried out to investigate the effect of different methods of data treatment for non-detect values (i.e., <MDL). For soil, this analysis involved looking at many of the common substitutions that are present in the literature (i.e., 0, ½ MDL, $1/\sqrt{(2)}$ MDL, MDL). It should be noted that a substitution of 0 or the MDL itself are the extreme bounds on the possible true value of the soil concentration. The sensitivity analysis is detailed in ATTACHMENT D.2.

Figure D.1 General selection process for constituents of potential concern



D.2 Constituents of Potential Concern in Soil

The soil COPC screen considered measured soil concentrations from across the Yellowknife area. As soil concentrations generally change slowly over time, all compiled data (from 1999 and onwards) were considered for the Yellowknife area. This ensures that both off-site and on-site conditions at the Giant Mine are considered. Analytical data has demonstrated that constituent concentrations are generally higher in surficial soils; in addition, this soil depth represents the likely exposure depth for both humans and animals. Although preference was given to data from the upper five centimeters (5 cm) profile, it should be noted that concentrations at a depth of ≤ 10 cm were considered for the soil screening process as some of the constituents were not measured at the 5 cm depth. There were different MDLs in some of the data sets and the treatment of the different MDLs is discussed in more detail below. All the datasets were considered equally as metal concentrations in soil do not decrease over time.

For the soil COPC screen, the agricultural soil guidelines from the Canadian Council of Ministers of the Environment (CCME 2017) were considered appropriate. The use of the most restrictive agricultural criteria ensures that all potential COPC are captured in the screening process. In the absence of CCME guideline values, the generic site condition standards for coarse textured soil and agricultural land use in a potable water scenario from the Ontario Ministry of the Environment and Climate Change (formerly Ontario Ministry of the Environment [MOE 2011])) were used. For this application, boron was the only constituent where the MOE soil guideline was used. The criterion is based on ecological considerations and is considered to be appropriate for this application.

A summary of the screening process for COPC in soil is provided in Figure D.2, while details on each step of the process are provided in this section. Summary statistics of the considered data are presented below in Table D.1 along with the soil COPC screen details.

Figure D.2 Flowchart of soil constituents of potential concern screening results

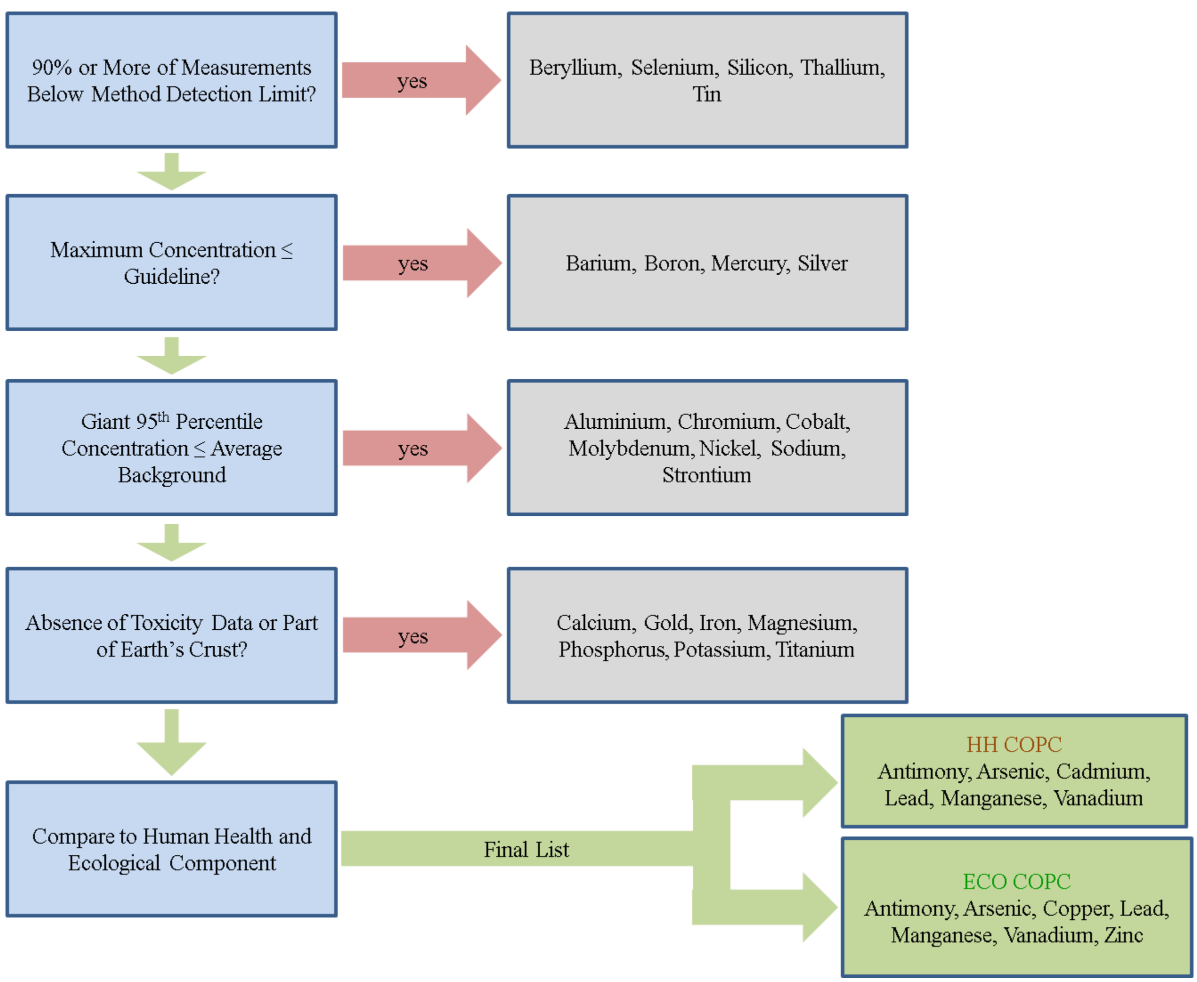


Table D.1 Selection of constituents of potential concern in soil for the risk assessment

Constituent	Unit	Soil Guideline [a]	Bkgd Avg	Yellowknife Area						Giant Mine	Heavily Censored? (90% or more < MDL)	Max ≤ Guideline?	Giant Mine 95th Percentile ≤ Bkgd Avg?	Lack of Tox Data or Part of Earth's Crust?	COPC out of Step 4?	Rationale
				N	N<MDL	Minimum	Maximum	Average	St Dev	95th Percentile						
Aluminum	mg/kg	-	71978	270	0	610	56400	16734	10126	34000	N	-	Y	-	N	Giant Mine 95th Percentile ≤ Avg Bkgd.
Antimony	mg/kg	20	0.7	302	13	0.2	900	91	130	371	N	N	N	N	Y	Maximum Measured Value > Guideline, Giant Mine 95th Percentile > Avg Bkgd, Toxicity Data Available.
Arsenic	mg/kg	12	66	386	0	6.1	17000	1382	1984	5046	N	N	N	N	Y	Maximum Measured Value > Guideline, Giant Mine 95th Percentile > Avg Bkgd, Toxicity Data Available.
Barium	mg/kg	750	389	224	3	2.5	560	113	98	284	N	Y	Y	-	N	All values ≤ Guideline.
Beryllium	mg/kg	4	-	224	219	0.1	2.0	2.0	0.3	2.0	Y	Y	-	-	N	All values ≤ Guideline and Heavily Censored (90% or more < MDL).
Boron	mg/kg	120	-	223	197	0.9	38	11	5.3	25	N	Y	-	N	N	All values ≤ Guideline.
Cadmium	mg/kg	1.4	-	224	141	0.05	5.2	0.9	0.7	2.1	N	N	N	-	Y	Maximum Measured Value > Guideline, Toxicity Data Available.
Calcium	mg/kg	-	13258	293	0	200	81000	16762	17013	55500	N	-	N	Y	N	No Guideline and Part of Earth's Crust.
Chromium	mg/kg	64	103	224	63	7.5	190	39	29	88	N	N	Y	-	N	Giant Mine 95th Percentile ≤ Avg Bkgd.
Cobalt	mg/kg	40	21	275	33	0.8	88	18	15	45	N	N	N	-	N	No Statistically Significant Difference Between Giant Mine Data and Background [b].
Copper	mg/kg	63	27	275	0	4.0	900	78	91	201	N	N	N	N	Y	Maximum Measured Value > Guideline, Giant Mine 95th Percentile > Avg Bkgd, Toxicity Data Available.
Gold	mg/kg	-	0.01	262	45	0.005	9	0.8	1.2	2.5	N	-	N	Y	N	No Guideline or Toxicity Data Available.
Iron	mg/kg	-	40398	296	0	745	110000	27040	19501	59300	N	-	N	Y	N	No Guideline or Toxicity Data Available.
Lead	mg/kg	70	20	275	39	2.0	860	54	87	230	N	N	N	N	Y	Maximum Measured Value > Guideline, Giant Mine 95th Percentile > Avg Bkgd, Toxicity Data Available.
Magnesium	mg/kg	-	-	224	0	280	33667	9518	8397	28475	N	-	-	Y	N	No Guideline and Part of Earth's Crust.
Manganese	mg/kg	-	316	292	0	7.0	9500	928	1393	3594	N	-	N	N	Y	No Guideline, Giant Mine 95th Percentile > Avg Bkgd, Toxicity Data Available.
Mercury	mg/kg	6.6	0.5	6	0	0.01	0.09	0.03	0.03	-	N	Y	-	-	N	All values ≤ Guideline.
Molybdenum	mg/kg	5	1.6	276	203	0.3	1010	4.9	61	2.6	N	N	N	-	N	No Statistically Significant Difference Between Giant Mine Data and Background [b].
Nickel	mg/kg	45	46	275	4	3	107	32	21	71	N	N	N	-	N	No Statistically Significant Difference Between Giant Mine Data and Background [b].
Phosphorus	mg/kg	-	-	275	0	23	3900	896	687	2300	N	-	-	Y	N	No Guideline and Part of Earth's Crust.
Potassium	mg/kg	-	972	225	0	96	6700	944	1127	4040	N	-	N	Y	N	No Guideline and Part of Earth's Crust.
Selenium	mg/kg	1	-	224	219	0.1	5.0	4.9	0.6	5.0	Y	N	N	-	N	Heavily Censored (90% or more < MDL).
Silicon	mg/kg	-	-	43	43	5.0	5.0	5.0	0.0	5.0	Y	-	-	-	N	Heavily Censored (90% or more < MDL).
Silver	mg/kg	20	1.7	275	209	0.02	5	1	0	1.1	N	Y	Y	-	N	All values ≤ Guideline.
Sodium	mg/kg	-	21708	220	20	38	1833	212	204	594	N	-	Y	Y	N	Giant Mine 95th Percentile ≤ Avg Bkgd.
Strontium	mg/kg	-	237	219	4	2.5	107	30	19	67	N	-	Y	-	N	Giant Mine 95th Percentile ≤ Avg Bkgd.
Thallium	mg/kg	1	-	224	203	0.05	5.6	0.7	0.7	1.8	Y	N	-	-	N	Heavily Censored (90% or more < MDL).
Tin	mg/kg	5	-	224	219	1.0	4	1.0	0.2	1.0	Y	Y	Y	-	N	All values ≤ Guideline and Heavily Censored (90% or more < MDL).
Titanium	mg/kg	-	-	224	1	5.0	3000	558	522	1500	N	-	-	Y	N	No Guideline or Toxicity Data Available.
Uranium	mg/kg	23	3.8	270	216	0.2	334	8.3	24	18	N	N	N	-	Y	Maximum Measured Value > Guideline, Giant Mine 95th Percentile > Avg Bkgd, Toxicity Data Available.
Vanadium	mg/kg	130	-	224	16	5.0	210	54	41	132	N	N	-	-	Y	Maximum Measured Value > Guideline, Toxicity Data Available.
Zinc	mg/kg	200	93	280	2	7.1	800	134	122	354	N	N	N	-	Y	Maximum Measured Value > Guideline, Giant Mine 95th Percentile > Avg Bkgd, Toxicity Data Available.

Note: a – Canadian Council of Ministers of the Environment (CCME 2017) agricultural land use guideline, supplemented by the Ontario Ministry of the Environment and Climate Change (MOE 2011) soil quality guideline if CCME value unavailable; b – Based on a student's t-test assuming unequal variances and an alpha of 0.05. The criterion for boron is from the MOE (2011).

Table D.1 Selection of constituents of potential concern in soil for the risk assessment (Cont'd)

COPC	COPC from Step 4?	Unit	Human Health Component (a)	Ecological Component (a)	Giant Mine 95th Percentile	HH COPC?	Rationale	Eco COPC?	Rationale
Antimony	Y	mg/kg	7.5	20	371	Y	Giant Site 95th Percentile > HH Component	Y	Giant Mine 95th Percentile > Eco Component.
Arsenic	Y	mg/kg	12	17	5046	Y	Giant Site 95th Percentile > HH Component	Y	Giant Mine 95th Percentile > Eco Component.
Cadmium	Y	mg/kg	1.4	3.8	2.1	Y	Giant Site 95th Percentile > HH Component	N	Giant Mine 95th Percentile ≤ Eco Component.
Copper	Y	mg/kg	1100	63	201	N	Giant Site 95th Percentile ≤ HH Component	Y	Giant Mine 95th Percentile > Eco Component.
Lead	Y	mg/kg	140	70	230	Y	Giant Site 95th Percentile > HH Component	Y	Giant Mine 95th Percentile > Eco Component.
Manganese	Y	mg/kg	-	-	3594	Y	No HH Component, Toxicity Data Available	Y	No Eco Component, Toxicity Data Available.
Uranium	Y	mg/kg	23	33	18	N	Giant Site 95th Percentile ≤ HH Component	N	Giant Mine 95th Percentile ≤ Eco Component.
Vanadium	Y	mg/kg	39	130	132	Y	Giant Site 95th Percentile > HH Component	Y	Giant Mine 95th Percentile > Eco Component.
Zinc	Y	mg/kg	5600	200	354	N	Giant Site 95th Percentile ≤ HH Component	Y	Giant Mine 95th Percentile > Eco Component.

Note: a – Human health and ecological components of the Canadian Council of Ministers of the Environment (CCME 2017) agricultural land use guideline, supplemented by the Ontario Ministry of the Environment and Climate Change (MOE 2011) soil quality guideline components if CCME value unavailable. The component values for antimony, vanadium and zinc are from the MOE (2011). These values are based on an agricultural scenario similar to the CCME and are deemed appropriate for use.

Following the screening procedure outlined in Figure D.1, the first step of the soil COPC screen identified constituents with the majority of data points below the MDL. As shown in Figure D.2 and Table D.1, a large percentage (more than 90%) of the measurements were below the MDL for beryllium, selenium, silicon, thallium and tin and thus they were dropped from further assessment. ATTACHMENT D.2 provides a discussion of detection limits and indicates the reasons for dropping these constituents. As the reported MDLs vary from study to study, the detection limits were examined in detail as discussed in ATTACHMENT D.2 to ensure constituents were not dropped erroneously due to the presence of elevated MDLs in either the background or non-background datasets.

Given that selenium is an important micronutrient from a human health standpoint, the COPC screen included additional examination of the analytical data for selenium in soil. In addition to more than 90% of the samples (219 out of 244 samples) being below the MDL, all of the MDLs are well below both the CCME (2017) human health component value (80 mg/kg) and the MOE (2011) Table 2 human health value (78 mg/kg), supporting the decision to drop selenium as a COPC in soil.

For beryllium, 219 out of 229 samples were below the MDL and the maximum concentration, as shown in Table D.1, is 2 mg/kg which is below the guideline. A similar rationale was used for tin where 219 out of 224 samples are below the MDL and the maximum concentration is below the guideline. For silicon, all the samples are below the MDL and thus silicon was not considered to be measured. For thallium, 203 out of 224 samples are below the MDL. A comparison was done for the reported MDLs to the (2017) soil guideline and all of the MDLs were at or below this guideline. This discussion confirms that these constituents should be dropped in Step 1. ATTACHMENT D.2 discusses the method detection limits.

The second step involved comparison of maximum measured levels from the Yellowknife area to the appropriate screening criteria. As indicated in Figure D.2, barium, boron, mercury, and silver were dropped from consideration as all measured levels from the Yellowknife area were below the applicable guideline. In the early days of operation of the Giant Mine, mercury and cyanide amalgamation was used before the roaster was brought online. ATTACHMENT D.3 provides a discussion of mercury in various media around the Giant Mine and concludes that it is not a COPC from a human health standpoint. A few sediment samples had mercury concentrations above the sediment quality guideline, thus mercury was included as a COPC in sediment for the ERA.

It should be noted that the highest measured concentrations all occurred at the Giant Mine and in all the further screening steps only data from the Giant Mine were considered.

The next step involved comparing measured data to background concentrations to determine which constituents are elevated above natural levels. The soil COPC screen included consideration of all background data, regardless of sampling location or depth, as it is more representative of the regional background conditions. The Federal Contaminated Sites Action Plan (FCSAP 2015) background document refers to United States Environmental Protection Agency (U.S. EPA 2002) guidance for developing an appropriate background concentration. This guidance uses an average concentration for background when comparing to exposure areas to determine the difference between background and exposure areas. This approach was used for the COPC screen. Further details on the development of background concentrations for the COPC screen are provided in ATTACHMENT D.1.

Average background concentrations used in the soil COPC screen were calculated from data reported in three studies (Stantec 2014a; Stevens et al. 2015; Golder 2016), as well as till data collected in 1999, 2000, and 2001 by Daniel Kerr and compiled in the Geological Survey of Canada (GSC) database[1]; the majority of the considered background data were obtained from the GSC database. All values below the MDL were converted to ½ the MDL before the average values were calculated. As discussed previously, Antweiler (2015) and Ogden (2010) indicate that for low degrees of censoring (<25%) and the number of observations between 20 and 100 that the substitution of ½ the MDL shows "fairly modest bias in the 95th percentile or the mean, and the imprecisions of these estimates are only slightly worse than the optimum method of data treatment".

As there is a large set of data from the Giant Mine (greater than 200 samples for most constituents), the 95th percentiles of the Giant Mine data were compared to the average background concentrations. This is considered to be a reasonably conservative approach for omitting anomalous measurements related to the Giant Mine.

This step resulted in the removal of aluminum, chromium, sodium, and strontium since the 95th percentile concentrations were below the background averages. It should be noted that the maximum concentrations of aluminum, sodium and strontium were also

[1] Data available for download from http://geochem.nrcan.gc.ca/cdogs/content/svy/svy210026_e.htm

below the background concentrations and only 6 of 224 samples (2.7%) for chromium are above the average concentration; therefore the removal of these constituents is valid. Additional analysis (student t-test, alpha = 0.05) and a graphical representation of the Giant Mine and regional background data showed that there is no statistically significant difference between the Giant Mine data and background distributions for cobalt, molybdenum, and nickel; thus, these constituents were not considered further in the assessment. The selected student t-test takes into account any difference in variance between the two data sets and is appropriate for use with data sets of unequal sample sizes which is the case for this application where there are over 200 samples collected at the Giant Mine and approximately 120 background samples. Frequency distribution plots comparing the background and Giant Mine measured data are shown in Figure D.3 for a number of constituents. In these plots the individual background concentrations and the individual samples from the Giant Mine were binned into concentration ranges. The plots for cobalt, molybdenum, and nickel corroborate the findings of the statistical test and show that the Giant Mine data and the background data are similarly distributed while the plots for other constituents (particularly antimony, arsenic, and lead) show greater difference between Giant Mine and background data.

Of the remaining constituents, regulatory screening criteria were not available for calcium, gold, iron, magnesium, manganese, phosphorus, potassium, and titanium. Of these, gold and titanium were dropped from further assessment due to lack of human health and ecological toxicological data. Additionally, calcium, iron, magnesium, phosphorus, and potassium are considered as natural elements in the earth's crust and are therefore not COPC. The following discussion supports the exclusion of a number of these constituents:

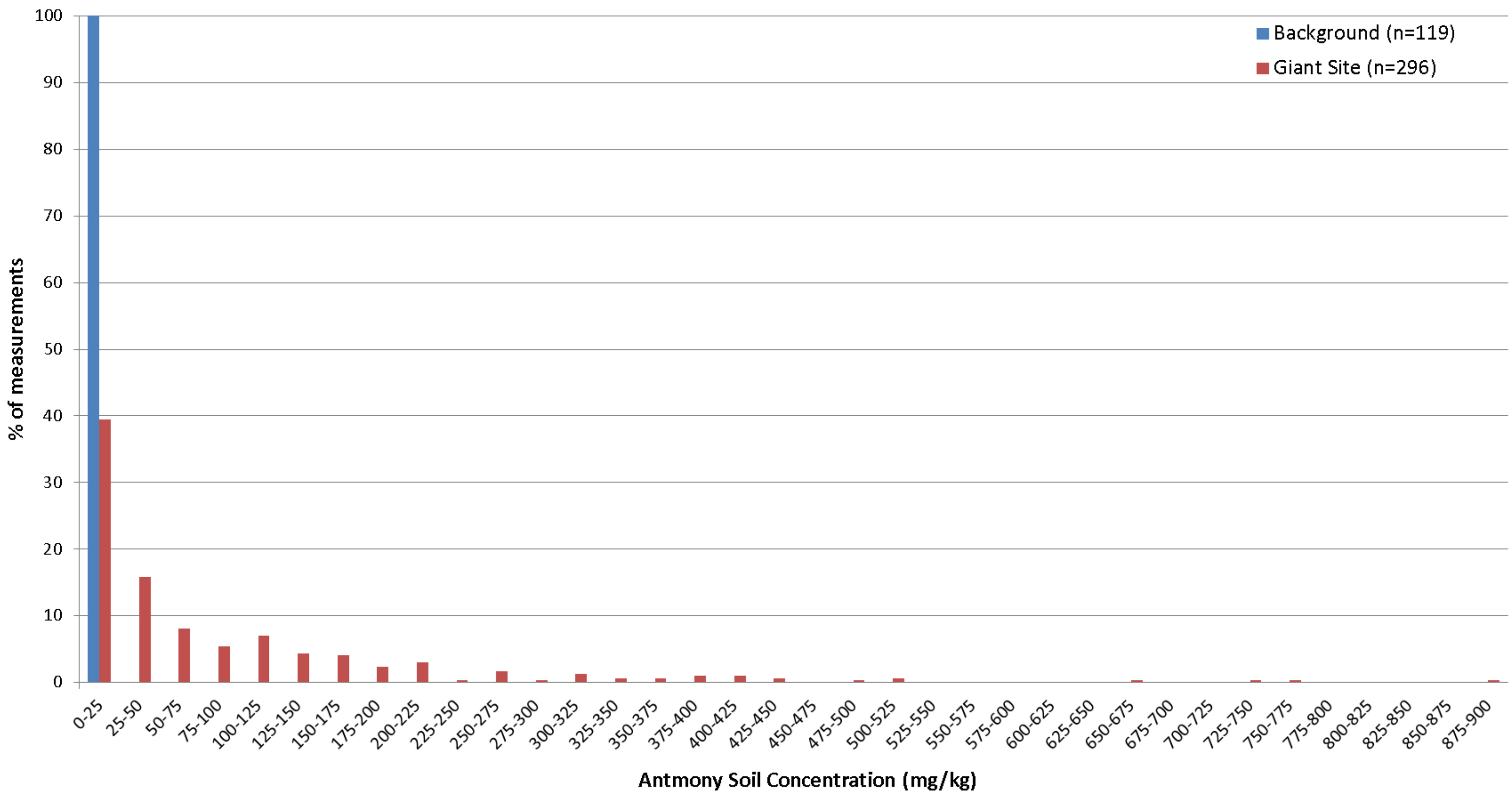
- Calcium: The technical supporting document for the drinking water guideline development for calcium by Health Canada (1987a) states that because of the efficient homeostatic mechanisms that control calcium metabolism, adverse effects are observed only following the intake of extremely large quantities of calcium. Thus calcium is not considered further. It should be noted that Health Canada has not updated this document recently.
- Iron: Health Canada (1987b) notes that there is no evidence of dietary iron toxicity in the general population. It should be noted that Health Canada has not updated this document recently. In addition, the National Research Council (NRC 2005) state that there are inadequate data available to accurately define maximum

tolerable levels of iron from dietary or water sources for most non-laboratory animals. Very few studies have included incremental dose levels sufficient to determine thresholds for toxicity. However, maximum tolerable levels of iron have been determined for cattle, sheep, and poultry (500 mg/kg), as well as swine (3,000 mg/kg). Other reported toxic iron levels are greater than 4,000 mg/kg for cattle and 390 mg/kg for horses (Puls 1994). Iron toxicosis can occur in domesticated animals as they are often given dietary supplements. It is expected that most animals do not uptake large amounts of iron in their diet (NRC 2005) and it is not anticipated that iron will have the potential to cause adverse effects to humans or terrestrial biotic receptors at the Giant Mine.

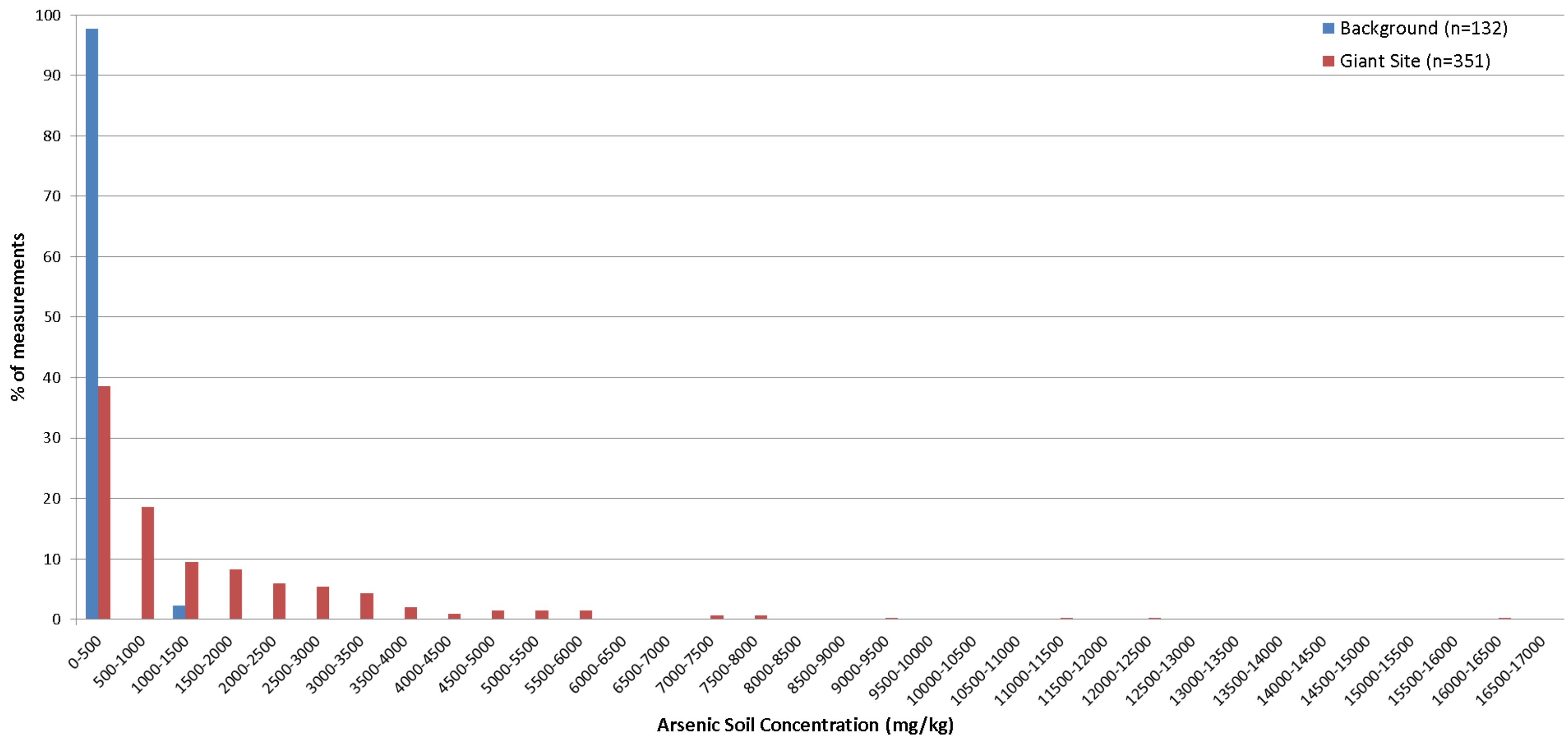
- Magnesium: Magnesium is an essential element in human metabolism and is required for over 300 enzyme reactions. The most readily observable adverse effect of magnesium in drinking water is the laxative effect (Health Canada 1987c). Thus magnesium is not considered further. It should be noted that Health Canada has not updated this document recently.
- Phosphorus: Phosphorus is an essential nutrient required for critical biological reactions that maintain the normal homoeostatic control of the cell. The CCME (2013) has confirmed that phosphorus does not pose a direct threat to human health; it is an essential component of all cells and is present in bones and teeth. The issue with phosphorus is as a nutrient that can affect water quality.
- Potassium: Potassium is an essential element that helps regulate fluid volumes in cells and is thus necessary to maintain normal cell function. Potassium also acts to blunt the risk of blood pressure in response to sodium and decreases markers of bone turnover and recurrence of kidney stones (Institute of Medicine [IOM 2005]). There are no health effects noted from excessive consumption of potassium in food (IOM 2005) and thus the IOM did not derive an upper limit (maximum level of daily nutrient that is likely to pose no risk of health effects).

Figure D.3 Comparison of soil concentrations: Giant Mine vs regional background

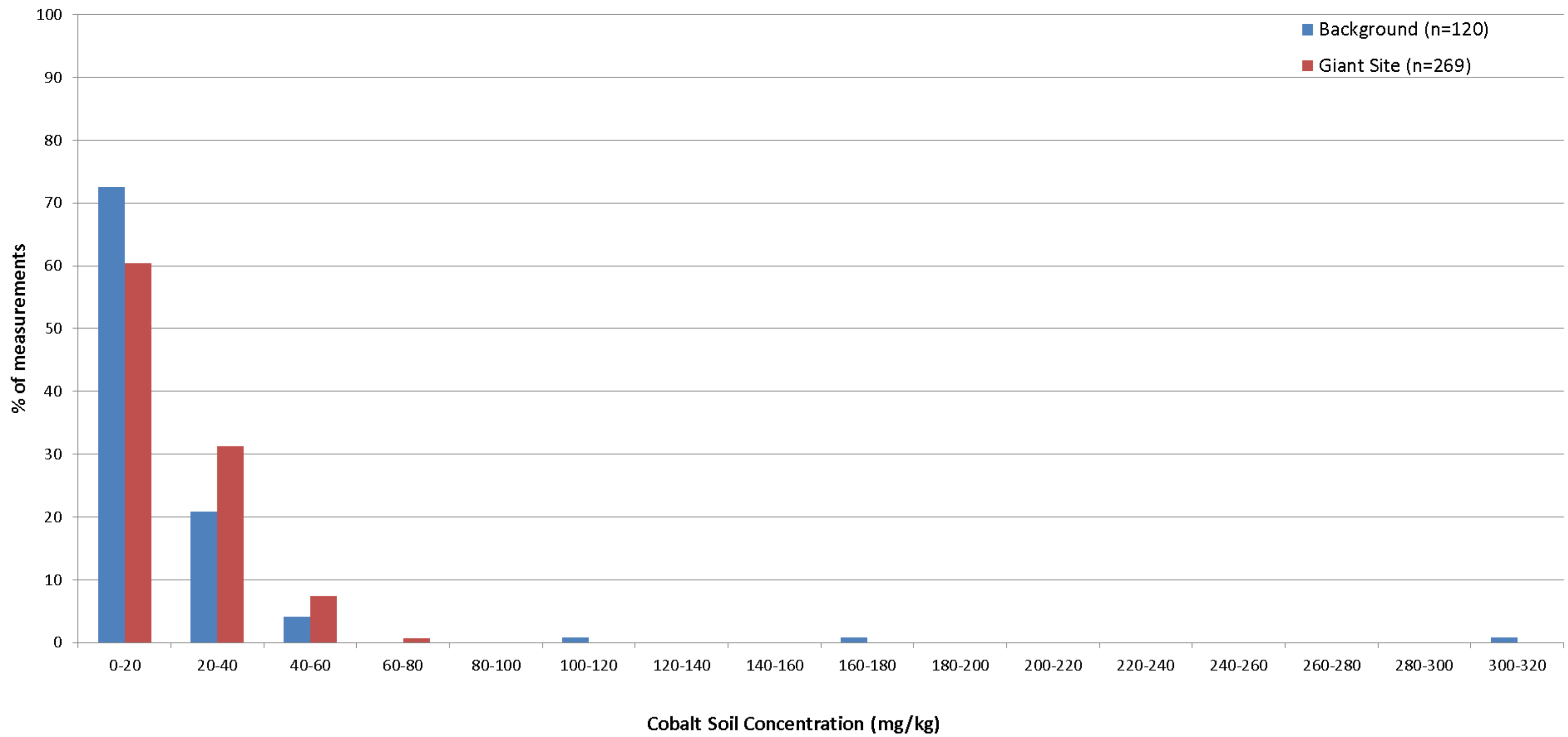
a) Antimony



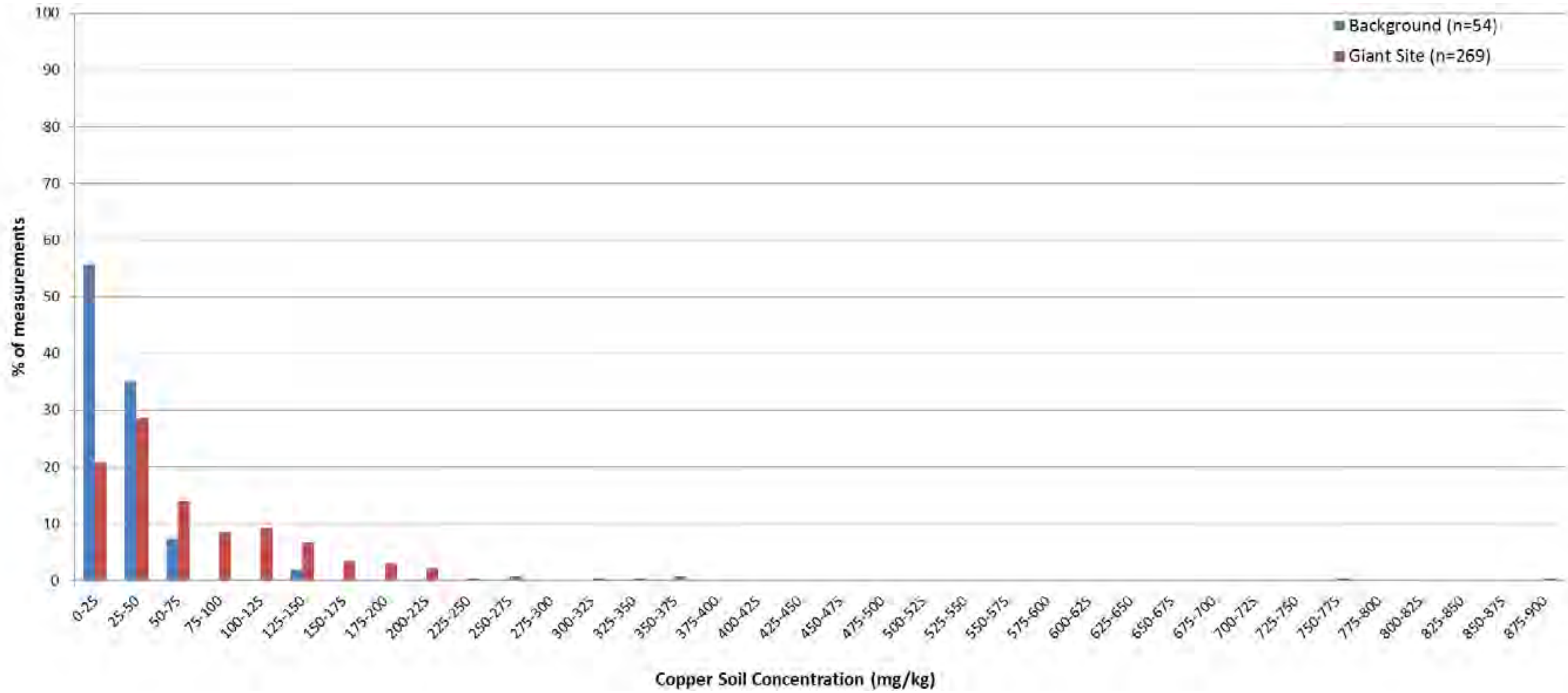
b) Arsenic


Background (n=132)
Giant Site (n=351)
% of measurements
100
90
80
70
60
50
40
30
20
10
0
0-500
500-1000
1000-1500
1500-2000
2000-2500
2500-3000
3000-3500
3500-4000
4000-4500
4500-5000
5000-5500
5500-6000
6000-6500
6500-7000
7000-7500
7500-8000
8000-8500
8500-9000
9000-9500
9500-10000
10000-10500
10500-11000
11000-11500
11500-12000
12000-12500
12500-13000
13000-13500
13500-14000
14000-14500
14500-15000
15000-15500
15500-16000
16000-16500
16500-17000
Arsenic Soil Concentration (mg/kg)

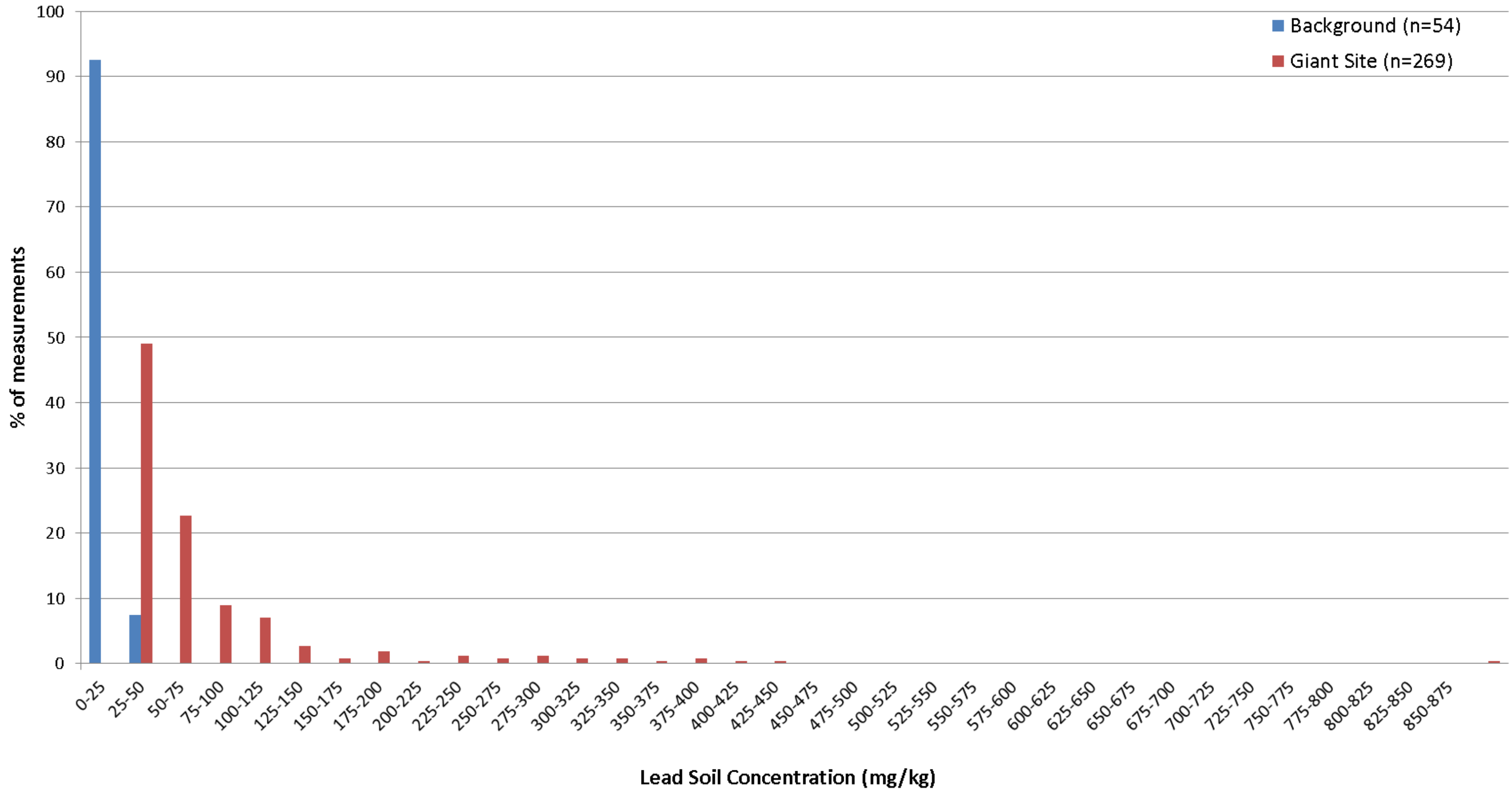
c) Cobalt


Background (n=120)
Giant Site (n=269)
% of measurements
100
90
80
70
60
50
40
30
20
10
0
0-20
20-40
40-60
60-80
80-100
100-120
120-140
140-160
160-180
180-200
200-220
220-240
240-260
260-280
280-300
300-320
Cobalt Soil Concentration (mg/kg)

d) Copper

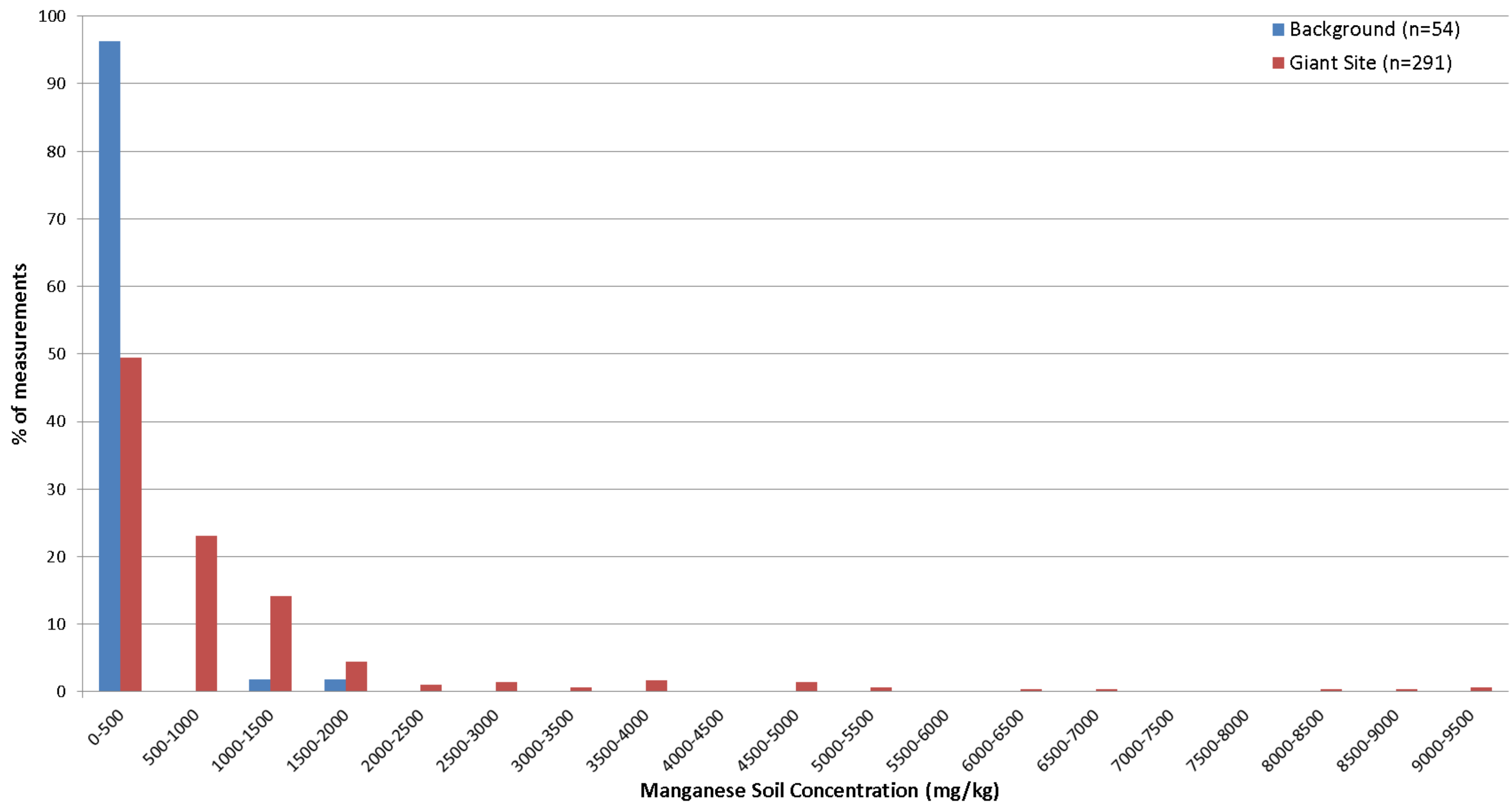

Background (n=54)
Giant Site (n=269)
% of measurements
0
10
20
30
40
50
60
70
80
90
100
0-25
25-50
50-75
75-100
100-125
125-150
150-175
175-200
200-225
225-250
250-275
275-300
300-325
325-350
350-375
375-400
400-425
425-450
450-475
475-500
500-525
525-550
550-575
575-600
600-625
625-650
650-675
675-700
700-725
725-750
750-775
775-800
800-825
825-850
850-875
875-900
Copper Soil Concentration (mg/kg)

e) Lead



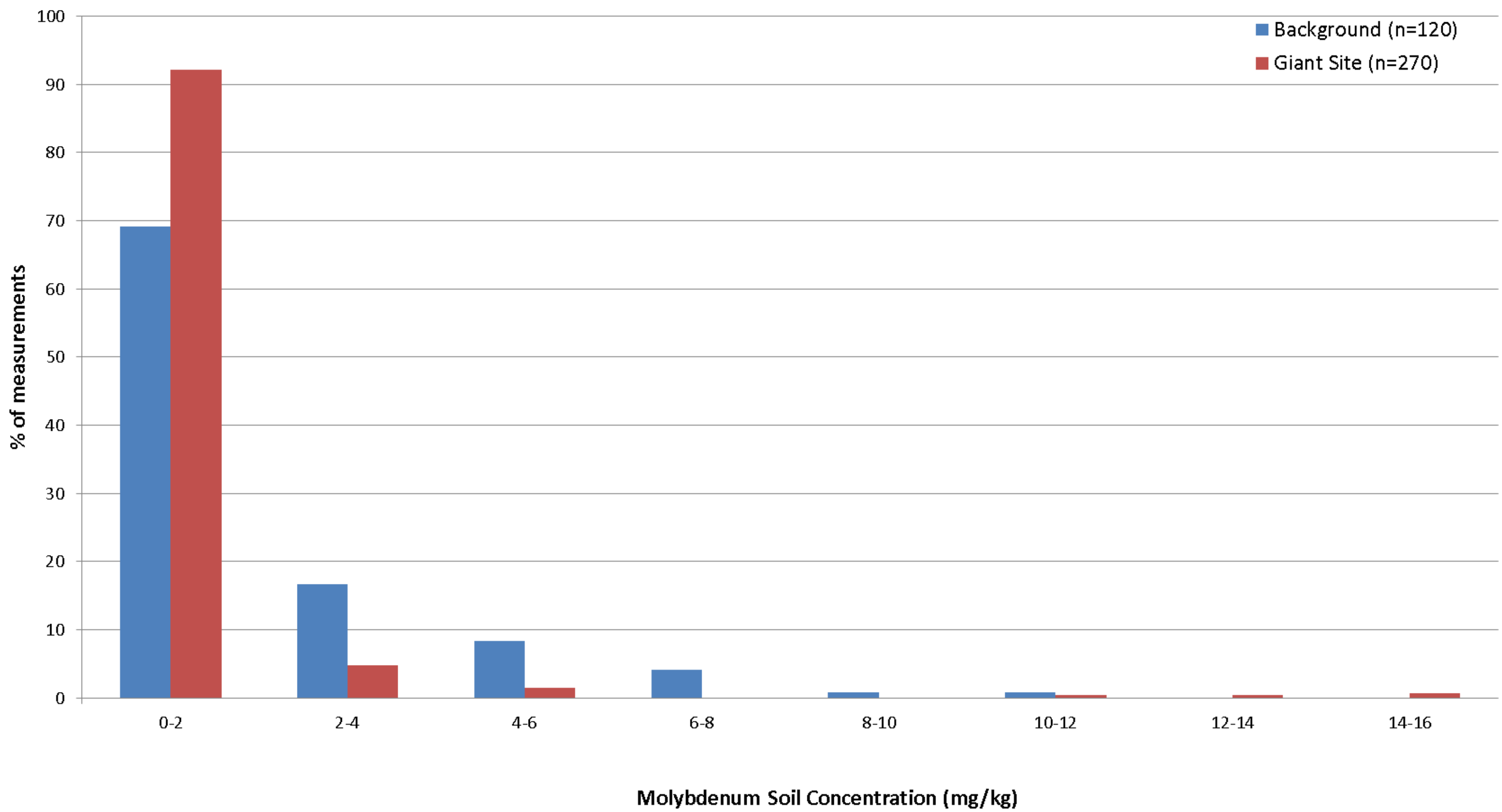
Background (n=54)
Giant Site (n=269)
% of measurements
100
90
80
70
60
50
40
30
20
10
0
0-25
25-50
50-75
75-100
100-125
125-150
150-175
175-200
200-225
225-250
250-275
275-300
300-325
325-350
350-375
375-400
400-425
425-450
450-475
475-500
500-525
525-550
550-575
575-600
600-625
625-650
650-675
675-700
700-725
725-750
750-775
775-800
800-825
825-850
850-875
Lead Soil Concentration (mg/kg)

f) Manganese



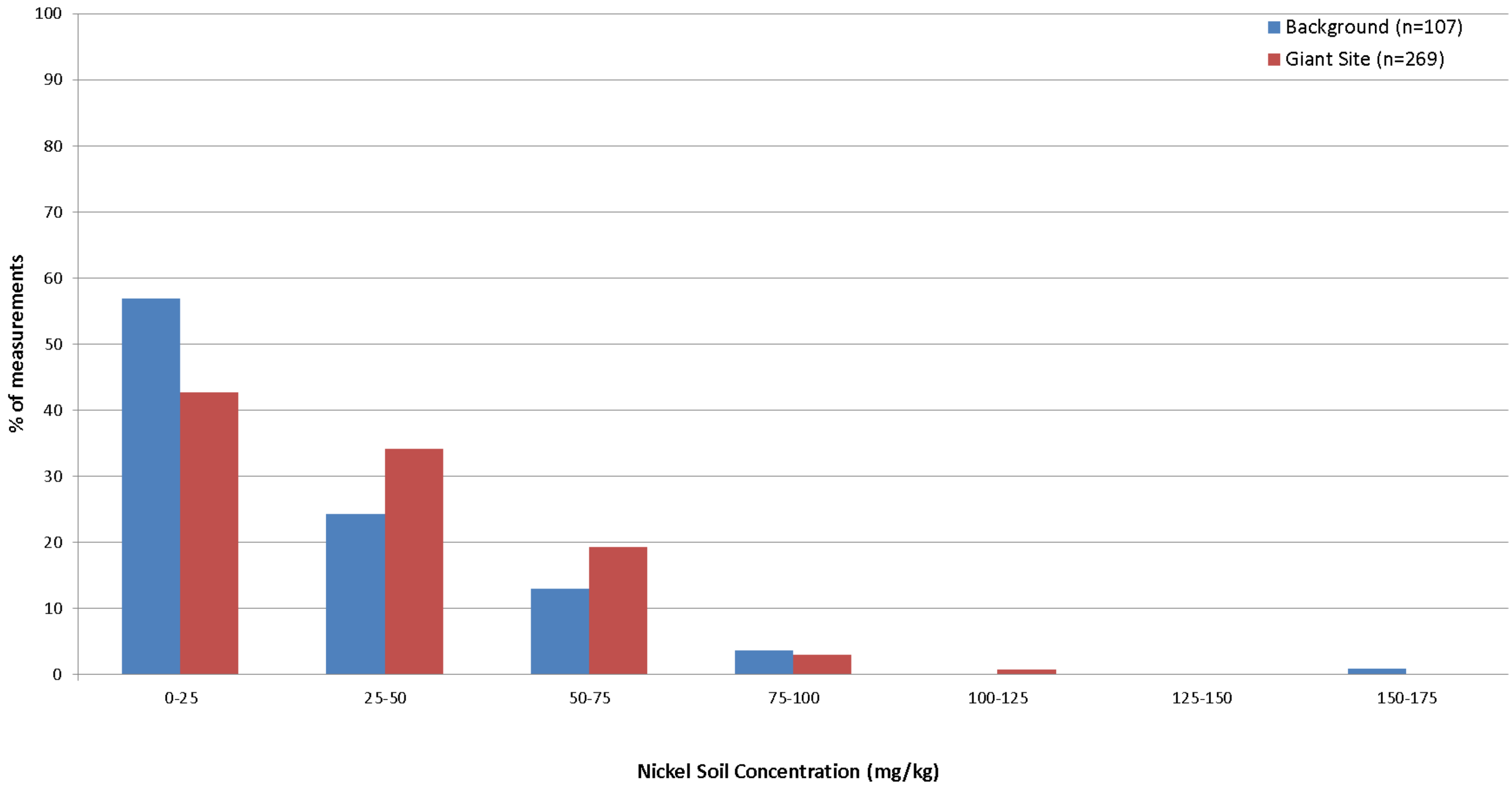
Background (n=54)
Giant Site (n=291)
% of measurements
100
90
80
70
60
50
40
30
20
10
0
0-500
500-1000
1000-1500
1500-2000
2000-2500
2500-3000
3000-3500
3500-4000
4000-4500
4500-5000
5000-5500
5500-6000
6000-6500
6500-7000
7000-7500
7500-8000
8000-8500
8500-9000
9000-9500
Manganese Soil Concentration (mg/kg)

g) Molybdenum



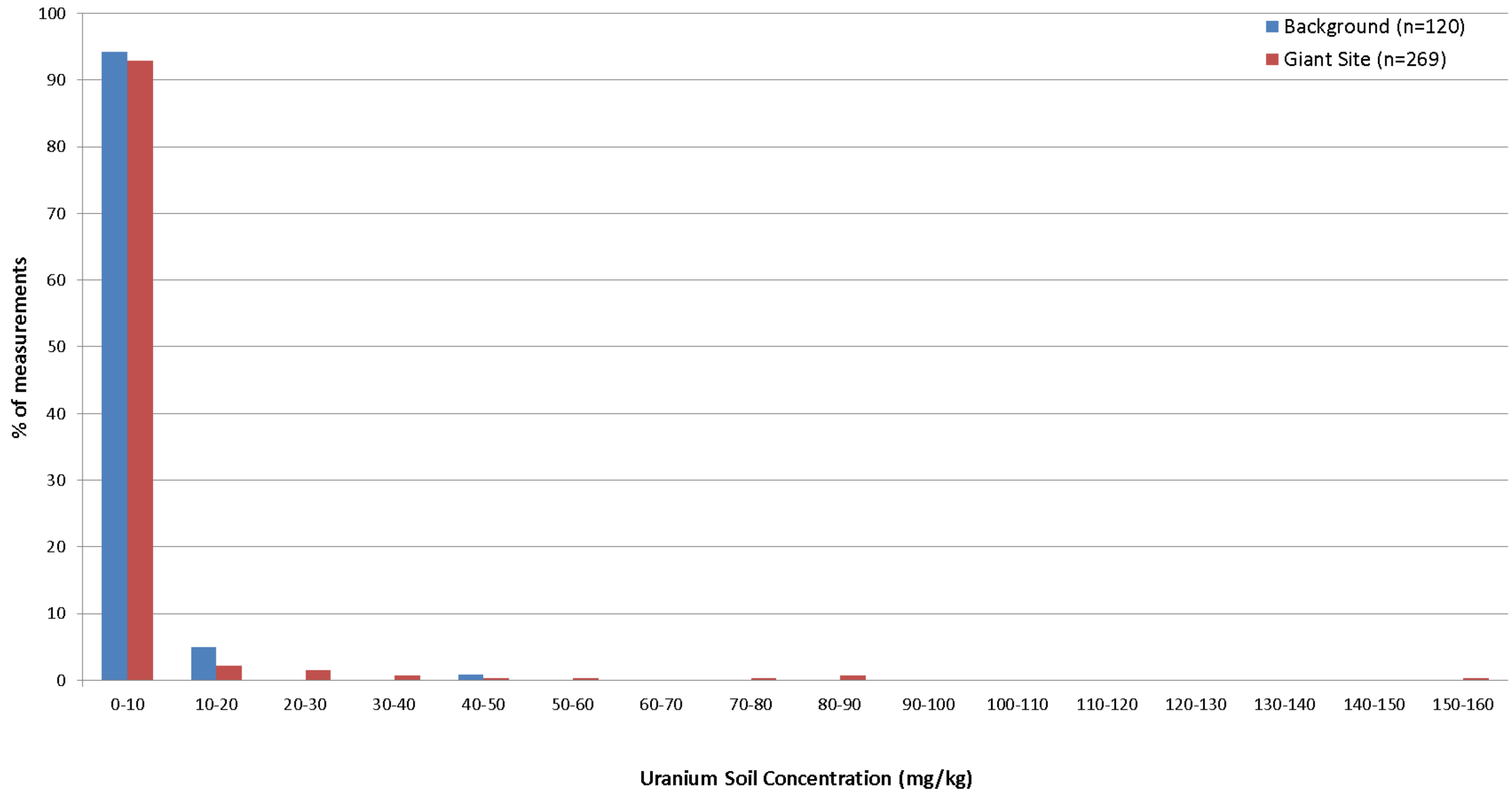
Note: Single high measurement (1005-1010 mg/kg) from the Giant Mine not shown.

h) Nickel

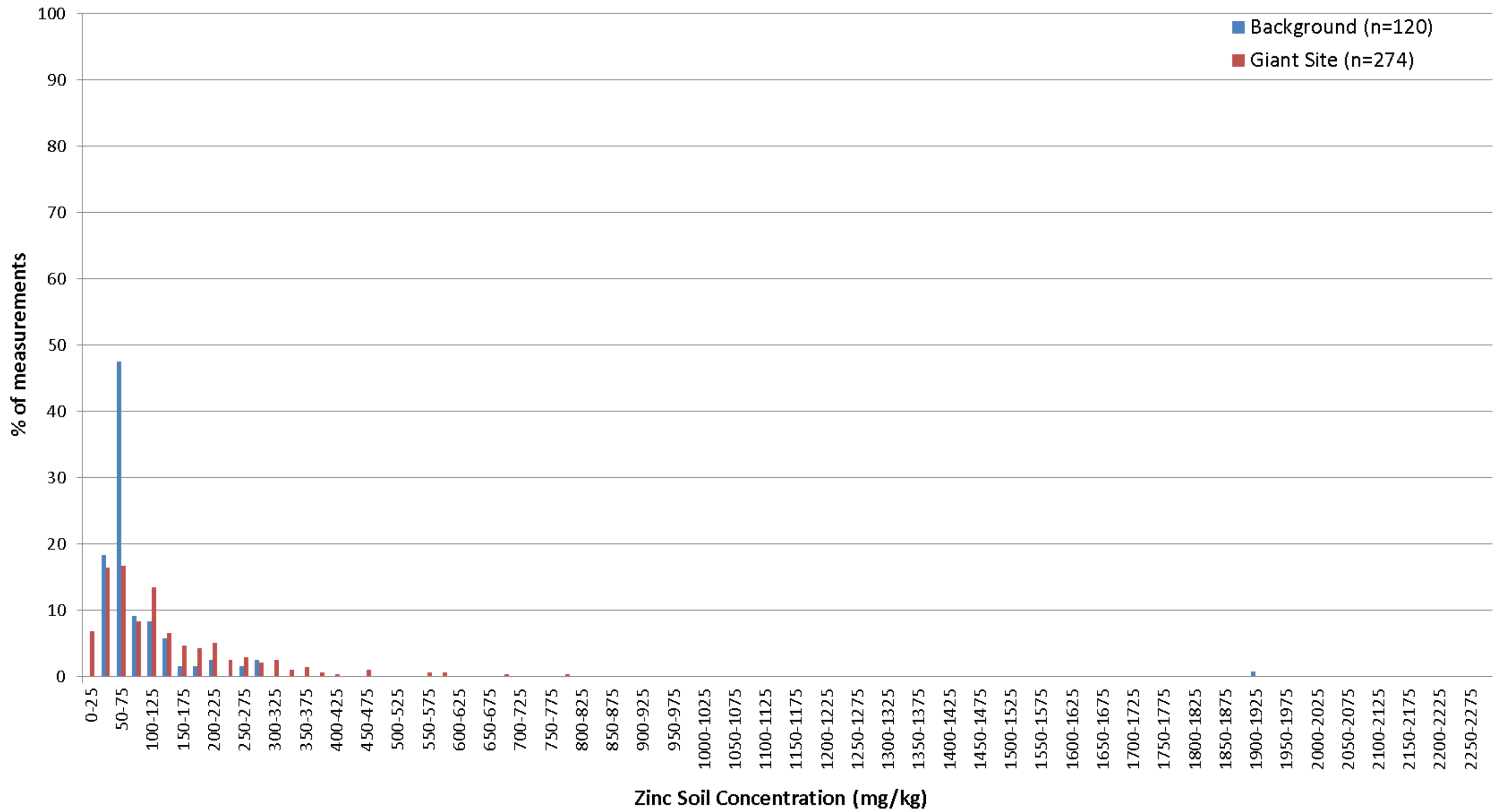


Note: Single high measurement (1950-1975 mg/kg) from background not shown.

i) Uranium


Background (n=120)
Giant Site (n=269)
% of measurements
100
90
80
70
60
50
40
30
20
10
0
0-10
10-20
20-30
30-40
40-50
50-60
60-70
70-80
80-90
90-100
100-110
110-120
120-130
130-140
140-150
150-160
Uranium Soil Concentration (mg/kg)

j) Zinc


Background (n=120)
Giant Site (n=274)
% of measurements
0
10
20
30
40
50
60
70
80
90
100
0-25
50-75
100-125
150-175
200-225
250-275
300-325
350-375
400-425
450-475
500-525
550-575
600-625
650-675
700-725
750-775
800-825
850-875
900-925
950-975
1000-1025
1050-1075
1100-1125
1150-1175
1200-1225
1250-1275
1300-1325
1350-1375
1400-1425
1450-1475
1500-1525
1550-1575
1600-1625
1650-1675
1700-1725
1750-1775
1800-1825
1850-1875
1900-1925
1950-1975
2000-2025
2050-2075
2100-2125
2150-2175
2200-2225
2250-2275
Zinc Soil Concentration (mg/kg)

The fifth and final step of the screen compared the 95th percentile concentrations from the Giant Mine to the most restrictive of the ecological and human health components of the appropriate screening criteria in order to identify those COPC for further consideration in the ERA and HHRA, respectively. Most of the component values were obtained from the CCME (2017); however, the component values for antimony, vanadium and zinc were obtained from the MOE (2011); these values are based on an agricultural scenario similar to the CCME and are deemed appropriate for use.

This essentially represents a qualitative screening level risk assessment. Uranium was removed from consideration as the 95th percentile concentration at the Giant Mine was below both the ecological and human health components. There is no screening criterion, and hence no ecological or human health components, available for manganese, toxicity data are available and therefore it was selected as a COPC for both the ERA and HHRA.

As shown in Figure D.2, the remaining constituents retained as COPC include: antimony, arsenic, cadmium, copper, lead, manganese, vanadium, and zinc. Of these COPC, copper, and zinc were not carried forward for the HHRA since the 95th percentile of measured concentrations at the Giant Mine were below the human health components. Cadmium was not retained as a COPC for the ERA as the 95th percentile of measured concentrations at the Giant Mine was below the ecological component value.

A sensitivity analysis was carried out to investigate the effect of different methods of data treatment for non-detect values (i.e., <MDL). For soil, this analysis involved looking at many of the common substitutions that are present in the literature (i.e., 0, ½ MDL, 1/√(2) MDL, MDL). It should be noted that a substitution of 0 or the MDL itself are the extreme bounds on the possible true value of the soil concentration. The sensitivity test found that none of these substitutions changed the final soil COPC list, as detailed in ATTACHMENT D.2.

D.3 Constituents of Potential Concern in Surface Water

The surface water COPC screen was completed to identify COPC in Yellowknife Bay for human receptors (i.e., for the HHRA) that may use this water body as a drinking water source directly (i.e., not municipally treated and distributed), and to identify COPC in both Baker Creek and Yellowknife Bay for aquatic biota (i.e., for the ERA). Data for total metals collected from June 2011 onwards were considered in the process to represent current conditions as these data were collected after the JoJo tailings spill.

For Baker Creek, data from all reaches downstream of Baker Pond were included, as well as data collected from Back Bay at the outlet of Baker Creek (i.e., Station S18 that was sampled in 2012 and 2013 [Stantec 2014b]). For Yellowknife Bay, data from all areas were considered, including Back Bay (with the exception of S18), North Yellowknife Bay (i.e., around Latham Island and Ndilo), and South Yellowknife Bay (i.e., east of Yellowknife and around Dettah). Due to the large number of measurements available for each location, the 95th percentile concentrations of the measured data were used in the screening process. As discussed above, this is considered to be a reasonably conservative approach for omitting anomalous measurements.

For the HHRA, the Health Canada (2017) Guidelines for Canadian Drinking Water Quality were selected preferentially as the screening criteria. It should be noted that Health Canada considers that water with concentrations of constituents below these values is safe to drink. The risk-based values for drinking water for arsenic are based on the as low as reasonably achievable (ALARA) principle. In instances where the guideline for a constituent was based on an aesthetic objective (AO) or operational guideline (OG) and not a health-based maximum acceptable concentration (MAC), other sources of health-based drinking water guidelines were consulted including the British Columbia Ministry of Environment (BCMOE 2010) for aluminum, iron and manganese, and the U.S. EPA (2016a) Regional Screening Levels (RSLs) for tap water. To be consistent with the Giant Mine Problem Formulation (Stantec 2015) and Canadian guideline derivation procedures, the RSLs were adjusted for a target hazard quotient (THQ) value of 0.2 (i.e., RSL for a THQ of 1, divided by 5) for non-carcinogenic constituents.

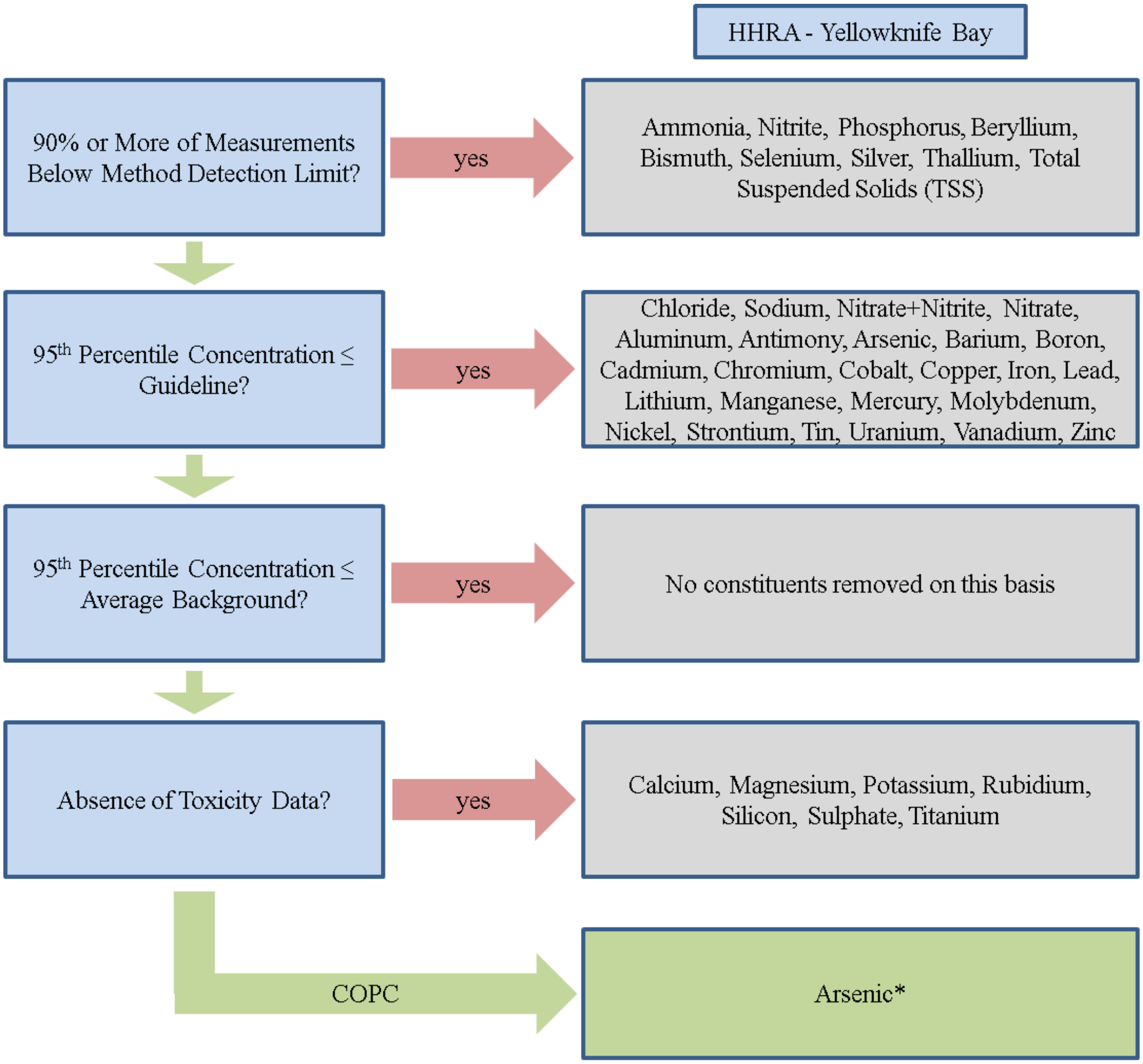
For selecting COPC for the ERA, surface water quality guidelines for the protection of freshwater aquatic life for long-term exposure from the CCME (2017) were considered. In the absence of a value from the CCME, other sources were consulted such as the Saskatchewan Environmental Quality Guidelines (SEQG; Government of Saskatchewan (GS 2015)), U.S. EPA (2016b) Water Quality Benchmarks for Aquatic Life, and the BCMOE (2017) Water Quality Guidelines to Protect Aquatic Life.

For guidelines that vary with hardness (i.e., copper, lead, manganese, and nickel), the average hardness of the 2010 to 2015 measurements for that particular waterbody (i.e., 46.8 mg/L for Yellowknife Bay and 394 mg/L for Baker Creek) was used to set the guideline. Ammonia toxicity increases with increasing temperature and pH, and the CCME (2017) provides a table of guideline values for different pH values and temperatures. For the screen, the guideline value for a temperature of 20°C and a pH of

8.0 was selected, based on the monthly average temperature in Baker Creek in a warmer month (18.5°C for August 2015) and the average field pH over 2010 to 2015 (7.86). Temperature data are not available for Yellowknife Bay, and thus the guideline for Baker Creek was used. Although the average pH (7.65) is slightly lower in Yellowknife Bay than in Baker Creek, and the temperature would be expected to be as well, the use of the higher pH and temperature is conservative.

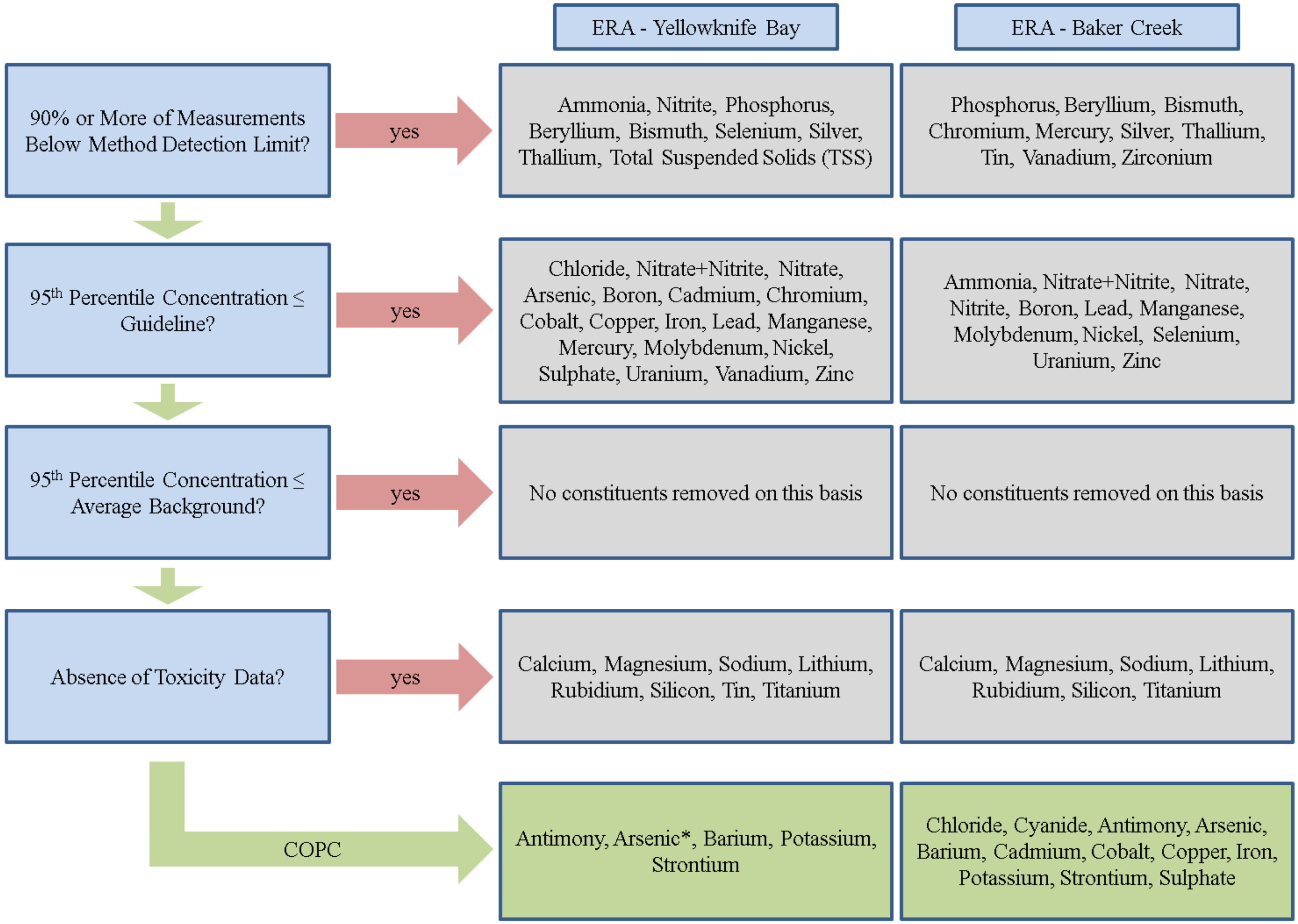
A summary of the screening process for COPC in surface water is provided in Figure D.4 for the HHRA and Figure D.5 for the ERA. Summary statistics of the considered data as well as the screening results are presented below in Table D.2 (for the HHRA screen in Yellowknife Bay), Table D.3 (for the ERA screen in Yellowknife Bay), and Table D.4 (for the ERA screen in Baker Creek).

Figure D.4 Flowchart of surface water constituents of potential concern screening results for the human health risk assessment



* Although arsenic concentrations were below the Health Canada Drinking Water Guideline in Yellowknife Bay, it was retained in the final list of COPC due to community concerns related to fish consumption and sediment contact.

Figure D.5 Flowchart of surface water constituents of potential concern screening results for the ecological risk assessment



* Although arsenic was below the aquatic life guideline in Yellowknife Bay, it was retained in the final list of COPC due to community concerns.

Table D.2 Selection of constituents of potential concern in surface water in Yellowknife Bay for the human health risk assessment

Constituent	Unit	Guideline	Bkgd Avg	N	N<MDL	Minimum	Maximum	Average	St. Dev.	95th Percentile	Heavily Censored? (90% < MDL)	95th Percentile ≤ Guideline?	95th Percentile ≤ Bkgd Avg?	HH Tox Data Available?	HH COPC?	Rationale
General Water Chemistry																
Calcium	mg/L	-	12.1	229	0	4.67	28	13.9	7.6	26.8	N	-	N	N	N	No guideline, no toxicity data available.
Chloride	mg/L	250	3.40	195	0	1.66	8.2	3.80	1.82	7.23	N	Y	N	N	N	95th percentile below guideline.
Conductivity	µS/cm	-	108	195	0	55.1	227	115	57	217	N	-	N	N	N	Not a human health concern.
Hardness ($CaCO_3$)	mg/L	-	43.9	195	0	21.3	112	46.8	24.2	88.0	N	-	N	N	N	Not a human health concern.
Magnesium	mg/L	-	3.32	228	0	1.88	6.6	3.73	1.50	6.22	N	-	N	N	N	No guideline, no toxicity data available.
Potassium	mg/L	-	1.04	229	6	0.72	1.3	1.02	0.08	1.12	N	-	N	N	N	No guideline, no toxicity data available.
Sodium	mg/L	200	3.61	229	0	1.80	8	4.12	1.9	7.25	N	Y	N	N	N	95th percentile below guideline.
Sulphate	mg/L	-	8.87	195	0	2.79	23	10.0	6.4	21.1	N	-	N	N	N	No guideline, no toxicity data available.
Total Dissolved Solids	mg/L	-	69.9	302	0	28.1	173	60.6	29.8	116	N	-	N	N	N	Not human health concern, individual ions used.
Total Suspended Solids	mg/L	-	3.04	161	158	1.50	4.00	1.50	0.30	1.50	Y	-	Y	N	N	Heavily censored (90% or more < MDL).
Nutrients																
Ammonia-N, total	mg/L	-	0.02	195	190	0.003	0.03	0.02	0.01	0.025	Y	-	N	N	N	Heavily censored (90% or more < MDL).
Nitrate+Nitrite-N	mg/L	11	0.03	175	144	0.025	0.22	0.04	0.02	0.086	N	Y	N	N	N	95th percentile below guideline.
Nitrate-N	mg/L	10	0.03	161	113	0.025	0.17	0.04	0.03	0.087	N	Y	N	Y	N	95th percentile below guideline.
Nitrite-N	mg/L	1	0.01	161	161	0.001	0.03	0.02	0.01	0.025	Y	Y	N	Y	N	Heavily censored (90% or more < MDL).
Phosphorus	mg/L	-	0.03	167	160	0.01	0.15	0.03	0.04	0.15	Y	-	N	N	N	Heavily censored (90% or more < MDL).
Metals and Trace Elements																
Aluminum	mg/L	9.5	0.07	199	17	0.007	0.23	0.05	0.03	0.11	N	Y	N	Y	N	95th percentile below guideline.
Antimony	mg/L	0.006	0.0002	199	138	0.00003	0.001	0.0002	0.0001	0.0005	N	Y	N	Y	N	95th percentile below guideline.
Arsenic	mg/L	0.01	0.0005	237	0	0.0003	0.01	0.002	0.001	0.003	N	Y	N	Y	N	95th percentile below guideline.
Barium	mg/L	1	0.02	199	1	0.0001	0.05	0.02	0.013	0.042	N	Y	N	Y	N	95th percentile below guideline.
Beryllium	mg/L	0.005	0.001	199	199	0.000005	0.001	0.0004	0.0002	0.0005	Y	Y	Y	Y	N	Heavily censored (90% or more < MDL).
Bismuth	mg/L	-	0.04	53	49	0.00005	0.0003	0.0001	0.0001	0.0003	Y	-	Y	N	N	Heavily censored (90% or more < MDL).
Boron	mg/L	5	0.02	195	140	0.005	0.03	0.02	0.007	0.025	N	Y	N	Y	N	95th percentile below guideline.
Cadmium	mg/L	0.005	0.00002	199	149	0.000003	0.0001	0.000008	0.00001	0.00002	N	Y	Y	Y	N	95th percentile below guideline.
Chromium	mg/L	0.05	0.001	199	142	0.0001	0.001	0.0004	0.0001	0.0005	N	Y	Y	Y	N	95th percentile below guideline.
Cobalt	mg/L	0.0012	0.0013	199	165	0.000006	0.001	0.0007	0.0004	0.001	N	Y	Y	Y	N	95th percentile below guideline.
Copper	mg/L	1	0.0009	233	72	0.0005	0.0024	0.001	0.0004	0.0015	N	Y	N	Y	N	95th percentile below guideline.
Iron	mg/L	6.5	0.06	233	51	0.005	0.20	0.04	0.03	0.076	N	Y	N	N	N	95th percentile below guideline.
Lead	mg/L	0.01	0.0001	199	132	0.000005	0.001	0.00007	0.00007	0.0002	N	Y	N	Y	N	95th percentile below guideline.
Lithium	mg/L	0.008	0.00	199	161	0.002	0.005	0.004	0.001	0.005	N	Y	N	N	N	95th percentile below guideline.
Manganese	mg/L	0.55	0.002	233	108	0.0002	0.006	0.002	0.001	0.003	N	Y	N	Y	N	95th percentile below guideline.
Mercury	mg/L	0.001	0.0004	302	253	0.0000003	0.00001	0.00001	0.000005	0.00001	N	Y	Y	Y	N	95th percentile below guideline.
Molybdenum	mg/L	0.02	0.001	199	135	0.0001	0.003	0.002	0.001	0.003	N	Y	N	Y	N	95th percentile below guideline.
Nickel	mg/L	0.078	0.001	199	136	0.0003	0.0012	0.0009	0.0002	0.001	N	Y	N	Y	N	95th percentile below guideline.
Rubidium	mg/L	-	-	38	0	0.0007	0.0019	0.0012	0.0003	0.002	N	-	-	N	N	No guideline, no toxicity data available.
Selenium	mg/L	0.05	0.0002	199	199	0.00005	0.0005	0.0002	0.0001	0.0003	Y	Y	N	Y	N	Heavily censored (90% or more < MDL).
Silicon	mg/L	-	0.89	20	0	0.42	1.42	0.58	0.27	1.13	N	-	N	N	N	No guideline, no toxicity data available.
Silver	mg/L	0.0188	0.001	199	199	0.000003	0.00005	0.00001	0.000007	0.00001	Y	Y	Y	Y	N	Heavily censored (90% or more < MDL).
Strontium	mg/L	2.4	0.04	57	0	0.02	0.14	0.08	0.04	0.14	N	Y	N	Y	N	95th percentile below guideline.
Thallium	mg/L	0.00004	0.02	199	199	0.00003	0.0001	0.00004	0.00001	0.0001	Y	N	Y	Y	N	Heavily censored (90% or more < MDL).
Tin	mg/L	2.4	0.02	195	175	0.00005	0.03	0.02	0.01	0.025	N	Y	N	Y	N	95th percentile below guideline.
Titanium	mg/L	-	0.004	165	56	0.0005	0.006	0.002	0.002	0.005	N	-	N	N	N	No guideline, no toxicity data available.
Uranium	mg/L	0.02	0.0003	199	0	0.0001	0.0004	0.0003	0.0001	0.0004	N	Y	N	Y	N	95th percentile below guideline.
Vanadium	mg/L	0.0172	0.003	199	141	0.00006	0.0006	0.0004	0.0002	0.0005	N	Y	Y	Y	N	95th percentile below guideline.
Zinc	mg/L	5	0.003	233	137	0.00005	0.034	0.003	0.004	0.010	N	Y	N	Y	N	95th percentile below guideline.

Table D.3 Selection of constituents of potential concern in surface water in Yellowknife Bay for the ecological risk assessment

Constituent	Unit	Guideline	Bkgd Avg	N	N<MDL	Minimum	Maximum	Average	St. Dev.	95th Percentile	Heavily Censored? (90% < MDL)	95th Percentile ≤ Guideline?	95th Percentile ≤ Bkgd Avg?	Aquatic Tox Data Available?	Aquatic COPC?	Rationale
General Water Chemistry																
Calcium	mg/L	-	12.1	229	0	4.67	28	13.9	7.6	26.8	N	-	N	N	N	No guideline, no toxicity data available.
Chloride	mg/L	120	3.40	195	0	1.66	8.2	3.80	1.82	7.23	N	Y	N	Y	N	95th percentile below guideline.
Conductivity	µS/cm	-	108	195	0	55.1	227	115	57	217	N	-	N	N	N	Not ecological health concern, individual ions used.
Hardness ($CaCO_3$)	mg/L	-	43.9	195	0	21.3	112	46.8	24.2	88.0	N	-	N	N	N	Not an ecological health concern.
Magnesium	mg/L	-	3.32	228	0	1.88	6.6	3.73	1.50	6.22	N	-	N	N	N	No guideline, no toxicity data available.
Potassium	mg/L	-	1.04	229	6	0.72	1.3	1.02	0.08	1.12	N	-	N	Y	**Y**	No guideline, toxicity data available.
Sodium	mg/L	-	3.61	229	0	1.80	8	4.12	1.9	7.25	N	-	N	N	N	No guideline, no toxicity data available.
Sulphate	mg/L	218	8.87	195	0	2.79	23	10.0	6.4	21.1	N	Y	N	Y	N	95th percentile below guideline.
Total Dissolved Solids	mg/L	-	69.9	302	0	28.1	173	60.6	29.8	116	N	-	N	N	N	Not ecological health concern, individual ions used.
Total Suspended Solids	mg/L	-	3.04	161	158	1.50	4.00	1.50	0.30	1.50	Y	-	Y	N	N	Heavily censored (90% or more < MDL).
Nutrients																
Ammonia-N, total	mg/L	0.41	0.02	195	190	0.003	0.03	0.02	0.01	0.025	Y	Y	N	Y	N	Heavily censored (90% or more < MDL).
Nitrate+Nitrite-N	mg/L	3.06	0.03	175	144	0.025	0.22	0.04	0.02	0.086	N	Y	N	Y	N	95th percentile below guideline.
Nitrate-N	mg/L	3	0.03	161	113	0.025	0.17	0.04	0.03	0.087	N	Y	N	Y	N	95th percentile below guideline.
Nitrite-N	mg/L	0.06	0.01	161	161	0.001	0.03	0.02	0.01	0.025	Y	Y	N	Y	N	Heavily censored (90% or more < MDL).
Phosphorus	mg/L	-	0.03	167	160	0.01	0.15	0.03	0.04	0.15	Y	-	N	N	N	Heavily censored (90% or more < MDL).
Metals and Trace Elements																
Aluminum	mg/L	0.1	0.07	199	17	0.007	0.23	0.05	0.03	0.11	N	N	N	Y	N	At average pH (7.65), aluminum is in not accessible.
Antimony	mg/L	-	0.0002	199	138	0.00003	0.001	0.0002	0.0001	0.0005	N	-	N	Y	**Y**	No guideline, toxicity data available.
Arsenic	mg/L	0.005	0.0005	237	0	0.0003	0.01	0.002	0.001	0.003	N	Y	N	Y	N	95th percentile below guideline.
Barium	mg/L	-	0.02	199	1	0.0001	0.05	0.02	0.013	0.042	N	-	N	Y	**Y**	No guideline, toxicity data available.
Beryllium	mg/L	-	0.001	199	199	0.000005	0.001	0.0004	0.0002	0.0005	Y	-	Y	Y	N	Heavily censored (90% or more < MDL).
Bismuth	mg/L	-	0.04	53	49	0.00005	0.0003	0.0001	0.0001	0.0003	Y	-	Y	N	N	Heavily censored (90% or more < MDL).
Boron	mg/L	1.5	0.02	195	140	0.005	0.03	0.02	0.007	0.025	N	Y	N	Y	N	95th percentile below guideline.
Cadmium	mg/L	0.00009	0.00002	199	149	0.000003	0.0001	0.000008	0.00001	0.00002	N	Y	Y	Y	N	95th percentile below guideline.
Chromium	mg/L	0.001	0.001	199	142	0.0001	0.001	0.0004	0.0001	0.0005	N	Y	Y	Y	N	95th percentile below guideline.
Cobalt	mg/L	0.0025	0.0013	199	165	0.000006	0.001	0.0007	0.0004	0.001	N	-	Y	Y	N	95th percentile below guideline.
Copper	mg/L	0.002	0.0009	233	72	0.0005	0.0024	0.001	0.0004	0.0015	N	Y	N	Y	N	95th percentile below guideline.
Iron	mg/L	0.3	0.06	233	51	0.005	0.20	0.04	0.03	0.076	N	Y	N	Y	N	95th percentile below guideline.
Lead	mg/L	0.001	0.0001	199	132	0.000005	0.001	0.00007	0.00007	0.0002	N	Y	N	Y	N	95th percentile below guideline.
Lithium	mg/L	-	0.00	199	161	0.002	0.005	0.004	0.001	0.005	N	-	N	N	N	No guideline, no toxicity data available.
Manganese	mg/L	0.81	0.002	233	108	0.0002	0.006	0.002	0.001	0.003	N	Y	N	Y	N	95th percentile below guideline.
Mercury	mg/L	0.000026	0.0004	302	253	0.0000003	0.00001	0.00001	0.000005	0.00001	N	Y	Y	Y	N	95th percentile below guideline.
Molybdenum	mg/L	0.073	0.001	199	135	0.0001	0.003	0.002	0.001	0.003	N	Y	N	Y	N	95th percentile below guideline.
Nickel	mg/L	0.025	0.001	199	136	0.0003	0.0012	0.0009	0.0002	0.001	N	Y	N	Y	N	95th percentile below guideline.
Rubidium	mg/L	-	-	38	0	0.0007	0.0019	0.0012	0.0003	0.002	N	-	-	N	N	No guideline, no toxicity data available.
Selenium	mg/L	0.001	0.0002	199	199	0.00005	0.0005	0.0002	0.0001	0.0003	Y	Y	N	Y	N	Heavily censored (90% or more < MDL).
Silicon	mg/L	-	0.89	20	0	0.42	1.42	0.58	0.27	1.13	N	-	N	N	N	No guideline, no toxicity data available.
Silver	mg/L	0.00025	0.001	199	199	0.000003	0.00005	0.00001	0.000007	0.00001	Y	Y	Y	Y	N	Heavily censored (90% or more < MDL).
Strontium	mg/L	-	0.04	57	0	0.02	0.14	0.08	0.04	0.14	N	-	N	Y	**Y**	No guideline, toxicity data available.
Thallium	mg/L	0.0008	0.02	199	199	0.00003	0.0001	0.00004	0.00001	0.0001	Y	Y	Y	Y	N	Heavily censored (90% or more < MDL).
Tin	mg/L	-	0.02	195	175	0.00005	0.03	0.02	0.01	0.025	N	-	N	N	N	No guideline, no toxicity data available.
Titanium	mg/L	-	0.004	165	56	0.0005	0.006	0.002	0.002	0.005	N	-	N	N	N	No guideline, no toxicity data available.
Uranium	mg/L	0.015	0.0003	199	0	0.0001	0.0004	0.0003	0.0001	0.0004	N	Y	N	Y	N	95th percentile below guideline.
Vanadium	mg/L	0.05	0.003	199	141	0.00006	0.0006	0.0004	0.0002	0.0005	N	Y	Y	Y	N	95th percentile below guideline.
Zinc	mg/L	0.03	0.003	233	137	0.00005	0.034	0.003	0.004	0.010	N	N	N	Y	N	95th percentile below guideline.

Table D.4 Selection of constituents of potential concern in surface water in Baker Creek for the ecological risk assessment

Constituent	Unit	Guideline	Bkgd Avg	N	N<MDL	Minimum	Maximum	Average	St. Dev.	95th Percentile	Heavily Censored? (90% < MDL)	95th Percentile ≤ Guideline?	95th Percentile ≤ Bkgd Avg?	Aquatic Tox Data Available?	Aquatic COPC?	Rationale
General Water Chemistry																
Calcium	mg/L	-	12.1	288	0	4.63	441	124	148	387	N	-	N	N	N	No guideline, no toxicity data available.
Chloride	mg/L	120	3.40	29	0	1.91	496	207	175	454	N	N	N	Y	Y	95th percentile above guideline.
Conductivity	µS/cm	-	108	287	0	53.9	3400	962	1120	3014	N	-	N	N	N	Not ecological health concern, individual ions used.
Cyanide	mg/L	0.005	0.003	143	111	0.001	0.01	0.003	0.002	0.008	N	N	N	Y	Y	95th percentile above guideline.
Hardness ($CaCO_3$)	mg/L	-	43.9	294	0	21.1	1550	450	521	1340	N	-	N	N	N	Not an ecological health concern.
Magnesium	mg/L	-	3.32	288	0	1.73	110	30	35.3	93.6	N	-	N	N	N	No guideline, no toxicity data available.
Potassium	mg/L	-	1.04	288	146	0.95	14.1	4.31	4.37	11.9	N	-	N	Y	Y	No guideline, toxicity data available.
Sodium	mg/L	-	3.61	288	0	1.70	216	53.27	67.3	178	N	-	N	N	N	No guideline, no toxicity data available.
Sulphate	mg/L	429	8.87	29	0	3.24	1200	565	470	1120	N	N	N	Y	Y	95th percentile above guideline.
Total Dissolved Solids	mg/L	-	69.9	295	0	1.3	2610	693	874	2333	N	-	N	N	N	Not ecological health concern, individual ions used.
Total Suspended Solids	mg/L	-	3.0	268	42	0.50	2660	28.3	243	12.8	N	-	N	N	N	Not an ecological health concern.
Nutrients																
Ammonia-N, total	mg/L	0.41	0.02	268	77	0.003	0.47	0.02	0.05	0.04	N	Y	N	Y	N	95th percentile below guideline.
Nitrate+Nitrite-N	mg/L	3.06	0.03	40	8	0.003	1.89	0.45	0.59	1.66	N	Y	N	Y	N	95th percentile below guideline.
Nitrate-N	mg/L	3	0.03	29	9	0.003	1.87	0.72	0.65	1.72	N	Y	N	Y	N	95th percentile below guideline.
Nitrite-N	mg/L	0.06	0.01	29	19	0.001	0.027	0.02	0.01	0.03	N	Y	N	Y	N	95th percentile below guideline.
Phosphorus	mg/L	-	0.03	282	259	0.01	0.45	0.13	0.05	0.15	Y	-	N	N	N	Heavily censored (90% or more < MDL).
Metals and Trace Elements																
Aluminum	mg/L	0.1	0.07	288	5	0.003	4.34	0.11	0.30	0.26	N	N	N	Y	N	At average pH (7.86), aluminum is not accessible.
Antimony	mg/L	-	0.0002	288	6	0.00017	1.39	0.094	0.14	0.34	N	-	N	Y	Y	No guideline, toxicity data available.
Arsenic	mg/L	0.005	0.0005	288	1	0.0004	8.54	0.14	0.51	0.28	N	N	N	Y	Y	95th percentile above guideline.
Barium	mg/L	-	0.02	288	48	0.0042	0.09	0.02	0.02	0.06	N	-	N	Y	Y	No guideline, toxicity data available.
Beryllium	mg/L	-	0.001	288	288	0.000005	0.50	0.004	0.03	0.003	Y	-	N	Y	N	Heavily censored (90% or more < MDL).
Bismuth	mg/L	-	0.04	267	266	0.00001	0.30	0.093	0.03	0.10	Y	-	N	N	N	Heavily censored (90% or more < MDL).
Boron	mg/L	1.5	0.02	288	182	0.010	0.41	0.12	0.11	0.33	N	Y	N	Y	N	95th percentile below guideline.
Cadmium	mg/L	0.00009	0.00002	288	222	0.000003	0.08	0.0009	0.006	0.0001	N	N	N	Y	Y	95th percentile above guideline.
Chromium	mg/L	0.001	0.001	288	271	0.0001	0.50	0.0064	0.03	0.005	Y	N	N	Y	N	Heavily censored (90% or more < MDL).
Cobalt	mg/L	0.0025	0.0013	288	257	0.00005	0.15	0.0056	0.01	0.005	N	N	N	Y	Y	95th percentile above guideline.
Copper	mg/L	0.004	0.001	288	8	0.0005	0.10	0.006	0.0074	0.01	N	N	N	Y	Y	95th percentile above guideline.
Iron	mg/L	0.3	0.06	288	1	0.014	7.59	0.20	0.49	0.44	N	N	N	Y	Y	95th percentile above guideline.
Lead	mg/L	0.007	0.0001	288	34	0.000025	0.10	0.001	0.008	0.002	N	Y	N	Y	N	95th percentile below guideline.
Lithium	mg/L	-	0.00	288	188	0.002	0.045	0.012	0.010	0.03	N	-	N	N	N	No guideline, no toxicity data available
Manganese	mg/L	2.59	0.002	288	65	0.0010	0.86	0.036	0.079	0.11	N	Y	N	Y	N	95th percentile below guideline
Mercury	mg/L	0.000026	0.0004	271	266	0.0000003	0.00005	0.00000	0.000003	0.00001	Y	Y	Y	Y	N	Heavily censored (90% or more < MDL).
Molybdenum	mg/L	0.073	0.001	288	10	0.0001	0.10	0.006	0.009	0.02	N	Y	N	Y	N	95th percentile below guideline.
Nickel	mg/L	0.15	0.001	288	14	0.0003	0.25	0.007	0.016	0.02	N	Y	N	Y	N	95th percentile below guideline.
Rubidium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	N	N	No guideline, no toxicity data available.
Selenium	mg/L	0.001	0.0002	288	130	0.00003	0.1000	0.0006	0.0059	0.0006	N	Y	N	Y	N	95th percentile below guideline.
Silicon	mg/L	-	0.89	281	0	0.21	6.43	0.79	0.58	1.51	N	-	N	N	N	No guideline, no toxicity data available.
Silver	mg/L	0.00025	0.001	288	269	0.000005	0.05	0.005	0.003	0.005	Y	N	N	Y	N	Heavily censored (90% or more < MDL).
Strontium	mg/L	-	0.04	281	0	0.03	4.85	1.05	1.36	3.53	N	-	N	Y	Y	No guideline, toxicity data available.
Thallium	mg/L	0.0008	0.02	288	277	0.00001	0.30	0.087	0.037	0.10	Y	N	N	Y	N	Heavily censored (90% or more < MDL).
Tin	mg/L	-	0.02	288	288	0.00005	0.50	0.02	0.03	0.015	Y	-	N	N	N	Heavily censored (90% or more < MDL).
Titanium	mg/L	-	0.004	288	215	0.0005	0.50	0.010	0.030	0.027	N	-	N	N	N	No guideline, no toxicity data available.
Uranium	mg/L	0.015	0.0003	288	3	0.0002	0.05	0.001	0.003	0.004	N	Y	N	Y	N	95th percentile below guideline.
Vanadium	mg/L	0.05	0.003	288	281	0.00025	0.50	0.015	0.029	0.015	Y	Y	N	Y	N	Heavily censored (90% or more < MDL).
Zinc	mg/L	0.03	0.003	288	173	0.00150	1.500	0.012	0.090	0.013	N	Y	N	Y	N	95th percentile below guideline.
Zirconium	mg/L	-	-	9	9	0.00005	0.0003	0.0001	0.0001	0.0003	Y	-	-	Y	N	Heavily censored (90% or more < MDL).

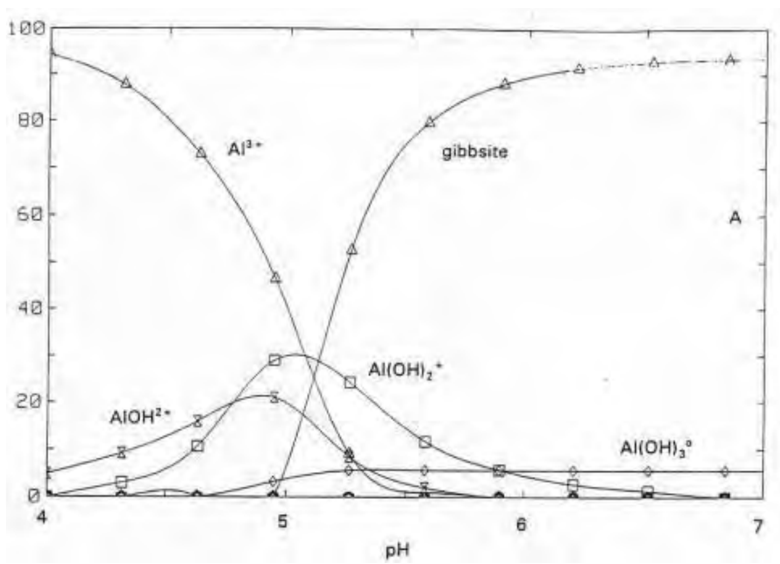
Following the screening procedure outlined in Figure D.1, the surface water COPC screen first identified constituents where the more than 90% of the data were below the MDL. As shown in Figure D.4 and Figure D.5, ammonia, nitrite, phosphorus, beryllium, bismuth, selenium, silver, thallium, and total suspended solids (TSS) were not considered further in Yellowknife Bay on the basis of 90% or more of measurements being below the MDL, while in Baker Creek (Figure D.5), phosphorus, beryllium, bismuth, chromium, mercury, silver, thallium, tin, vanadium, and zirconium were not considered further. The reported MDLs were examined closely to determine whether any of the COPC had detection limits above the water quality criteria. This investigation found that all the maximum reported MDLs were below the CCME aquatic guidelines (the most stringent water quality guidelines) and thus it is reasonable to exclude these constituents from further investigation.

As indicated in Figure D.4 for the HHRA and Figure D.5 for the ERA, the following constituents were dropped from further consideration on the basis of the 95th percentile of the measured concentrations being below the appropriate guideline:

- Yellowknife Bay (HHRA): chloride, sodium, nitrate+nitrite, nitrate, aluminum, antimony, arsenic, barium, boron, cadmium, chromium, cobalt, copper, iron, lead, lithium, manganese, mercury, molybdenum, nickel, strontium, tin, uranium, vanadium, and zinc.
- Yellowknife Bay (ERA): chloride, nitrate+nitrite, nitrate, arsenic, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, sulphate, uranium, vanadium, and zinc.
- Baker Creek (ERA): ammonia, nitrate+nitrite, nitrate, nitrite, boron, lead, manganese, molybdenum, nickel, selenium, strontium, uranium, and zinc.

Although the 95th percentile concentrations of the data for aluminum were above the aquatic life guideline in Baker Creek and Yellowknife Bay, additional considerations were included in the final determination for whether aluminum was a COPC. Aluminum is complexed by both inorganic and organic ligands in water (see Figure D.6). Below a pH of 6, organic complexes and the hydrated free ion tend to be the principal forms. At higher pH values, the dissolved species are only a small fraction of the total aluminum present since most of the aluminum is in a particulate form, which is inaccessible and therefore much less toxic than dissolved aluminum. At pH values between 5.5 and 9, there is very little aluminum that is in true solution and available for uptake by biological species (Gardner et al. 2002). Since the average pH is 7.65 in Yellowknife Bay and 7.86 in Baker Creek, aluminum is not considered to be in an available (toxic) form. In addition, measured data in Baker Creek support the conclusion that aluminium in Baker Creek is not in a dissolved (bioavailable) form. For example the mean total aluminum concentration in Upper Baker Creek is 0.086 mg/L and the corresponding mean dissolved aluminum concentration is 0.005 mg/L, indicating that approximately 5% of aluminum is in the dissolved form. Similarly in Lower Baker Creek, the mean total aluminum concentration is approximately 0.11 mg/L and the mean dissolved aluminum concentration is 0.0078 mg/L representing approximately 7% in a dissolved form. Thus, aluminum is not in a bioavailable form. It should be noted that in Yellowknife River (background location) the mean total and dissolved aluminum concentrations are the same as those measured in Lower Baker Creek. The treated effluent has a mean total aluminum concentration of 0.015 mg/L and thus there is also not a substantial load of aluminum associated with the Giant Mine. For all of these reasons, aluminum was not considered to be a COPC.

Figure D.6 Aluminum speciation in water from pH 4 to 7



Note: from Gensemer and Playle (1999).

The next step involved comparing the 95th percentiles of the measured data to background concentrations to determine which constituents are present at natural levels. Average background concentrations were developed from data obtained from three locations that have historically been considered background locations (see ATTACHMENT D.1): Yellowknife River, South Yellowknife Bay (near Horseshoe

Island), and Prosperous Lake. No additional constituents were removed the list of potential COPC on this basis.

The final step involved an evaluation of whether or not toxicity data were available for a constituent. The following constituents were removed on the basis of having no aquatic or human health toxicity data:

- Yellowknife Bay (HHRA): calcium, magnesium, potassium, rubidium, silicon, sulphate, and titanium.
- Yellowknife Bay (ERA): calcium, magnesium, sodium, lithium, rubidium, silicon, tin, and titanium.
- Baker Creek (ERA): calcium, magnesium, sodium, lithium, rubidium, silicon, and titanium.

The screening procedure is summarized in Table D.2, Table D.3, and Table D.4, as well as Figure D.4 and Figure D.5. No constituents were identified as COPC for the HHRA in Yellowknife Bay as all measured concentrations were below drinking water guidelines. For the ERA, antimony and barium were selected as COPC for both Yellowknife Bay and Baker Creek, while chloride, cyanide, arsenic, cadmium, cobalt, copper iron, and sulphate were also identified as COPC for Baker Creek. Even though arsenic concentrations in Yellowknife Bay were below both the drinking water guideline and the aquatic life guideline, it was retained as a COPC in Yellowknife Bay due to community concerns.

D.4 Constituents of Potential Concern in Sediment

A secondary screen was carried out for sediments to determine whether additional COPC would be identified. The screen was undertaken on sediments from Baker Creek and Yellowknife Bay. Data for total metals collected from May 2011 onwards were considered in the process to represent current conditions. For Baker Creek, data from all reaches downstream of Baker Pond were included, as well as data collected from Back Bay at the outlet of Baker Creek. For Yellowknife Bay, data from all areas were considered, including Back Bay near Latham Island, North Yellowknife Bay near Ndilo, and South Yellowknife Bay by Dettah. Due to the large number of measurements available for each location, the 95% UCLM concentrations of the measured data were used in the screening process. This is considered to be a reasonably conservative approach and representative of average concentrations.

In this secondary screening process, the 95% UCLM concentrations were compared to sediment quality guidelines for the protection of freshwater aquatic life for long-term exposure from the CCME (2017). This is essentially Step 2 of the screening process. Only those constituents with a guideline were considered in this step. If the 95% UCLM of the constituent was above the sediment quality guideline then it was considered to be a COPC and compared to the list from the surface water screen to determine whether it was already on the list or whether it should be added to the list. Summary statistics of the considered data as well as the screening results are presented in Table D.5 and Table D.6, for the ERA screen in Baker Creek and Yellowknife Bay, respectively. The results of this secondary screen indicated chromium, lead, mercury, and zinc were added to the COPC list for the Baker Creek ERA and chromium was added for the Yellowknife Bay ERA.

Table D.5 Selection of constituents of potential concern in sediment in Baker Creek for the ecological risk assessment

Constituent	Unit	Guideline	N	N<MDL	Minimum	Maximum	Average	St. Dev.	95% UCLM	95% UCLM ≤ Guideline?	Aquatic COPC?	Rationale
Arsenic	mg/kg	5.9	41	0	12	13700	1790	2577	2631	Y	**Y**	95% UCLM above guideline
Cadmium	mg/kg	0.6	41	1	0.05	23	1.8	4.1	4.6	Y	**Y**	95% UCLM above guideline
Chromium	mg/kg	37.3	41	0	10	59	40	11	43	Y	**Y**	95% UCLM above guideline
Copper	mg/kg	35.7	41	0	8.6	3490	444	720	916	Y	**Y**	95% UCLM above guideline
Lead	mg/kg	35	41	0	5.1	3440	217	583	614	Y	**Y**	95% UCLM above guideline
Mercury	mg/kg	0.17	41	3	0.0058	0.84	0.19	0.23	0.27	Y	**Y**	95% UCLM above guideline
Zinc	mg/kg	123	41	0	19	3830	410	748	557	Y	**Y**	95% UCLM above guideline

Note: Sediment quality guidelines for the protection of freshwater aquatic life for long-term exposure from the Canadian Council of Ministers of the Environment (CCME 2017).

Table D.6 Selection of constituents of potential concern in sediment in Yellowknife Bay for the ecological risk assessment

Constituent	Unit	Guideline	N	N<MDL	Minimum	Maximum	Average	St. Dev.	95% UCLM	95% UCLM ≤ Guideline?	Aquatic COPC?	Rationale
Arsenic	mg/kg	5.9	116	0	0.9	1980	374	464	562	Y	**Y**	95% UCLM above guideline
Cadmium	mg/kg	0.6	116	26	0.01	1.73	0.38	0.29	0.43	N	N	95% UCLM below guideline
Chromium	mg/kg	37.3	116	0	6.4	71	41	12	43	Y	**Y**	95% UCLM above guideline
Copper	mg/kg	35.7	116	0	1.87	231	65	50	85	Y	**Y**	95% UCLM above guideline
Lead	mg/kg	35	116	0	1.22	115	25	21	34	N	N	95% UCLM below guideline
Mercury	mg/kg	0.17	51	5	0.0025	0.16	0.056	0.038	0.079	N	N	95% UCLM below guideline
Zinc	mg/kg	123	116	0	7.2	248	103	43	120	N	N	95% UCLM below guideline

Note: Sediment quality guidelines for the protection of freshwater aquatic life for long-term exposure from the Canadian Council of Ministers of the Environment (CCME 2017).

D.5 Summary

The final list of COPC in soil, surface water, and sediment for the Giant Mine HHRA and ERA from this screening process is summarized in Table D.7.

Table D.7 Summary of constituents of potential concern for the human health and ecological risk assessment

Soil		Surface Water/Sediment		
ERA	HHRA	Yellowknife Bay – HHRA	Yellowknife Bay – ERA	Baker Creek - ERA
Antimony Arsenic Copper Lead Manganese Vanadium Zinc	Antimony Arsenic Cadmium Lead Manganese Vanadium	Arsenic	Antimony Arsenic Barium Chromium (*sed) Copper (*sed)	Chloride Cyanide Sulphate Antimony Arsenic Barium Cadmium Chromium (*sed) Cobalt Copper Iron Lead (*sed) Mercury (*sed) Zinc (*sed)

Note: Arsenic in Yellowknife Bay was measured below the drinking water guidelines as well as the guidelines for protection of aquatic life but was retained due to community concerns; *sed – identified based on the sediment screen only.

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LIST OF ATTACHMENTS

ATTACHMENT D.1

DEVELOPMENT OF BACKGROUND CONCENTRATIONS

APPENDIX D – ATTACHMENT 1: DEVELOPMENT OF BACKGROUND CONCENTRATIONS

This attachment provides an overview of the development of background concentrations in surface water and soil for use in screening for constituents of potential concern (COPC). Guidance from the Federal Contaminated Sites Action Plan (FCSAP 2015) indicates that background is representative of the true range of concentrations associated with the geographic area of the Giant Mine. Thus, the background samples selected for use in the COPC screen for the human health and ecological risk assessment (HHERA) were for areas in the local area around the Giant Mine but outside of the area of influence.

The FCSAP background document (2015) refers to guidance from the United States Environmental Protection Agency (U.S. EPA 2002) for developing an appropriate background concentration. This guidance uses an average concentration for background when comparing to exposure areas to determine the difference between background and exposure areas. This is the approach that was used for screening to identify the COPC.

SURFACE WATER

Average background concentrations used in the surface water COPC screen were calculated from data obtained from three background locations: Prosperous Lake, South Yellowknife Bay near Horseshoe Island, and Yellowknife River (Figure 1). For most constituents, 20 samples were available from Prosperous Lake (four sampling locations, South Yellowknife Bay (two sampling locations), and Yellowknife River (three sampling locations). The data used to calculate the average background surface water concentrations were obtained from five studies completed by Golder and Stantec from 2012 to 2014. All values below the method detection limit (MDL) were converted to ½ the MDL before calculating summary statistics (e.g., average, 95th percentile, and standard deviation). This approach was only used for the screening step. In the risk assessment, the detection limits were handled within the ProUCL program and no adjustments were made.

Table 1 provides a summary of the background statistics for all constituents used in the COPC screen.

Figure 1. Background surface water sampling locations

Table 1. Summary of background concentrations in surface water

Constituent	Unit	N	N<MDL	Minimum	Maximum	Average	St. Dev.	95th Percentile
Aluminum	mg/L	20	2	0.0105	0.6	0.07	0.12	0.12
Ammonia-N, total	mg/L	19	15	0.0025	0.06	0.02	0.01	0.03
Antimony	mg/L	20	19	0.000025	0.0002	0.0002	0.0001	0.0002
Arsenic	mg/L	20	1	0.0002	0.0012	0.0005	0.0002	0.0008
Barium	mg/L	20	1	0.0043	0.04	0.02	0.02	0.04
Beryllium	mg/L	20	20	0.00005	0.0025	0.0007	0.0008	0.0025
Bismuth	mg/L	8	8	0.0001	0.1	0.04	0.05	0.1
Boron	mg/L	20	17	0.0098	0.05	0.02	0.01	0.05
Cadmium	mg/L	20	20	$5.0x10^{-6}$	0.0001	$2.3x10^{-5}$	$3.4x10^{-5}$	0.0001
Calcium	mg/L	20	0	4.8	29	12	9.3	28
Chloride	mg/L	20	0	1.6	6.4	3.4	1.9	6.2
Chromium	mg/L	20	17	0.00015	0.005	0.001	0.002	0.005
Cobalt	mg/L	20	20	0.00005	0.005	0.0013	0.0016	0.005
Conductivity	µS/cm	19	0	52	207	108	68	201
Copper	mg/L	20	8	0.0005	0.0017	0.0009	0.0004	0.0014
Cyanide	mg/L	7	6	0.0025	0.0055	0.0029	0.0011	0.0046
Hardness (as CaCO3)	mg/L	20	0	21	87	44	29	87
Iron	mg/L	20	1	0.012	0.52	0.06	0.11	0.10
Lead	mg/L	20	15	0.000025	0.00058	$9.0x10^{-5}$	0.00013	0.00025
Lithium	mg/L	17	16	0.0017	0.005	0.005	0.001	0.005
Magnesium	mg/L	20	0	1.9	6.1	3.3	1.7	6.1
Manganese	mg/L	20	13	0.001	0.0093	0.0024	0.0019	0.0046
Mercury	mg/L	31	27	$5.0x10^{-6}$	0.0051	0.00044	0.0011	0.0026
Molybdenum	mg/L	20	13	0.00005	0.0025	0.0014	0.0012	0.0025
Nickel	mg/L	20	13	0.00025	0.0010	0.00078	0.0003	0.0010
Nitrate+Nitrite-N	mg/L	16	15	0.0026	0.072	0.028	0.019	0.045
Nitrate-N	mg/L	20	16	0.0025	0.072	0.025	0.023	0.067
Nitrite-N	mg/L	20	20	0.0005	0.025	0.014	0.012	0.025
Nitrogen	mg/L	1	0	0.25	0.25	0.25	NA	NA
pH, lab	-	19	0	7.1	8.1	7.6	0.3	8.1
Phosphate	mg/L	4	0	0.006	0.024	0.01	0.01	0.15
Phosphorus	mg/L	17	13	0.005	0.15	0.03	0.05	0.15
Potassium	mg/L	20	3	0.87	1.2	1.0	0.08	1.1
Radium-226	mg/L	1	1	0.0025	0.0025	0.0025	NA	NA
Selenium	mg/L	20	19	0.00005	0.0002	0.00016	$6.6x10^{-5}$	0.0002
Silicon	mg/L	5	0	0.35	1.8	0.89	0.66	1.4
Silver	mg/L	20	20	$5.0x10^{-6}$	0.005	0.0008	0.0018	0.005
Sodium	mg/L	20	0	1.8	7.0	3.6	2.1	7.0
Strontium	mg/L	8	0	0.024	0.126	0.038	0.036	0.093

Table 1. Summary of background concentrations in surface water (Cont'd)

Constituent	Unit	N	N<MDL	Minimum	Maximum	Average	St. Dev.	95th Percentile
Sulphate	mg/L	20	0	2.7	20.8	8.9	7.8	20
TDS	mg/L	31	0	29	136	70	40	125
Thallium	mg/L	20	20	$5.0x10^{-6}$	0.1	0.015	0.037	0.025
Tin	mg/L	20	18	0.00005	0.025	0.016	0.011	0.0062
Titanium	mg/L	20	12	0.0005	0.027	0.0039	0.0057	0.0062
Total Kjeldahl Nitrogen	mg/L	7	0	0.21	0.31	0.25	0.03	0.30
Total Organic Carbon (TOC)	mg/L	20	0	4	6.1	5.3	0.6	5.9
TSS	mg/L	20	17	0.5	33	3.0	7.1	3.1
Uranium	mg/L	20	0	0.00017	0.00043	0.0003	0.0001	0.0004
Vanadium	mg/L	20	18	0.000075	0.015	0.0026	0.0053	0.015
Zinc	mg/L	20	18	0.0015	0.011	0.0026	0.0021	0.0059

NA: Not applicable

SOIL

Average background concentrations used in the soil COPC screen were calculated from data reported in three studies (Stantec 2014; Stevens et al. 2015; Golder 2016), as well as till data collected in 1999, 2000, and 2001 by Daniel Kerr and compiled in the Geological Survey of Canada (GSC) database (Kerr 1999, 2000, 2001). The majority of the considered background data was obtained from the GSC database (Figure 2). The yellow outline on the figure represents the mineralized Greenstone Belt. The consideration of all background data, regardless of sampling location or depth, was appropriate as it is more representative of the regional background conditions. As there is a large set of data (n > 100 samples for most constituents), summary statistics could be calculated with confidence. All values below the MDL were converted to ½ the MDL before calculating summary statistics (e.g., average, 95th percentile, and standard deviation). This approach was only used for the screening step. In the risk assessment, the detection limits were handled within the ProUCL program and no adjustments were made.

Table 2 provides a summary of the background statistics for all constituents in soil used in the COPC screen.

Figure 2. Background soil sampling locations

Table 2. Summary of background concentrations in soil

Constituent	Unit	N	N<MDL	Minimum	Maximum	Average	St. Dev.	95th Percentile
Aluminum	mg/kg	54	0	14,100	86,600	71,978	10,147	83,940
Antimony	mg/kg	120	25	0.05	11	0.7	1.3	3.0
Arsenic	mg/kg	131	0	2.4	1500	66	199	179
Barium	mg/kg	120	0	73	750	389	118	570
Cadmium	mg/kg	54	54	2.5	2.5	2.5	0	2.5
Calcium	mg/kg	66	27	5000	50,000	13,258	10,724	37,500
Cesium	mg/kg	120	3	0.5	11	2.7	1.5	5.0
Chromium	mg/kg	120	0	29	980	103	104	155
Cobalt	mg/kg	120	2	2.5	320	21	33	43
Copper	mg/kg	54	0	5	128	27	20	59
Gold	mg/kg	120	44	0.001	0.56	0.012	0.052	0.027
Iron	mg/kg	120	0	13,000	200,000	40,398	26,066	87,410
Lead	mg/kg	54	0	15	30.5	20	3.2	26
Manganese	mg/kg	54	0	165	1505	316	221	452
Mercury	mg/kg	53	53	0.5	0.5	0.5	0	0.5
Molybdenum	mg/kg	120	79	0.5	12	1.6	2.0	6.0
Nickel	mg/kg	107	44	10	1970	46	189	76
Potassium	mg/kg	9	0	401	1909	972	478	1781
Rubidium	mg/kg	120	8	7.5	150	56	28	100
Selenium	mg/kg	107	107	1.5	2.5	2.0	0.5	2.5
Silver	mg/kg	107	107	1	2.5	1.7	0.8	2.5
Sodium	mg/kg	120	0	2000	30,900	21,708	5574	29,300
Strontium	mg/kg	54	0	38	334	237	47	318
Thorium	mg/kg	120	0	1.8	46	12	6.4	22
Tin	mg/kg	54	54	50	50	50	0	50
Uranium	mg/kg	120	2	0.25	42	3.8	4.5	10
Zinc	mg/kg	120	66	25	1920	93	179	226
Zirconium	mg/kg	54	24	100	400	194	95	370

NA: Not applicable

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ATTACHMENT D.2

METHOD DETECTION LIMIT TREATMENT SENSITIVITY ANALYSIS

APPENDIX D – ATTACHMENT 2: METHOD DETECTION LIMIT TREATMENT SENSITIVITY ANALYSIS

This attachment provides a discussion on the method detection limits in soils and surface water as well as a sensitivity analysis on using different treatment options for the method detection limit (MDL).

SOIL

Due to the size of the data set for soils, the investigation on MDLs focused on those constituents that were screened out on the basis of being heavily censored (i.e., 90% or more of the measurements being below the MDL). As a first step into the soil investigation, those constituents that were screened out on the basis of being heavily censored were reviewed, comparing the minimum and maximum reported MDL values to the agricultural soil quality guidelines from the Canadian Council of Ministers of the Environment (CCME 2017). The summary is as follows:

- Beryllium – 219 out of 224 measurements <MDL; maximum value of < 4.0 mg/kg is equal to the guideline (4 mg/kg). Therefore beryllium is not dropped from screening.

- Selenium – 219 out of 224 measurements <MDL; maximum reported MDL value of < 10 mg/kg is above the guideline (1 mg/kg). Looking at the entire dataset it was observed that detected levels of selenium were only associated with garden soils in Yellowknife. These are believed to be samples of imported soil and therefore not related to activities at the Giant Mine. Since selenium was not detected in any other soils in the study area it was dropped from further consideration. In addition, all of the MDLs are well below both the CCME (2017) human health component value (80 mg/kg) and the MOE (2011) Table 2 human health value (78 mg/kg), supporting the decision to drop selenium as a COPC in soil.

- Silicon – 43 out of 43 measurements <MDL; no guideline or background concentrations are available, however silicon was not measured in a single sample and was not expected to be associated with activities at the Giant Mine.

- Thallium – 203 out of 224 measurements <MDL; maximum value of 5.6 is above the guideline (1 mg/kg). However, only 16 of 224 measured concentrations or

reported MDL values are above the guideline, this represents less than 10% of the samples. In addition, thallium was not expected to be associated with activities at the Giant Mine and therefore is not considered further.

- Tin – 219 out of 224 measurements <MDL; maximum value of 4.0 mg/kg is below the guideline (5 mg/kg). Therefore tin was not considered further.

A sensitivity investigation was undertaken to examine the influence of detection limit treatment in generating summary statistics for the COPC screen. The investigation looked at the how the COPC screen outcomes would change if the <MDL values in both the background and exposure datasets were set to some of the common substitutions that are present in the literature (i.e., 0, 1/√(2) MDL, or MDL) instead of setting <MDL values equal to ½ the MDL (Antweiler 2015; Ogden 2010). This sensitivity investigation found that the treatment of the <MDL values has little influence on the final COPC list. The key differences as compared to the adopted approach (i.e, <MDL set to ½ MDL) are:

- Setting <MDL values to 0 – the t-test comparing background data to the Giant Mine concentrations found no statistically significant differences between the two datasets for uranium and would result in uranium being screened out during the initial phase of the screen. As uranium was screened out in the secondary screen by a comparison to the ecological and human health component values, this does not change the final COPC list.

- Setting <MDL values to 1/√(2) MDL or the MDL – the t-test comparing background data to the Giant Mine concentrations found no statistically significant differences between the two datasets for zinc and would result in zinc being screened out during the initial phase of the screen. Zinc is included in the final list of COPC for ecological receptors, demonstrating the conservative nature of using the ½ MDL approach.

These findings show that the COPC screen process is fairly robust with respect to MDL treatment and that setting <MDL values to ½ the MDL is a conservative approach as compared to the other methodologies considered.

SURFACE WATER

Due to the size of the data set for surface water, the investigation focused on those constituents that were screened out on the basis of being heavily censored (i.e., 90% or more of the measurements being below the MDL). As a first step into the investigation, those constituents that were screened out on the basis of being heavily censored were reviewed, comparing the minimum and maximum values to the human health (drinking water) and ecological protection (aquatic life) guidelines. It should be noted that the guidelines for the protection of aquatic life are more restrictive than the drinking water guidelines. For screening and statistical purposes, concentrations that were below the MDL were set equal to ½ MDL, however, in this investigation the MDL was used.

In Yellowknife Bay, the following constituents were classified as heavily censored:

- Total suspended solids (TSS), ammonia (as nitrogen), nitrite (as nitrogen), phosphorus, beryllium, bismuth, selenium, silver, and thallium.

There are no human health or ecological guidelines available for TSS, phosphorus, or bismuth and, as such, they were not investigated further.

- Ammonia – 190 of 195 measurements < MDL; maximum value of < 0.05 mg/L. Maximum measurable value of 0.01 mg/L. All are well below aquatic life guideline of 0.41 mg/L.

- Nitrite – all 161 measurements < MDL; maximum value of < 0.05 mg/L is below aquatic life guideline of 0.06 mg/L.

- Beryllium – all 199 measurements < MDL; maximum value of < 0.002 mg/L is below drinking water guideline of 0.005 mg/L.

- Selenium – all 199 measurements < MDL; maximum value of < 0.001 mg/L is equal to aquatic life guideline of 0.001 mg/L and below the drinking water guideline of 0.05 mg/L.

- Silver – all 199 measurements < MDL; maximum value of < 0.0001 mg/L is below aquatic life guideline of 0.00025 mg/L and drinking water guideline of 0.0188 mg/L.

- Thallium – all 199 measurements < MDL; maximum value of < 0.0001 mg/L is below aquatic life guideline of 0.0008 mg/L but above drinking water guideline 0.00004 mg/L. It should be noted that the drinking water guideline is based on the Regional Screening Level (RSL) for tap water from the United States Environmental Protection Agency (2016) divided by 5. The actual RSL is 0.0002 mg/L for various salts of thallium including chloride, acetate, selenite and nitrite. Further investigation notes that:
    - 145 samples have MDLs that are < 0.0001 mg/L and 54 samples have MDLs that are < 0.00005 mg/L
    - Maximum measured thallium concentration is 0.000025 mg/L in Baker Creek is below drinking water guideline.

Based on the above comparison of maximum MDLs/measured values, and the fact that the majority of the constituents were 100% undetectable, it is reasonable to exclude the above-listed constituents from the list of COPC for Yellowknife Bay.

In Baker Creek, the following constituents were classified as heavily censored:

- Phosphorus, beryllium, bismuth, chromium, mercury, silver, thallium, tin, vanadium, and zirconium.

There are no ecological guidelines available for phosphorus, beryllium, bismuth, tin, or zirconium and, as such, they were not investigated further. No comparison was made to drinking water guidelines since Baker Creek is not being evaluated for human exposure; however it should be noted that guidelines for the protection of aquatic life are more stringent than drinking water guidelines.

- Chromium – 271 of 288 measurements < MDL; max MDL is < 1 mg/L, which was raised from 0.001 mg/L due to matrix interference. Maximum measured concentration is 0.00071 mg/L, which is below aquatic life guideline of 0.001 mg/L.

- Mercury – 266 of 271 measurements < MDL; max MDL is < 0.0000026 mg/L, which was raised due to detection of mercury at similar level in method blank. Even still, an order of magnitude below aquatic life guideline (0.000026 mg/L). Max measured is 0.000051 mg/L, which is just above the guideline; however, this was in 2011, and the four other detectable concentrations since that time are below the guideline.

- Silver – 269 of 288 measurements < MDL; max MDL of < 0.1 mg/L is above guideline (0.00025 mg/L), but it was raised due to matrix interference. All MDLs that are above guideline (< 0.03 mg/L and <0.01 mg/L) were raised due to matrix interference. Maximum measured silver concentration is 0.000059 mg/L, which is well below guideline.

- Thallium – 277 of 288 measurements < MDL; max MDL of <0.6 mg/L is above guideline (0.0008 mg/L), but raised due to matrix interference. Other MDLs that are above guideline (< 0.2 mg/L and < 0.02 mg/L) were raised due to matrix interference. The maximum measured thallium concentration is 0.000025 mg/L, which is well below guideline.

- Vanadium – 281 of 288 measurements < MDL; max value of < 1 mg/L is above guideline (0.05 mg/L), but raised due to matrix interference. Same for other MDLs above guideline (< 0.09 mg/L and < 0.1 mg/L) and other MDLs are below the guideline. The maximum measured vanadium concentration is 0.0012 mg/L, which is below guideline.

Based on the above comparison of maximum MDLs/measured values, and the fact that the majority of the constituents were 100% undetectable, it is reasonable to exclude the above-listed constituents from the list of COPC for Yellowknife Bay.

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ATTACHMENT D.3

MERCURY LEVELS IN YELLOWKNIFE

APPENDIX D – ATTACHMENT 3: MERCURY LEVELS IN YELLOWKNIFE

The Giant Mine Remediation Plan (GMRP) indicates that mercury amalgamation occurred from 1948 to 1959 even though the roaster came on line in 1949. Thus mercury may have been associated with the releases from the Giant Mine over 50 years ago. A recent paper by Thienpont et al. (2016) indicates that mercury in sediments from 1 core in Pocket Lake (a small lake on the Giant Mine) showed increases in concentrations when the mine was in operation and suggests that mercury was emitted from the roaster. It should be noted that mercury is always a concern in the north due to long-range transport.

Concentrations of mercury in various media (i.e., soil, water, sediment, and fish) were therefore examined further to determine whether mercury should be identified as a constituent of potential concern (COPC) in the human health and ecological risk assessment (HHERA). A statistical analysis was also conducted to determine if there was a significant difference between mercury levels in background and non-background areas, in addition to a comparison to available guidelines.

OVERVIEW

Mercury data from non-background areas as well as background areas in soils, water, sediment, and fish muscle were summarized and statistical tests were then carried out to determine whether the non-background and background data sets were different.

The following procedure was used to do the statistical comparison to background:

1. Samples from recent years (e.g., 2011 to present) were considered in the comparison as they were considered to be representative of current conditions.

2. Values below the method detection limit (MDL) were converted to ½ the MDL before calculating summary statistics (e.g., average, 95th percentile, and standard deviation) for this screening approach. Antweiler (2015) and Ogden (2010) indicate that for low degrees of censoring (<25%) and the number of observations between 20 and 100 that the substitution of ½ the MDL shows “fairly modest bias in the 95th percentile or the mean, and the imprecisions of these estimates are only slightly worse than the optimum method of data treatment”.

3. An F-test was conducted on the datasets to determine if the variances were equal or unequal. If the F-statistic is greater than the F critical one-tail, then the variances are

considered unequal. If the F-statistic is less than the F critical one-tail, then the variances are considered equal.

4. Based on the conclusion of the F-test, a T-test was conducted assuming either equal or unequal variances. If the T-statistic is greater than the t critical two-tail, the null hypothesis is rejected and the datasets are considered significantly different. If the T-statistic is less than the t critical two-tail, the null hypothesis cannot be rejected and the datasets are not considered significantly different.

SOIL

The levels of mercury in soil were investigated in background locations, non-background locations (sites around Yellowknife and Ingraham Trail) and on the Giant Mine. Mercury concentrations in soil at the Giant Mine, which would have been affected by deposition from any air emissions, ranged from 0.05 to 0.16 mg/kg; however, only a small data set was available (Table 1). The concentrations from Giant Mine are within the range of background measurements as well as off-site measurements. The 95th percentile for Giant Mine (0.16 mg/kg) is below the (CCME 1999) soil quality guideline of 6.6 mg/kg for agricultural land use.

The statistical comparison shows that mercury concentrations in off-site locations are similar to background (Table 2).

Table 1. Summary statistics for concentrations of mercury in soil

Location	N	N<MDL	Soil Concentration (mg/kg)				
			Min	Max	Mean	SD	95th Percentile
Background	31	5	0.0025	0.17	0.024	0.035	0.085
Non-background (off site)	27	3	0.0025	0.30	0.035	0.059	0.11
Giant Mine	4	0	0.05	0.16	0.113	0.049	0.16

Table 2. Statistic comparison of mercury concentrations in soil from background locations and non-background locations

Comparison	F-Statistic > F Critical One-tail	T-Statistic > T Critical Two Sided	Conclusion
Background vs. Non-background	Yes, the variances are not equal	No, cannot reject the null	Mercury levels in background and non-background locations are not statistically different, they are similar.

WATER

Although mercury generally partitions with soils and sediments and is not commonly found in surface water, comparisons of concentrations in water from 2011 to present in background locations, Yellowknife Bay locations (including Back Bay), and Baker Creek were conducted. Greater than 85% of all samples were below the MDL. Concentrations ranged from 5.0×10^{-6} to 5.1×10^{-3} mg/L, 2.5×10^{-7} to 1.2×10^{-5} mg/L, and 6.4×10^{-7} to 5.1×10^{-5} mg/L in background, Yellowknife Bay, and Baker Creek, respectively (Table 3).

Surface water samples from Yellowknife Bay and Baker Creek contained mercury concentrations that are lower than those from background areas (Table 4). All mercury concentrations are below the Health Canada (2017) drinking water guideline of 0.001 mg/L in Yellowknife Bay and in Baker Creek. There are four background samples that exceed the drinking water guideline; however, the majority of samples are all below the MDL.

Table 3. Summary statistics for concentrations of mercury in surface water

Location	N	N<MDL	Water Concentration (mg/L)				
			Min	Max	Mean	SD	95th Percentile
Background	30	26	5.0×10^{-6}	5.1×10^{-3}	4.6×10^{-4}	1.1×10^{-3}	2.6×10^{-3}
Yellowknife Bay	434	382	2.5×10^{-7}	1.2×10^{-5}	5.3×10^{-6}	3.9×10^{-6}	1.0×10^{-5}
Baker Creek	151	139	6.4×10^{-7}	5.1×10^{-5}	4.7×10^{-6}	4.0×10^{-6}	5.0×10^{-6}

Table 4. Statistic comparison of mercury concentrations in surface water from background, Yellowknife Bay, and Baker Creek

Comparison	F-Statistic > F Critical One-tail	T-Statistic > T Critical Two Sided	Conclusion
Background vs. Yellowknife Bay	Yes, the variances are not equal	Yes, reject the null	Mercury levels in background and Yellowknife Bay are statistically different.
Background vs. Baker Creek	Yes, the variances are not equal	Yes, reject the null	Mercury levels in background and Baker Creek are statistically different.

SEDIMENT

Comparisons of sediments from 2011 to present in background locations, Yellowknife Bay locations (including Back Bay), and Baker Creek were conducted. Concentrations ranged from 0.006 to 0.03 mg/kg dw, 0.003 to 0.26 mg/kg dw, and 0.007 to 1.06 mg/kg dw in background, Yellowknife Bay, and Baker Creek, respectively (Table 5). The highest concentrations of mercury were from samples obtained in Baker Creek downstream of the Giant Mine.

Sediment samples from Baker Creek contained mercury concentrations that are higher than those from background areas (Table 6). However, greater than a third of the samples were below the MDL. The CCME (1997) recommends an Interim Sediment Quality Guideline (ISQG) of 0.170 mg/kg dw and Probable Effect Level (PEL) of 0.486 mg/kg dw for the protection of aquatic life. The 95th percentile for Baker Creek (0.59 mg/kg dw) exceeds both the ISQG and the PEL, while the 95th percentiles for background and Yellowknife Bay locations (0.03 mg/kg dw and 0.14 mg/kg dw, respectively) are below the CCME ISQG.

Table 5. Summary statistics for concentrations of mercury in sediments

Location	N	N<MDL	Sediment Concentration (mg/kg dw)				
			Min	Max	Mean	SD	95th Percentile
Background	13	5	0.006	0.03	0.02	0.008	0.03
Yellowknife Bay	159	21	0.003	0.26	0.06	0.05	0.14
Baker Creek	203	77	0.007	1.1	0.12	0.19	0.59

Table 6. Statistical comparison of mercury concentrations in sediments from background locations, Yellowknife Bay and Baker Creek

Comparison	F-Statistic > F Critical One-tail	T-Statistic > T Critical Two Sided	Conclusion
Background vs. Yellowknife Bay	Yes, the variances are not equal	Yes, reject the null	Mercury levels in background and Yellowknife Bay are statistically different.
Background vs. Baker Creek	Yes, the variances are not equal	Yes, reject the null	Mercury levels in background and Baker Creek are statistically different.

Given the elevated concentrations of mercury in sediments in Baker Creek and the exceedance of the CCME ISQG, mercury in sediments was evaluated as a part of the ecological risk assessment (ERA) for Baker Creek.

FISH MUSCLE

Consultations with the Yellowknives Dene First Nation (YKDFN) indicate that fish species such as lake whitefish and inconnu are consumed by the community and important to their livelihood. Thus, mercury concentrations in flesh from these species were evaluated. Of the 42 background samples and 42 samples from Yellowknife Bay, none were below the MDL. Concentrations of mercury ranged from 0.03 to 0.18 mg/kg ww in background locations and 0.03 to 0.21 mg/kg ww in Yellowknife Bay locations (Table 7). There were significant differences in concentrations in fish caught in background locations than in fish caught in Yellowknife Bay (Table 8).

The 95th percentile in background and Yellowknife Bay locations (0.15 and 0.13 mg/kg ww, respectively) are below the Health Canada (2012) consumption guideline related to human health risk for total mercury in fish of 0.5 mg/kg ww.

Table 7. Summary statistics for mercury concentrations in fish muscle (lake whitefish and inconnu)

Location	N	N<MDL	Fish Muscle Concentrations (mg/kg ww)				
			Min	Max	Mean	SD	95th Percentile
Background	42	0	0.03	0.18	0.09	0.03	0.15
Yellowknife Bay	42	0	0.03	0.21	0.07	0.04	0.13

Table 8. Statistical comparison of mercury concentrations in background and Yellowknife Bay locations in fish (lake whitefish and inconnu)

Comparison	F-Statistic > F Critical One-tail	T-Statistic > T Critical Two Sided	Conclusion
Background vs. Yellowknife Bay	No, the variances are equal	Yes, reject the null	Mercury levels in background and non-background locations are statistically different but only slightly.

If northern pike and burbot are added to the data set the mercury concentrations range from 0.03 to 0.39 mg/kg ww and 0.03 to 0.47 mg/kg ww in background and Yellowknife Bay locations, respectively (Table 9), with the highest concentrations of mercury found in northern pike. This can be attributed to the predatory nature of northern pike and the biomagnification of mercury up the food chain. Concentrations of mercury in fish caught in Yellowknife Bay are just slightly different than in fish caught in background locations (Table 10).

The 95th percentile in background and Yellowknife Bay locations (0.26 and 0.37 mg/kg ww, respectively) are still below the Health Canada (2012) consumption guideline related to human health risk for total mercury in fish of 0.5 µg/g ww.

Table 9. Summary statistics for concentrations of mercury in muscle of all species of fish

Location	N	N<MDL	Fish Muscle Concentrations (mg/kg ww)				
			Min	Max	Mean	SD	95th Percentile
Background	68	0	0.03	0.39	0.12	0.07	0.26
Yellowknife Bay	74	0	0.03	0.47	0.13	0.11	0.37

Table 10. Statistical comparison of mercury concentrations in background and Yellowknife Bay for all fish species

Comparison	F-Statistic > F Critical one-tail	T-Statistic > T Critical Two Sided	Conclusion
Background vs. Yellowknife Bay	Yes, the variances are not equal	No, cannot reject the null	Mercury levels in background and non-background locations are not statistically different, they are similar

Conclusion

Mercury concentrations in soil at the Giant Mine are below CCME guidelines, while mercury concentrations in water are also below the Health Canada drinking water guideline. In addition, concentrations in fish are below the Health Canada consumption guideline related to human health risk for total mercury in fish, and the concentrations in fish consumed by the YKDFN community are not different from concentrations in fish from background locations. Thus, mercury will not be considered further in the human health risk assessment.

However, given the elevated levels of mercury in sediments in Baker Creek it will be carried forward in the ERA for Baker Creek sediments.

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APPENDIX E

HUMAN HEALTH RECEPTOR CHARACTERISTICS

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APPENDIX E: HUMAN HEALTH RECEPTOR CHARACTERISTICS

E.1 General

Receptor characteristics are used along with other exposure assumptions to estimate potential exposure in the risk assessment. The following sections provide the characteristics assumed for the human receptors considered in the human health risk assessment (HHRA). Food intakes and diet composition were based on the information obtained from the dietary surveys conducted in the Yellowknives Dene First Nation (YKDFN) and Metis communities (see Section E.5). Other characteristics were obtained from Health Canada Guidance for conducting Preliminary Quantitative Risk Assessments at Federal Sites (Health Canada 2012a) and other literature sources, as noted.

E.2 Identification of Human Receptors

Identification of human receptors for evaluation in the HHRA was based on the problem formulation (Stantec 2015) as well as on findings from consultation activities undertaken since the start of the project. This receptor identification took into account the diversity of inhabitants of the City of Yellowknife, Latham Island, the Ingraham Trail area, and the communities of Ndilo and Dettah as well as the wide range of land uses among these groups. Consideration was also given to future land use where it is possible that people may reside at the former Giant Townsite area. There are no specific plans in terms of the future land use for the former Townsite; however, the risk assessment considered the most restrictive land use. Figure E.1 presents the general geographic regions of the areas that were considered. As indicated in the Problem Formulation (Stantec 2015), major groups that were considered within the HHRA include:

- People (adults, teens, children, toddlers) living in the City of Yellowknife. This also includes members of the Metis community.
- People (elders, adults, teens, children, toddlers) living in the community of Ndilo.
- People (adults, teens, children, toddlers) living on Latham Island, other than in the Ndilo community.
- People (elders, adults, teens, children, toddlers) living in the community of Dettah.
- People (adults, teens, children, toddlers) residing on the Ingraham Trail. There were some samples collected along the Ingraham Trail, and these samples were used to evaluate the residential exposure.

In addition to these receptors, a hypothetical receptor was also included:

- People (adults, teens, children, toddlers) residing at the Giant Townsite.

Concern had been expressed about children wading in shallow sediments in the communities of Ndilo and Dettah and also at the Marina near Latham Island. In addition, exposure to the beach at Long Lake and to shallow sediments had also been identified as a concern during consultations. Therefore, additional exposures were considered for people wading in shoreline sediments and playing on the beach, and all life stages were considered to be exposed to sediments.

Additional exposures were considered for ingestion of medicinal tea and mushrooms, ingestion of drinking water from different parts of Yellowknife Bay, ingestion of organ meats from moose, fish, and ptarmigan/grouse, and recreational use of the Giant Mine in the future, including berry collection.

Workers on the Giant Mine as well as Highway workers working close to the site have been identified as a potential receptor group. However, workers are not being included in the HHRA, as they have their own, very rigorous health and safety protocols and regulations. At the Giant Mine in particular, there are many programs in place and the urinary arsenic program for on-site workers would also capture the exposure of workers who live in the community. In addition, during the screening process for selecting constituents of potential concern (COPC; see Appendix D), the 95th percentile of Giant Mine soil data were compared to the human health industrial/commercial criteria from the Canadian Council of Ministers of the Environment (CCME) that are considered to be protective of worker exposure; only antimony was in exceedance of the human health industrial/commercial criteria. This also provides additional evidence to exclude workers from the evaluation. Antimony is known to be co-located with arsenic and, thus, safety procedures targeted at protection from arsenic exposure would protect workers from antimony exposure as well.

The students of the K'àlemì Dene School in Ndilo were also identified for consideration since there are some elevated arsenic soil concentrations in the school yard and they consume lunches of fish caught in Yellowknife Bay. In Ndilo, all soil samples are considered in the residential scenario, including the high arsenic samples measured in the soils. Eating fish from North Yellowknife Bay where nets are set to catch fish for school lunches was also considered. Exposures for children living in Ndilo are for a longer time period (i.e., 24 hours a day, 365 days a year) than when they are at school (i.e., 6 hours a day for a maximum of 300 days a year) and, thus, capture potential exposures at the school. Therefore, students at the school were not specifically selected for the assessment.

For each selected receptor group, a range of life stages (toddler, child, teen, and adult) were considered. Exposures for infants were not evaluated because it was assumed that they would be mainly consuming breast milk. It is not expected that COPC such as arsenic would be found at high concentrations in breast milk. Samanta et al (2007) supports this statement since they determined that breast milk was found to have low concentrations of arsenic, even when women were being exposed to high levels of arsenic in their drinking water. Carignan et al. (2015) conducted a study that compared breastfed infants to formula-fed infants and determined that breastfed infants had lower arsenic exposure than formula-fed infants. These studies support the exclusion of infants in the risk assessment.

Figure E.1 Human receptor locations

E.3 Identification of Exposure Pathways

The exposure pathways identified in the 2006 risk assessment (SENES 2006) and retained in the 2015 Problem Formulation (Stantec 2015) were reviewed to determine if any changes were needed for the HHRA. The two changes are related to garden produce and inadvertent ingestion of water while swimming, playing, or boating, as discussed below.

Figure E.2 shows the potential exposure pathways that were selected for the current HHRA. The pathways considered for different types of country foods were based on results from the 2017 Dietary Survey and the samples provided from the voluntary sampling program. The potential exposure pathways are as follows:

- Surface Water: People drink water from various sources. The municipal supply in Yellowknife comes from the Yellowknife River and people in the City of Yellowknife get pipe-borne water. In Latham Island, Ndilo and Dettah, the municipal water is delivered by tanker truck. However, there are also some members of the community in Ndilo and Dettah, as well as houseboaters, that indicate that they drink water directly out of Yellowknife Bay.
- Air: Metals such as arsenic may be present in the air that can be breathed in by individuals.
- Soil: Individuals can come into contact with soil by gardening and other activities, such as camping or being out on the land, and children and toddlers can get exposed by playing with soil. Chemicals in the soil can get into the skin by these activities, and the soil on hands can end up in mouths and be eaten. Exposures can occur outside the home and if people are allowed to go to the Giant Mine in the future for some recreational activities where they can be exposed to soils on the Giant Mine.
- Dust: Dust in the house can have similar exposures to soil and can be present on hands and then ingested through hand-to-mouth contact. This is especially important in the winter when the soil outside is frozen.
- Sediment: Children have been reported to wade in shallow water along the shores of the Ndilo and Dettah communities as well as near the marina and other areas on Latham Island, and concern has been expressed about this activity. In addition, playing on the beach can result in sediments getting on hands and then being transferred to the mouth. Sediment can also stick on the skin. The assessment

considers all life stages for wading in shallow sediment and being exposed to beach sediments.

- Fish: The City of Yellowknife and surrounding communities are located on Yellowknife Bay and, from the dietary survey, it was reported that a large proportion of people eat fish from different areas in the bay. Fish flesh and liver samples were collected from different kinds of fish in different locations in Yellowknife Bay.
- Moose: Due to the fact that caribou cannot be hunted in the area any more, the dietary survey indicated that people are eating more moose. Moose flesh samples as well as organ (liver) samples were collected from the community.
- Grouse/ptarmigan: The dietary survey indicated that people eat both grouse and ptarmigan from the area. Flesh samples, as well as heart, liver, and gizzard samples, were also obtained from the community.
- Rabbit: The dietary survey indicated that people eat rabbit from the area. Information from other studies was considered along with samples from the community.
- Duck: People reported that they ate duck. Duck flesh samples were collected from the community.
- Medicinal Plants: In the dietary survey, people indicated that they drank Labrador tea, especially when they were on the land. In addition, they ate different medicinal plants, such as rat root and birch bark. Currently, there are samples of Labrador tea, and this is used as a surrogate for all medicinal plants.
- Berries: People collect berries from different locations across the study area. Many of the berries are collected at a distance from the Giant Mine; however, children in Ndilo have been reported to eat berries from local bushes. Samples have been collected from the community to represent exposure in all these areas.
- Mushrooms: The Metis community has indicated that their members eat mushrooms. Only a few mushroom samples have been provided by the community to examine this pathway.

In some communities, the drinking water supply may be obtained from groundwater wells. In the case of the City of Yellowknife and the surrounding communities, drinking water is obtained from the Yellowknife River or Yellowknife Bay. Given that these surface water sources are large and that there is no indication that the source of the municipal water system is likely to change, groundwater was not considered to represent a route of exposure.

People do have vegetable gardens in the area; however, it was determined that most of the soil in these gardens (which are generally raised) comes from outside of the area or from compost from the City. An examination of the chemical concentrations in both the garden soil and compost indicated that concentrations were no different from background soil concentrations and, thus, were not influenced by the Giant Mine. In addition, in 2001 a risk assessment was carried out by the Royal Military College (ESG 2001) related to exposure to arsenic from eating vegetables from backyard gardens in Yellowknife. This assessment involved the collection of soils and 61 different garden vegetables from 10 gardens across Yellowknife. The assessment considered the individual gardens as well as a garden that they considered to be representative of a typical resident in Yellowknife. The report concluded that even though residents in Yellowknife may eat garden vegetables with arsenic concentrations that are 10 times higher than in supermarket vegetables, when the amount of food consumed is considered there was no significant increase to the total daily intake of arsenic and therefore no indication that there was an increased health risk.

Between 2009 and 2012, the City of Yellowknife carried out a Centralized Composting Pilot Project (CCPP), the process and analytical requirements of which are documented in the following report:

- *Ripley 2012 Yellowknife centralized composting pilot project final report (contains data on two batches of finished compost from 2011 and 2012).*

Prior to selling the finished compost, trace elemental analysis must be conducted to ensure that the compost meets the CCME Category A compost requirements. For arsenic, this means that the concentrations must be below 13 mg/kg. As shown in

Table E.1, the average concentration of arsenic in compost of 22.1 mg/kg is above this criterion. The minimum value of 5.6 mg/kg was from the first batch of compost, while all subsequent batches have had higher concentrations as a result of an increasing proportion of yard waste in the compost (Ripley 2012). However, as discussed in Ripley (2012), these concentrations are consistent with the elevated background levels of arsenic in Yellowknife as compared to other regions of Canada. The average concentration is also below the average value for arsenic measured in soil samples from six gardens in the City of Yellowknife of 30.0 mg/kg (YCGC 2013). Therefore, garden produce was not considered in the assessment.

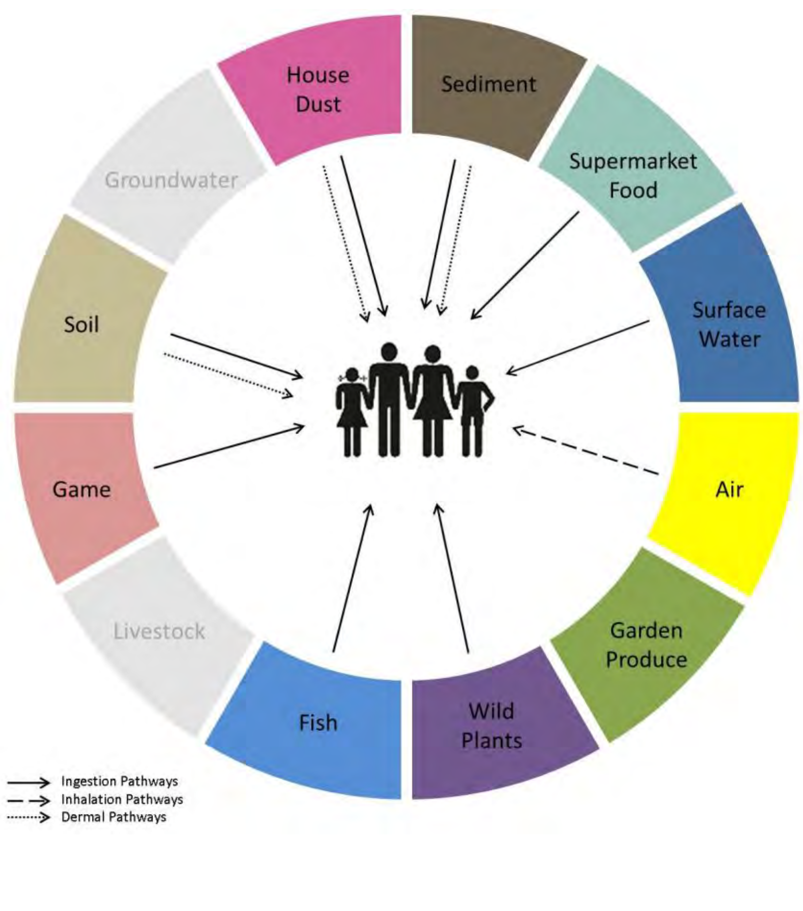
Table E.1 Summary of arsenic data availability and statistics – compost

Geographic Area	Years	N	N<MDL	Minimum	Maximum	Average	Standard Deviation
Yellowknife	2011, 2012, 2013, 2014	7	0	5.6	35.8	22.1	9.11

Note: Concentrations are in mg/kg; N – number of samples; N<MDL – number of samples below the Method Detection Limit (MDL).

Another pathway that was highlighted in the original Problem Formulation (Stantec 2015) was the ingestion of Yellowknife Bay water while swimming, playing on the shore, or boating. The risk assessment considers a resident drinking water from Yellowknife Bay and, thus, encompasses the exposure from these activities, as drinking water everyday represents a larger exposure than swimming, boating, or playing in Yellowknife Bay. City of Yellowknife residents were assumed to swim in Long Lake.

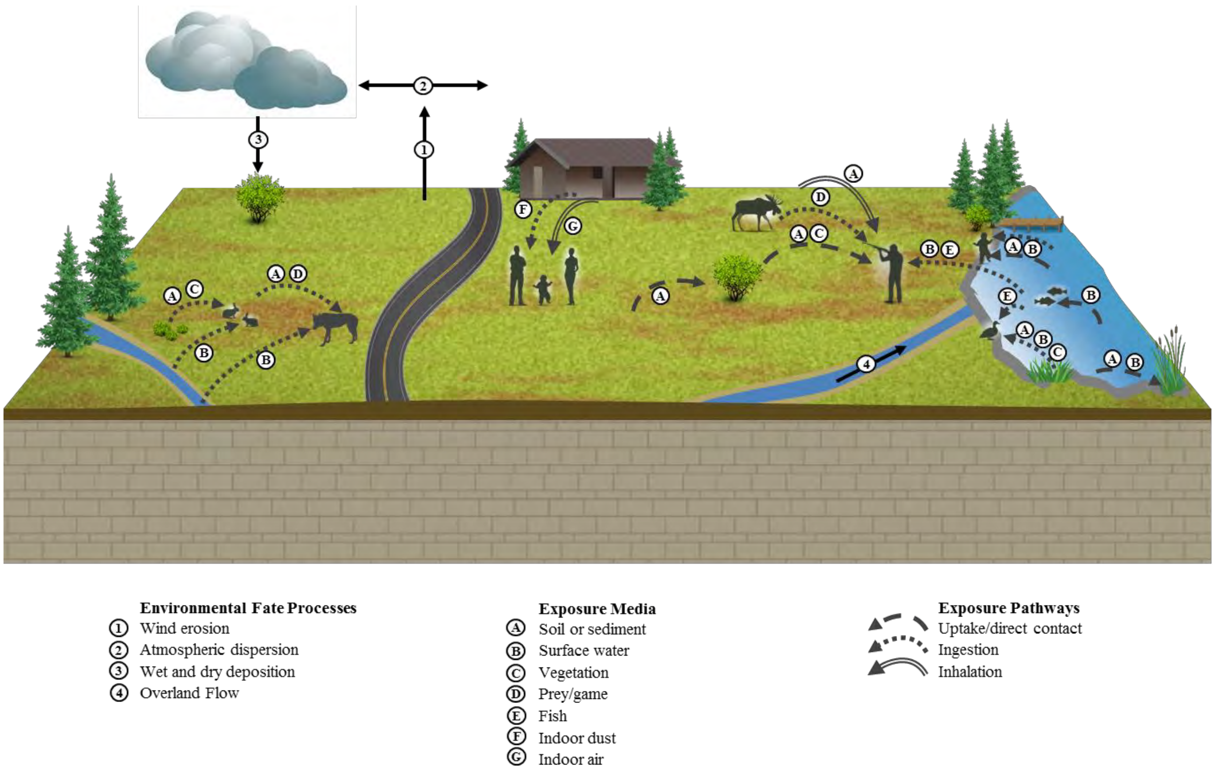
Figure E.2 Exposure pathways for HHRA



E.4 Conceptual Site Model

The Conceptual Site Model (CSM) for the Giant Mine HHRA is presented in Figure E.3. Note that this figure is a conceptual representation of the types of pathways and transport mechanisms considered in the HHRA and does not necessarily include every evaluated pathway/mechanism.

Figure E.3 Conceptual site model for HHRA



E.5 Dietary Survey

Within each community or population, there is diversity in the type and intensity of land use, country food gathering, and food consumption patterns. For the HHRA, data are available from studies conducted on Dene/Metis communities in 1996 and 1998 by the Centre for Indigenous Peoples' Nutrition and Environment (CINE; Receveur et al. 1996, 1998). These studies were comprehensive studies at the time. However, there have been dietary changes over the last 20 years mainly pertaining to the ban on caribou hunting and thus other wild game has been used as a substitute for the lack of caribou meat in the YKDFN diet. Discussions with the YKDFN indicated that an update to the dietary survey was necessary. Therefore, in 2017, three dietary survey workshops were held, and a dietary survey questionnaire was developed to gather additional information on YKDFN and North Slave Metis Alliance (NSMA) to inform the risk assessment and reduce uncertainty. This survey collected further specifics regarding the types and amounts of country foods consumed, as well as locations where hunting, trapping, fishing, and gathering take place.

The questions that were used in the workshops and questionnaire were primarily based on the voluntary samples that were collected (Appendix B), since these data formed the basis of the risk assessment. The questionnaire used for the workshops is provided in ATTACHMENT E.1.

E.5.1 Survey Methods

In conducting the workshops and questionnaires, the study team asked for groups of 20 people from the Ndilo, Dettah, and NSMA communities. The demographics that were targeted were the following:

- 16 to 19 years – 2 males and 2 females
- 20 to 39 years – 3 males and 3 females
- 40 to 59 years – 3 males and 3 females
- 60 plus – 2 males and 2 females

Indigenous and Northern Affairs Canada (INAC) worked with the community members to fulfil the requirements for the survey.

At the workshops, a presentation was given to each group to provide an overview of the results of the previous studies. Each workshop group was separated into smaller groups of around 3 to 5 people with a CanNorth representative asking questions and recording the results. In groups containing elders, a translator was present to facilitate communication.

The NSMA requested an electronic copy of the survey; this was developed in an online format and provided to the community.

E.5.2 Results of the Survey and Questionnaire

E.5.2.1 Participants

A total of 36 people from the YKDFN participated in the 3 in-person workshops. There were 28 males and 8 females. There were 9 people in the 20-to-39 year age group; 14 people in the 40-to-59 year age group; and 13 people in the 60-plus age group. No participants were in the 16-to-19 age group.

A total of 10 people completed questionnaires from the NSMA. There were 5 males and 5 females that completed questionnaires. Of the participants, 1 person was in the 12-to-19 age group; 2 people were in the 20-to-39 age group; 4 people were in the 40-to-59 age group; and 3 people were in the 60-plus age group.

Overall, there were 46 people who participated in the 2017 Dietary Survey.

E.5.2.2 Consumption of Traditional Food

Figure E.4 provides a summary of the percentage of traditional food that YKDFN participants said they consumed.

Over three quarters of the participants from both NSMA (Figure E.5) and YKDFN communities said that 30% or less of their diet is traditional foods.

Of the remaining YKDFN participants, a few people (5) reported eating between 40 % and 60% traditional foods; and another 5 people reported that they consume mostly (i.e., around 95%) traditional foods. Most of the high consumers of traditional food were in the 40 to 59 year age group. Of the elders surveyed, only 2 reported consuming more than 50% of traditional foods; the other 14 elders reported consuming 25% or less traditional foods. The person in the under-20 age group reported eating a diet consisting of approximately 25% traditional foods.

Figure E.4 Summary of reported traditional food content of the YKDFN diet

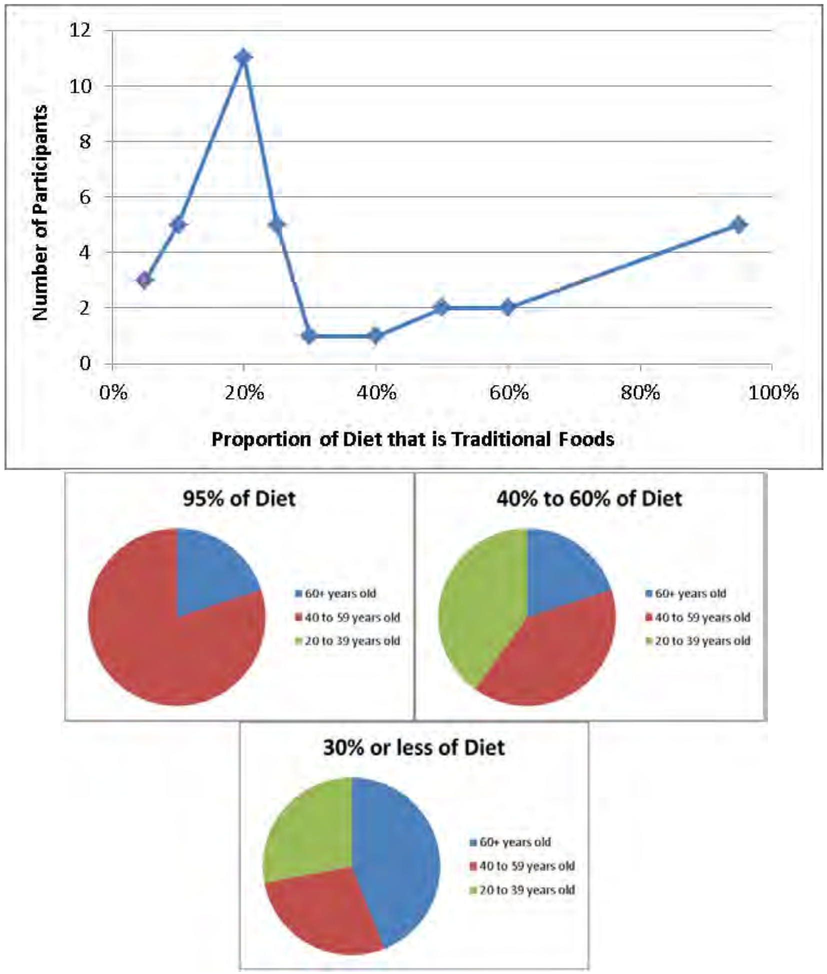
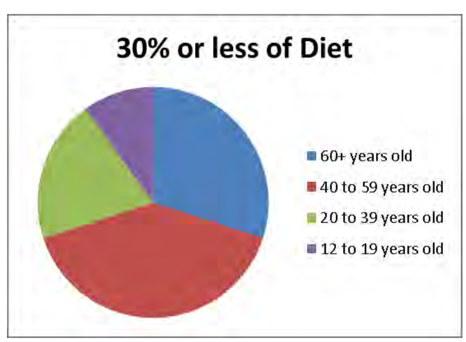


Figure E.5 Summary of reported traditional food content of the NSMA diet



E.5.2.3 Dietary Breakdown

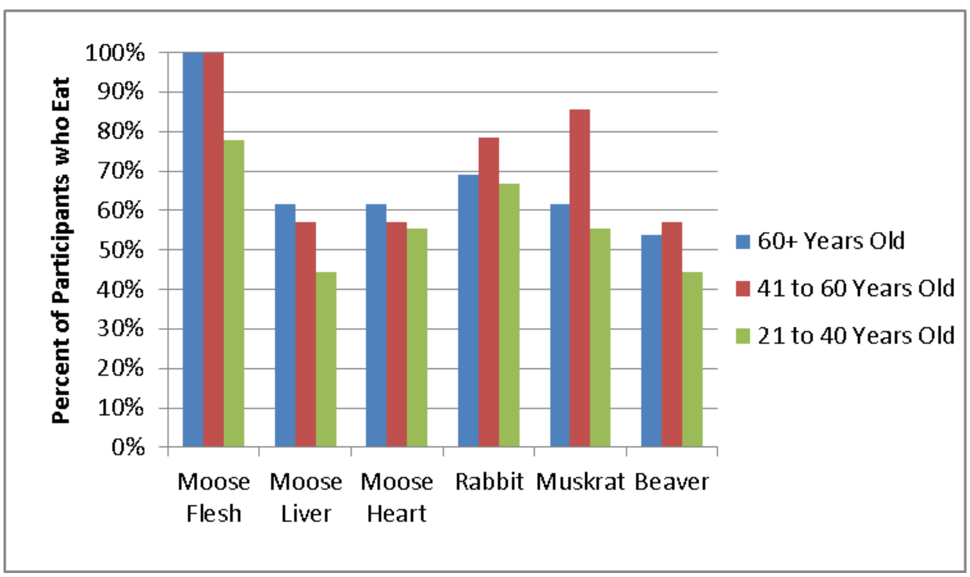
The following is a summary of each type of food discussed during the workshop and in the questionnaire, including what proportion of YKDFN and NSMA participants reported eating each item and how often these food items may be consumed.

Mammals

The mammals included in the 2017 Dietary Survey were moose, rabbit, muskrat, and beaver. Participants were asked about their consumption of caribou given that caribou hunting does not occur in the Yellowknife area and they were asked how they replaced caribou consumption in their diet. The majority of the participants indicated that they replaced it with store-bought food augmented with some additional traditional foods.

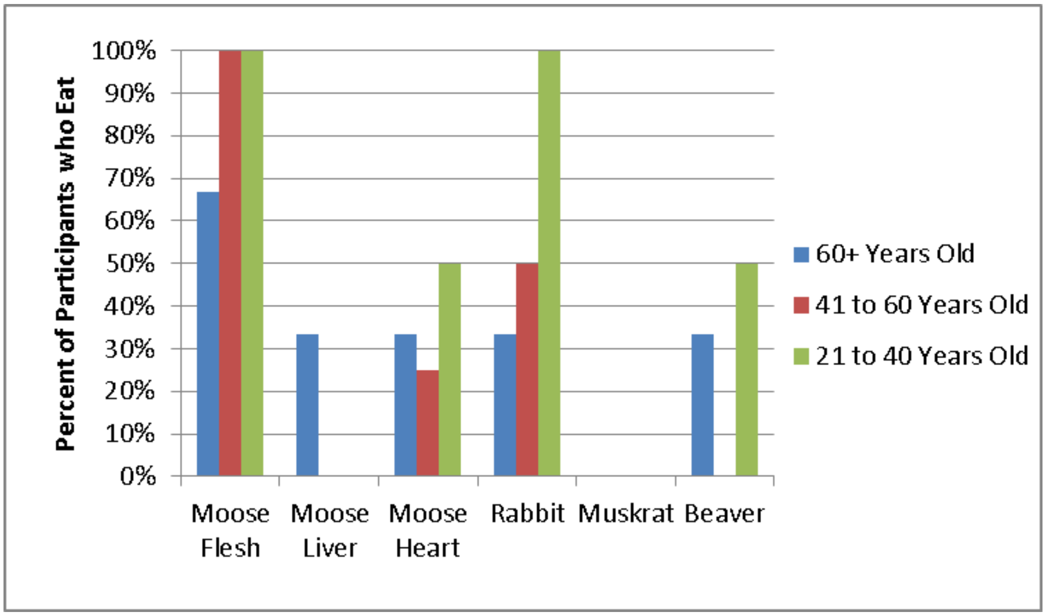
As can be seen from Figure E.6, most YKDFN participants (93%) reported eating moose flesh, with around half of participants eating moose liver (46%) and moose heart (52%). The previous dietary survey in the late 1990s indicated that about 53% of the YKDFN ate moose flesh, and about 30% ate heart and liver. This indicates that the consumption of caribou has possibly been replaced by the consumption of moose. Parents with children in their households said that children would eat moose flesh and perhaps moose heart but were less likely to eat moose liver. The participant in the under-20 age group indicated that they did not eat moose heart or liver.

Figure E.6 Percentage of YKDFN survey participants who reported consuming different mammals



Of the NSMA participants, 92% reported eating moose flesh, while less than a third of participants reported eating moose organs (Figure E.7).

Figure E.7 Percentage of NSMA survey participants who reported consuming different mammals



Seventy percent (70%) of YKDFN participants reported eating rabbits and fewer people reported eating muskrat (54%) or beaver (46%). None of the NMSA participants reported eating muskrat and about 40% of the participants reported eating beaver. Most of the participants indicated that beaver meat was very oily and, therefore, they did not like to eat as much. In the previous survey, about 25% of the participants said that they ate rabbit and about 30% said that they ate muskrat and 22% said that they ate beaver. Again, this suggests that people are substituting other wild game to replace at least some of the caribou that they used to consume. Additionally, participants reported that children would eat rabbit but would not generally eat muskrat or beaver. The participant in the under-20 age group indicated that they did not eat muskrat or beaver.

The previous survey found that, for those who ate moose, it was consumed around 17 times a year on average (or once every three weeks). This average moose flesh consumption rate is generally in line with the findings from the 2017 Dietary Survey where, with a few exceptions, people reported eating moose 17 times a year or less. Overall, the frequency ranged from 1 to 2 times per year up to around 60 times per year for the people with a diet that was mostly traditional food.

The previous survey found that moose liver was consumed 10 times per year, on average. This is high compared to the responses from the 2017 Dietary Survey, where all respondents who consumed moose liver said they consumed moose liver only a few times a year. Similarly, people reported eating moose heart a few times per year.

The previous survey found that, on average people consumed rabbit and muskrat around 17 times per year and beaver around 10 times per year. The 2017 Dietary Survey found that generally people consume these foods less often than previously reported with the exception of a few high traditional food eaters. Other than the few exceptions, people reported eating rabbit between 1 and 12 times per year; muskrat between 1 and 10 times per year; and beaver between 1 and 4 times per year. The higher traditional food participants reported eating rabbit up to 60 times per year, muskrat up to 20 times per year, and beaver up to 24 times per year.

In addition to the species shown above, several participants reported eating some caribou meat and reindeer meat, and one person reported that they eat bear when it is convenient.

Birds

The avian species that were included explicitly in the 2017 Dietary Survey were grouse, ptarmigan, duck, and Canada goose. Figure E.8 presents a summary of the YKDFN participants who reported consuming different types of birds. Around 66% of YKDFN participants reported eating grouse, ptarmigan (66%), and duck (83%) with slightly fewer reportedly eating Canada goose (69%). The previous survey indicated that about 50% of participants ate ptarmigan and duck, about 31% ate Canada goose, and only 20% reported consuming grouse. Thus, there is an increase in the amount of people consuming game birds compared to the previous study. Participants reported that children in their households would eat grouse, ptarmigan, duck, and Canada goose if adults in the household were consuming these foods. Participants from NSMA (Figure E.9) reported eating grouse (72%), ptarmigan (53%), and duck (39%) with only people 60 years and older reportedly eating Canada goose (22%). The participant in the under-20 age group indicated that they only ate grouse and ptarmigan.

Figure E.8 Percentage of YKDFN survey participants who reported consuming different birds

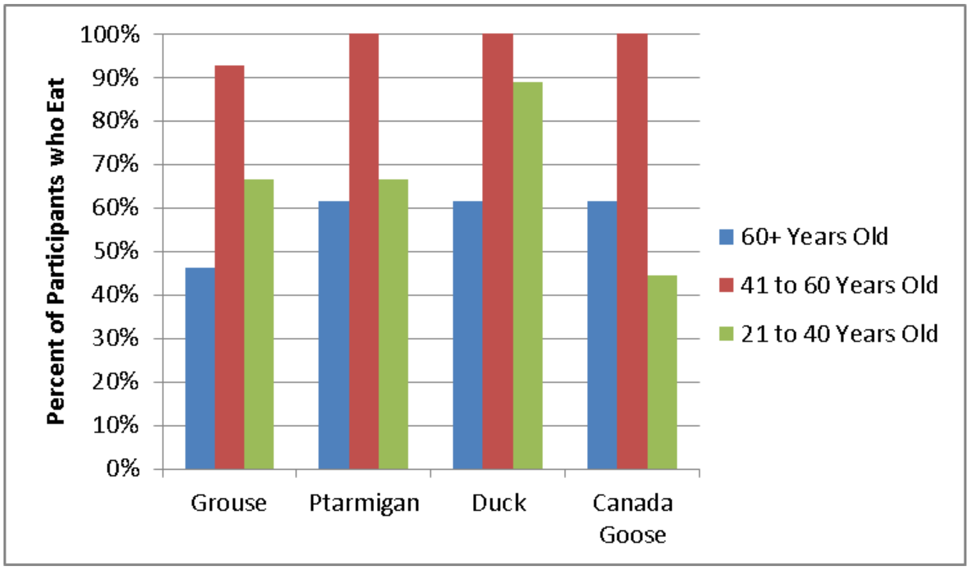
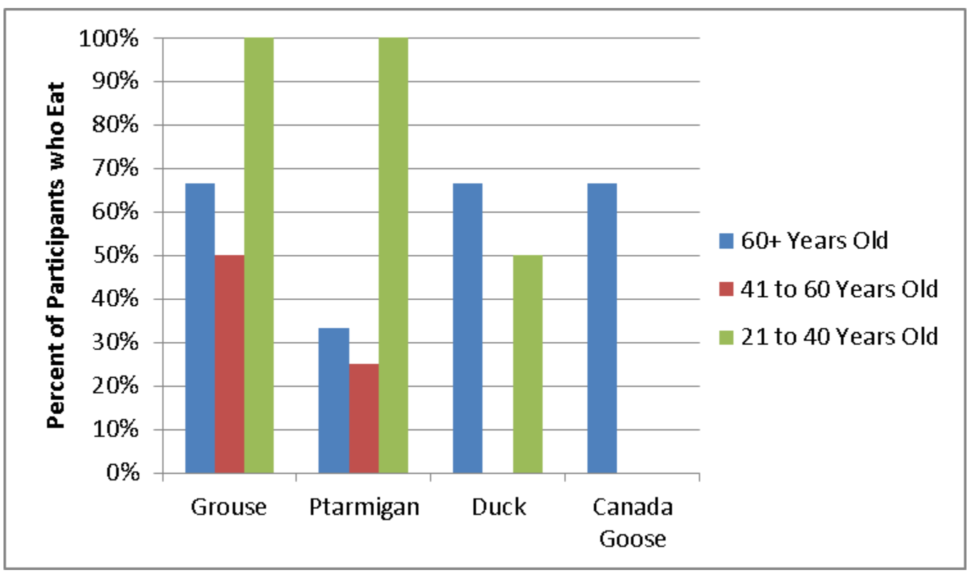


Figure E.9 Percentage of NSMA survey participants who reported consuming different birds



The 2017 Dietary Survey found that, with the exception of a few high traditional food consumers, people eat grouse between 1 and 8 times per year, ptarmigan between 1 and 16 times per year, duck between 1 and 20 times per year, and Canada goose between 1 and 12 times per year. The high traditional food consumers reported eating grouse up to 20 times per year, ptarmigan up to 50 times per year, duck up to 50 times per year. No people reported eating goose more than 8 to12 times per year. The average consumption frequency reported for all of these avian species was below the result from the previous study where, on average, people reported eating grouse around 10 times per year, ptarmigan around 10 times per year, duck around 17 times per year, and Canada goose around 10 times per year.

Fish

Fish that were explicitly included in the 2017 Dietary Survey included whitefish, lake trout, inconnu, and northern pike. Figure E.10 presents a summary of the proportion of YKDFN participants who reported eating these types of fish. The most people reported eating whitefish (80%), followed by trout (69%) with fewer people consuming northern pike (37%) or inconnu (19%). The previous survey indicated that 85% of people ate whitefish, 78% ate trout, and 20 % ate inconnu; thus, the current survey and the previous survey indicate that in general the types of fish consumed have not changed. The general consensus among people with children in their household is that the children typically eat whatever type of fish the parents are eating. Of the NSMA participants, all reported eating whitefish (100%) and trout (100%), with fewer people consuming northern pike (64%), and only people 60 years and older consuming inconnu (11%). The participant in the under-20 age group only indicated that they ate whitefish.

The fish consumption frequency from the 2017 Dietary Survey was fairly similar to the findings from the previous study where, on average, people at whitefish around 50 times per year, trout around 21 times per year, inconnu around 17 times per year, and northern pike around 10 times per year. Participants in the 2017 Dietary Survey reported consuming whitefish between 2 and 100 times per year, with most consuming between 30 and 50 times per year. People reported eating trout between 1 and 50 times per year, with most consuming between 20 and 25 times per year. People who consume inconnu reported that they eat it between 1 and 20 times per year and most people reported eating northern pike between 4 and 12 times per year, with a few higher eaters reporting eating pike up to 50 times per year.

In addition to the four species of fish discussed above, a number of participants said they consume pickerel, loache, mariah, or lingcod.

Figure E.10 Percentage of YKDFN survey participants who reported consuming different fish

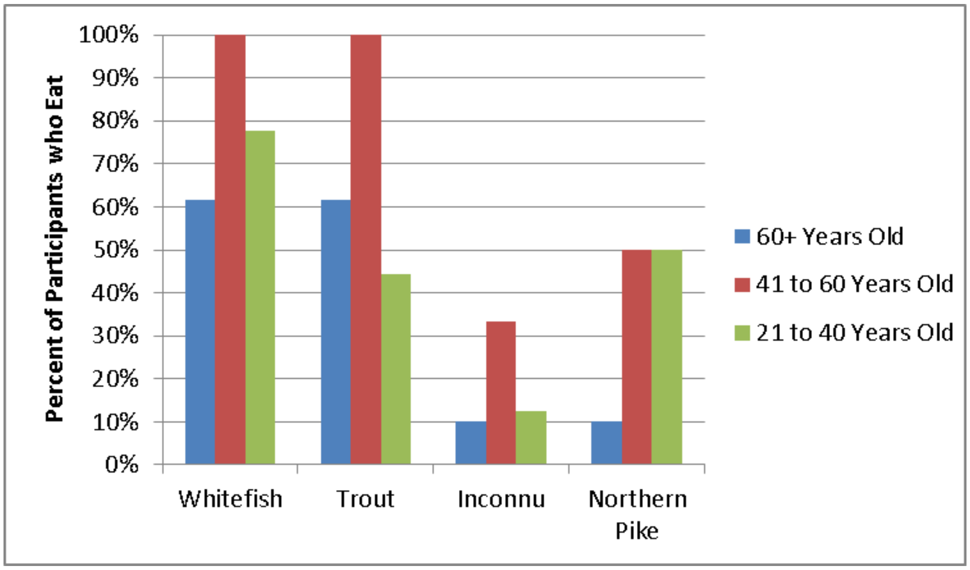
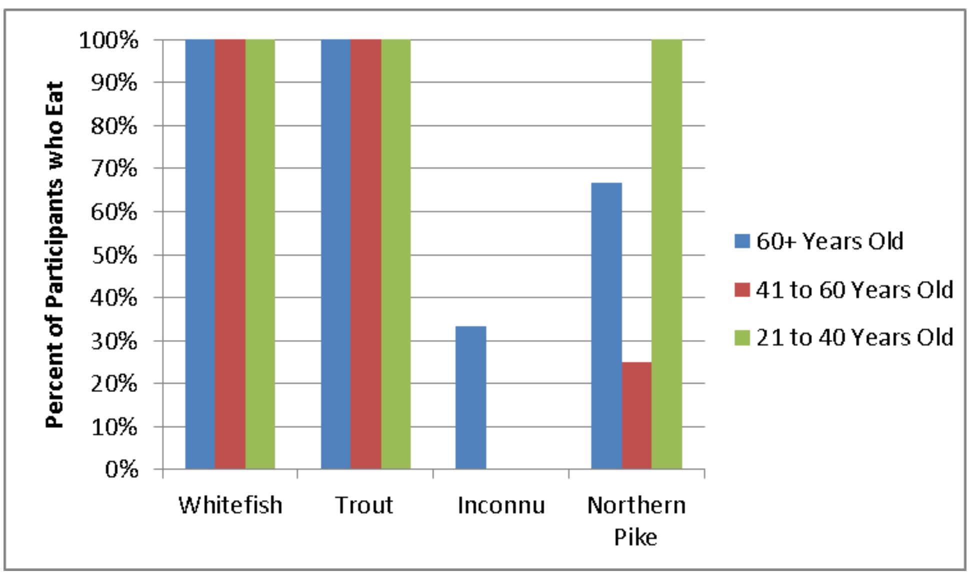


Figure E.11 Percentage of NSMA survey participants who reported consuming different fish



Plants

The types of plants explicitly included in the 2017 Dietary Survey included berries, rosehips, Labrador tea, mushrooms, and chives; an overview of the proportion of YKDFN participants who reported consuming each of these items is provided in Figure

E.12. Most people reported consuming berries (76%), and more than 70% respondents drink Labrador tea (71%), while fewer people reported consuming chives (29%), rosehips (22%), and none reported eating mushrooms. The previous survey indicated that about 58% of people consumed berries, 15% consumed Labrador tea, 7% consumed rose hips, and 4% consumed mushrooms and chives. The survey found that children generally ate locally sourced berries, and some would get Labrador tea at school, while few consume rosehips. Of the NMSA participants, most people reported consuming berries (81%), and about half of respondents consuming mushrooms (47%), while fewer people reported consuming chives and rosehips (17%), or Labrador tea (11%) (Figure E.13). The person in the under-20 age group only indicated that they only consume berries.

The previous study found that, on average, people reported consuming berries 1 to 2 days per week when in season; the average berry consumption frequency from the 2017 Dietary Survey was lower than this, with people reporting berry consumption generally between 5 and 30 times each year.

The previous study reported average consumption rates for rosehips, Labrador tea, mushrooms, and chives of 26 times per year, 76 times per year, 10 times per year, and 52 times per year, respectively. These numbers are all at the high end of the ranges reported by participants in the 2017 Dietary Survey, where rosehips were consumed a maximum of 12 times per year, Labrador tea was consumed a maximum of 52 times per year, mushrooms were consumed a maximum of 12 times per year, and chives were consumed a maximum of 52 times per year.

In addition to the five plants mentioned above, a number of people brought up rat root and spruce gum and reported consuming small amounts of it for medicinal purposes periodically.

Figure E.12 Percentage of YKDFN survey participants who reported consuming different plants

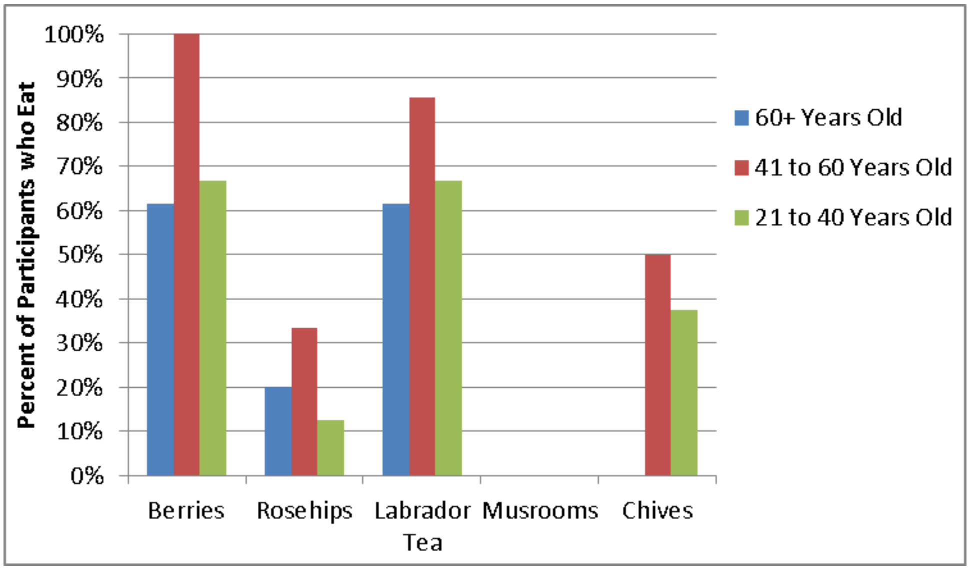
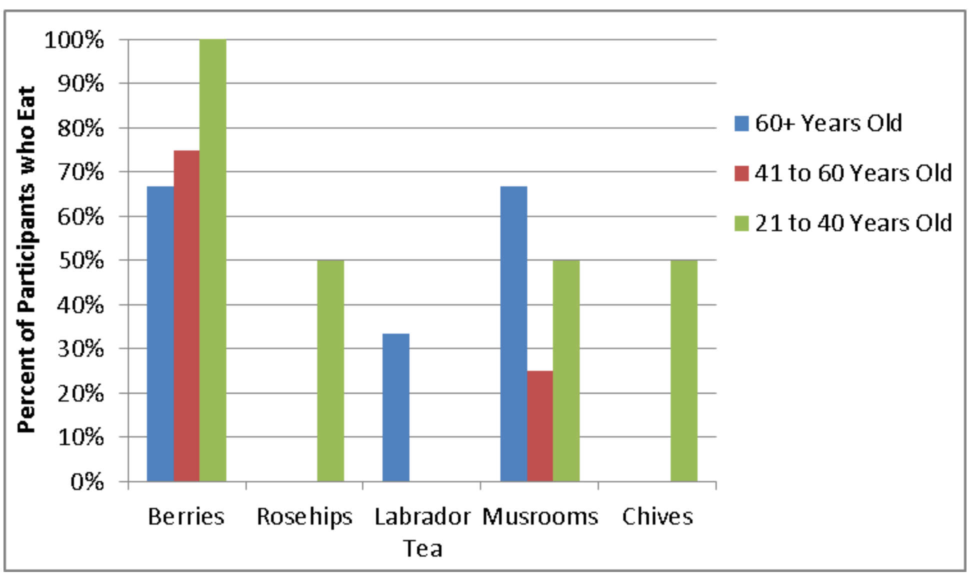


Figure E.13 Percentage of NSMA survey participants who reported consuming different plants



Traditional Food Portion Size

In addition to number of people who consume each food type and frequency of food consumption, another important piece of information is typical portion size for each of these traditional foods. Table E.2 presents the maximum and minimum amount of food people reported eating in the 2017 Dietary Survey. It should be noted that a portion size for meat and fish was defined as the palm of a hand, which represented 3 oz. (85 g). For rabbit, the minimum reported amount corresponds to a person eating about three whole rabbits a year, and for grouse/ptarmigan, the minimum reported amount also corresponds to eating about three grouse a year.

The 2017 Dietary Survey indicated that people ate about ½ c to 1½ c of berries, ¼ c to ½ c rose hips; ½ c to 1 c of mushrooms, and about 1 tbsp of chives.

The 2017 Dietary Survey has also captured some of the characteristics of a high traditional eater. These different consumption rates were used to determine the diets used in the HHRA.

Table E.2 Summary of findings of Dietary Survey

Food Item	2017 Dietary Survey	
	Minimum (g)	Maximum (g)
Caribou meat	85 (1 portion) [a]	255 (3 portions) [a]
Moose meat	85 (1 portion)	255 (3 portions)
Moose Liver	85 (1 portion)	85 (1 portion)
Moose Heart	45 (½portion)	85 (1 portion)
Rabbit	45 (½portion)	255 (3 portions)
Muskrat	45 (½portion)	170 (2 portions)
Beaver	85 (1 portion)	170 (2 portions)
Whitefish flesh	45 (½portion)	255 (3 portions)
Trout flesh	45 (½portion)	255 (3 portions)
Inconnu	85 (1 portion)	170 (2 portions)
Pike	85 (1 portion)	255 (3 portions)
Grouse	45 (½portion)	255 (3 portions)
Ptarmigan	45 (½portion)	170 (2 portions)
Duck	85 (1 portion)	255 (3 portions)
Canada Goose	85 (1 portion)	255 (3 portions)

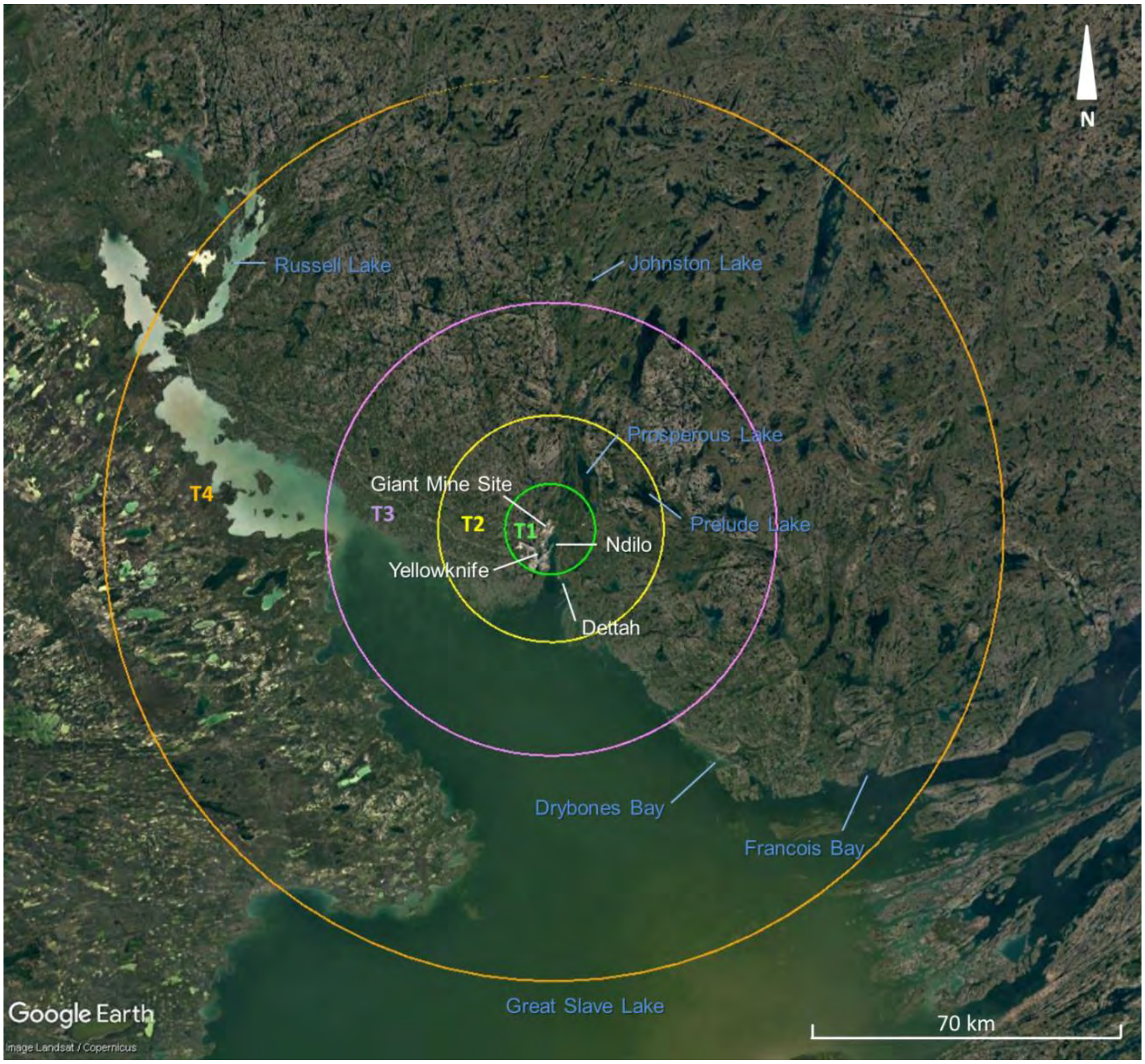
[a] - Based on responses from a few participants who consume caribou.

Hunting/Trapping/Gathering/Fishing Locations

During the three in-person workshops and through the electronic survey, information was collected on which general locations people frequent to hunt, trap, gather, or fish for traditional foods; the findings are summarized below.

The reference map that was used to gather information about where people hunt, trap, and gather terrestrial foods is shown in Figure E.14. Dietary Survey participants were asked to identify general areas where they source their traditional foods from; these areas are shown in Figure E.14 and include T1 (within 10 km from the site), T2 (within 25 km of the site), T3 (within 50 km of the site), T4 (within 100 km from the site), and outside T4 (more than 100 km from the site).

Figure E.14 Hunting/trapping/gathering location reference map



A summary of the locations frequented most often by participants is provided in Table E.3. The few people who reported consuming caribou said the caribou was largely from outside of T4 with an occasional caribou from within T4.

While people reported that most of the moose and Canada goose that they eat are from farther away from the site (i.e., T3 and farther), they reported capturing rabbit, muskrat, beaver, grouse, ptarmigan, and duck from a wider range of distances from the Giant site, including within 10 km from the site in some cases.

The 2017 Dietary Survey found that people do sometimes gather berries, rosehips, Labrador tea, and chives from within 10 km of the Giant Mine site, as these plants are often collected on an opportunistic basis. No participants reported collecting mushrooms from within 10 km from the Giant site.

Table E.3 Summary of most common hunting/trapping/gathering locations

Food Item	Most Frequent Locations	Other Locations
Caribou	Outside of T4	Occasional caribou within T4
Moose	T3, T4 and outside of T4	Occasional moose within T2
Rabbit	T1, T2 and T3	Occasionally rabbit outside of T3
Muskrat	T1, T2 and T3	Occasionally muskrat outside of T3
Beaver	T1, T2 and T3	Occasionally beaver outside of T3
Grouse	T1, T2, and T3	Occasionally grouse outside of T3
Ptarmigan	T1, T2, and T3	Occasionally ptarmigan outside of T3
Duck	T2, T3, and T4	-
Canada Goose	T3,T4, and outsideT4	-
Berries	T2 and T3	Occasionally berries in T1 or outside of T3
Rosehips	T1	-
Labrador Tea	T1, T2, T3, and T4	-
Mushrooms	T2 and T3	Outside of T3
Chives	T1	Occasionally chives in T2

The mapping used to gather information about where people go to fish is shown in Figure E.15. Participants were asked to identify general areas where they fish for different species of fish; these areas include A1 (Yellowknife River Area), A2 (Yellowknife Bay north of Dettah), A3 (Yellowknife Bay south of Dettah), Great Slave Lake beyond Yellowknife Bay, and other regional lakes.

A summary of the locations where participants fish most often is provided in Table E.4. People generally reported fishing for whitefish, lake trout, and northern pike most often from Yellowknife Bay (both north and south of Dettah), but the survey found that these species were obtained from a number of other areas as well. The 2017 Dietary Survey results indicated that most people fishing for inconnu fished in the portion of Yellowknife Bay south of Dettah.

Figure E.15 Fishing location reference map

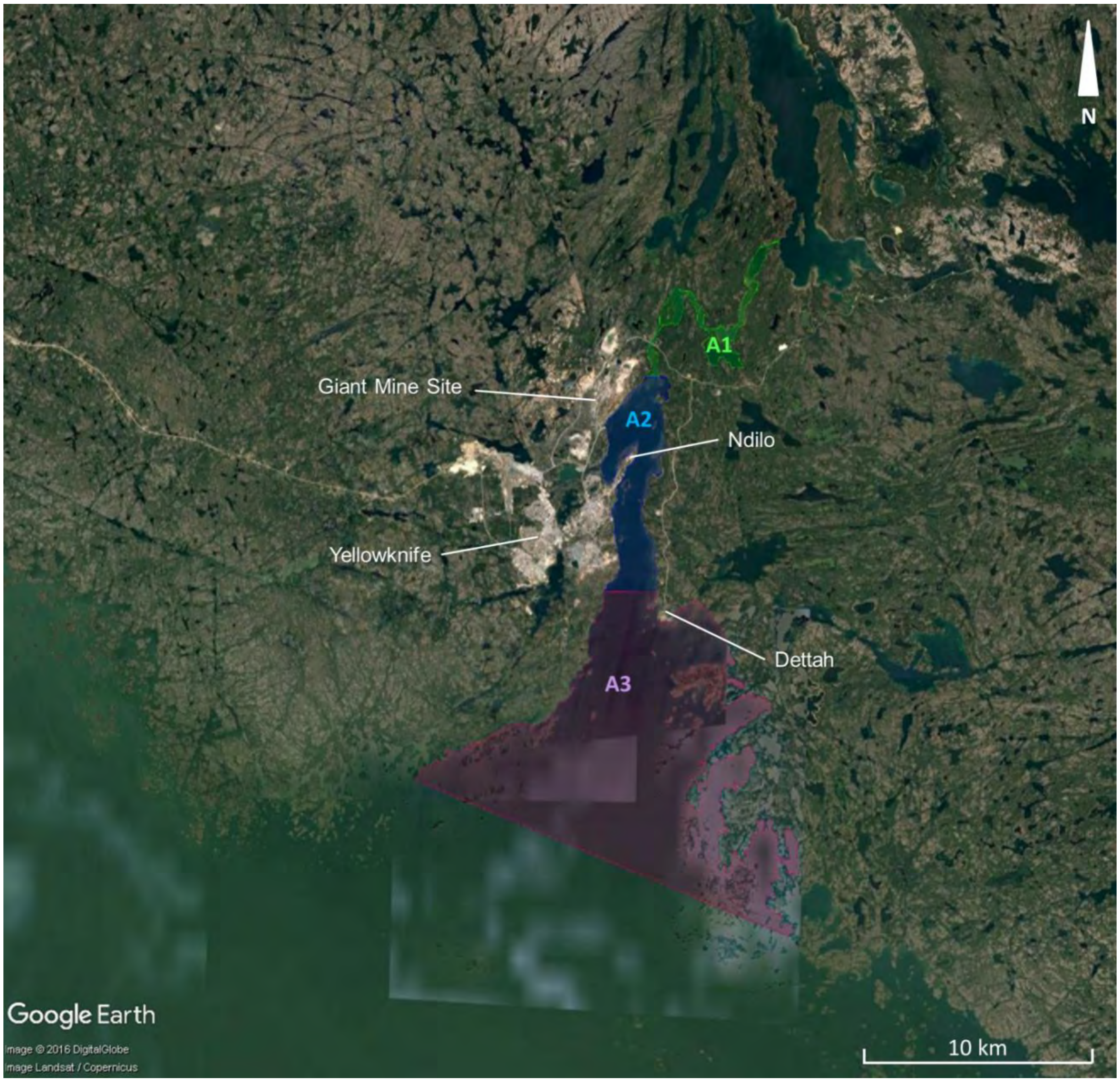


Table E.4 Summary of most common fishing locations

Food Item	Most Frequent Locations	Other Locations
Whitefish	A2, A3	A1, Great Slave Lake beyond A3, and other small regional lakes
Lake Trout	A2, A3	A1, Great Slave Lake beyond A3, and other small regional lakes
Inconnu	A3	Great Slave Lake beyond A3
Northern Pike	A2, A3	A1, Great Slave Lake beyond A3, and other small regional lakes

E.6 Receptor Characteristics

Information on human receptor characteristics are considered, such as body weight, food and drinking water ingestion rates, time spent outside, areas from which food (plants, fish, game) are obtained, etc., in order to complete estimates of potential exposure (Appendix F). Receptor characteristics were based on results from the dietary survey (Section E.5), as well as typical values from relevant guidance documents and other information provided in literature.

E.6.1 Food Consumption

The amount of country food that people reported eating from the survey was characterized for three different diets: a typical country foods eater from the YKDFN, a high country foods eater from the YKDFN, and a country food diet representative of the NSMA community and Yellowknife residents who hunt and fish based on results from the NSMA questionnaire. The assessment also considered people from the different locations that only ate supermarket food. About five people from the YKDFN indicated that they only ate country foods, and these people are captured in the high food diet. The largest number of people reported that they only ate 20% country food, and these people are captured in the typical food diet. A number of elders and young people in their 20s indicated that they either ate only food from the supermarket, or 5 to 10% country foods. The survey also asked people how many portions of different country food they ate based on portions. For all meat and fish, a portion was described as the size of a palm of your hand and was equivalent to 85g. For berries, people were asked about how many handfuls they ate, with a handful being equivalent to ½ c or 50 g. The portions of food and the number of days reported for the three different types of diets are summarized in Table E.5. The types of country food in the table are based on the different food samples collected in the voluntary sampling program.

Table E.5 Characterization of typical diets and adult food ingestion rates of country foods

Food Item	Portions per meal	Meals consumed per year	Portions per year	Ingestion Rate (g/d)[a]
Typical YKDFN				
Moose	2	15	30	7
Fish	2	365	730	170
Rabbit	2	6	12	2.8
Grouse [b]	1	12	12	2.8
Duck	1	10	10	2.3
Muskrat	0.5	8	4	0.9
Beaver	1	4	4	0.9
Goose	2	4	8	1.9
Berries	1	15	15	2.5
Organs - Moose	1	2	2	0.5
High YKDFN				
Moose	3	30	90	21
Fish	3	365	1095	255
Rabbit	3	26	78	18
Grouse [b]	2	20	40	9.3
Duck	3	30	90	21
Muskrat	2	20	40	9.3
Beaver	2	24	48	11.2
Goose	3	8	24	5.6
Berries	1	30	30	4.9
Organs - Moose	1	2	2	0.5
Typical City of Yellowknife				
Moose	1	12	12	2.8
Fish	1	210	210	49
Rabbit	0.5	2	1	0.2
Grouse [b]	1	6	6	1.4
Duck	1	6	6	1.4
Muskrat	0	0	0	0
Beaver	1	2	2	0.5
Goose	1	2	2	0.5
Berries	1	15	15	2.5
Mushrooms	0.5	4	2	0.5
Organs - Moose	1	2	2	0.5

Note: Based on dietary survey results for adults.
[a] – ingestion rates were calculating assuming an 85 g portion size.
[b] – combination of grouse and ptarmigan.

The ingestion rates provided in Table E.5 were specified for adult receptors. Elder receptors were assumed to have the same ingestion rates as adults, while teen, child, and toddler receptors were scaled from adult rates, assuming 91%, 75%, and 50%, respectively. The value for teens is based on data from Richardson (1997) for First Nations people and the values for child and toddler are based on data from a Canada wide survey (Health Canada 1994). Table E.6 provides the derived ingestion rates for the elder, teen, child, and toddler receptors. The survey results indicated that only adults or elders ate organs and mushrooms, and this was considered in the derivation of the rates for the other life stages.

Table E.6 Derived elder, teen, child, and toddler country food ingestion rates

Food Item	Elder [a]	Teen [b]	Child [c]	Toddler [d]
Typical YKDFN (g/d)				
Moose	7.0	6.4	5.2	3.5
Fish	170	155	128	85
Rabbit	2.8	2.5	2.1	1.4
Grouse[e]	2.8	2.5	2.1	1.4
Duck	2.3	2.1	1.7	1.2
Muskrat	0.9	0.8	0.7	0.5
Beaver	0.9	0.8	0.7	0.5
Goose	1.9	1.7	1.4	0.9
Berries	2.5	2.2	1.8	1.2
Organs – Moose [f]	0.5	0	0	0
High YKDFN (g/d)				
Moose	21.0	19.1	15.7	10.5
Fish	255	232	191	128
Rabbit	18.2	16.5	13.6	9.1
Grouse[e]	9.3	8.5	7.0	4.7
Duck	21.0	19.1	15.7	10.5
Muskrat	9.3	8.5	7.0	4.7
Beaver	11.2	10.2	8.4	5.6
Goose	5.6	5.1	4.2	2.8
Berries	4.9	4.5	3.7	2.5
Organs – Moose [f]	0.5	0	0	0
Typical City of Yellowknife (g/d)				
Moose	2.8	2.5	2.1	1.4
Fish	49	45	37	24
Rabbit	0.2	0.2	0.2	0.1
Grouse[e]	1.4	1.3	1.0	0.7
Duck	1.4	1.3	1.0	0.7
Muskrat	0	0	0	0
Beaver	0.5	0.4	0.3	0.2
Goose	0.5	0.4	0.3	0.2
Berries	2.5	2.2	1.8	1.2
Mushrooms [f]	0.5	0	0	0
Organs – Moose [f]	0.5	0	0	0

Note: Based on dietary survey results for adults.
[a] – Assumed equal to adult ingestion rates.
[b] – Assumed 91% of adult ingestion rates.
[c] – Assumed 75% of adult ingestion rates.
[d] – Assumed 50% of adult ingestion rates.
[e] – Combination of grouse and ptarmigan.
[f] – Organs and mushrooms were assumed to not be consumed by teen, child, or toddler receptors.

As part of the sensitivity assessment, consumption of organs from moose, fish, and ptarmigan/grouse was also considered. The dietary survey provided information related to the ingestion of moose organs (see Table E.5); however, there was no information on ingestion rates for fish or ptarmigan/grouse organs from the dietary survey. Therefore, some assumptions were made to derive the ingestion rates presented in Table E.7. Assumptions were based on relative organ to full body mass (with organ weights available from the voluntary sampling data) and applied to the ingestion rates of fish and grouse determined from the dietary survey. This assumes that the organs are consumed at the same relative rate as the meat from the rest of the animal.

Table E.7 Characterization of food ingestion rates of other organs

Food Item	Ingestion Rate (g/d) [a]			Basis of Assumption
	Typical YKDFN	High YKDFN	Typical City of Yellowknife	
Fish Liver	1.7	2.6	0.49	Fish liver is approximately 1% of whole body weight.
Grouse heart	0.06	0.19	0.03	Grouse and ptarmigan heart is approximately 2% of “dressed” whole body weight.
Grouse gizzard and liver	0.14	0.47	0.07	Grouse and ptarmigan gizzard is approximately 3% of “dressed” whole body weight; increased to 5% to account for additional weight of liver.

[a] – For adult and elder receptors only. Calculated based on a percentage of the associated meat ingestion rates for each animal from Table E.5.

E.6.2 Medicinal Tea Intake

A number of assumptions were used to derive appropriate intake rates for medicinal tea. It was assumed that tea was prepared following a ratio of 1 handful of leaves to 1 L of water. A bunch of mint leaves at the supermarket is 90 g; it was assumed that 1 handful is equal to ½ a bunch, or 45 g. This results in a ratio of 45 g to 1 L of water. Following preparation of the tea, it is recommended practice to further dilute the tea to 1/3, prior to consumption. This results in a ratio 15 g leaves to 1 L of water. Tea is typically consumed by the cup, which is approximately 0.25 L. This results in approximately 4 g of leaves per serving of medicinal tea. Based on results of the dietary survey, it was assumed that 3, 52, and 2 servings of Labrador tea were consumed per year for the typical YKDFN, high YKDFN, and typical City of Yellowknife diets, respectively. This equates to medicinal tea intakes of 0.05 g/d, 0.5 g/d, and 0.03 g/d, respectively. Only adult and elder receptors were assumed to drink medicinal tea on a regular basis.

E.6.3 Water Intake

The average water intakes for an adult (20 plus years of age) and elder (70 plus years of age), teen (12 to 19 years of age), child (5 to 11 years of age), and toddler (0.5 to 4 years of age) are provided by Health Canada (2012a) and are 1.5 L/d, 1 L/d, 0.8 L/d, and 0.6 L/d, respectively.

E.6.4 Soil Intake

Soil intake rates are available from Health Canada (2012a). There is uncertainty associated with these values, as they were developed using tracer element mass balance studies that are considered highly variable with numerous sources of uncertainties (Wilson et al. 2013). It is broadly acknowledged among professional risk assessors that the assumed rates of soil ingestion currently used for risk assessment significantly overestimate actual exposure from this environmental medium. Also, the assumptions concerning soil ingestion currently employed and recommended for risk assessment by Health Canada (2012a) are not associated in any way with the amount of time spent in the outdoor environment. As a result, the same assumed rate of soil ingestion is applied whether a hypothetical receptor is assumed to be outdoors for 10 minutes or 10 hours. However, with the exception of children who eat soil (known as pica behaviour), it is logical to expect that the amount of soil ingested, and certainly the likelihood that soil ingestion would actually occur, would be greater if that receptor were outdoors 10 hours versus 10 minutes and will not occur immediately after the person goes outdoors.

Wilson et al. (2013) adopted a mechanistic hand-loading and transfer approach to derive revised soil ingestion rates using both deterministic and probabilistic methods, and adapted it specifically for the Canadian context using the age groups and receptor characteristics supported by Health Canada (2012a). These soil ingestion rates are derived separately than dust ingestion rates and can be developed into an hourly rate or adjusted on a site-specific basis. For this assessment, the deterministic estimates of soil ingestion rates from Wilson et al. (2013) were used, with average values for the elder, adult, teen, child, and toddler of 1.5 mg/d, 1.6 mg/d, 1.4 mg/d, 21 mg/d, and 14 mg/d, respectively. These soil ingestion rates are physically based and more intuitive than tracer element mass balance studies and account for the important fact that soil exposure is time dependant and separate to dust ingestion.

E.6.5 Indoor Dust Intake

The soil intake rates from Health Canada (2012a) also implicitly include indoor dust ingestion and, in many risk assessments, dust ingestion rates were assumed to be the same as soil ingestion rates. Wilson et al. (2013) determined separate indoor dust ingestion rates using a mechanistic hand-loading and transfer approach. Indoor dust rates were determined both deterministically and probabilistically. Wilson et al. (2013) adapted the approach used by the Contaminants of Potential Concern Committee of The World Trade Center Indoor Air Task Force Working Group (WTCWG 2003) using data more representative of the Canadian context. The dust ingestion rates were dependent on whether an individual was in contact with hard surfaces such as hardwood, linoleum, tiles, countertops, tables and window sills or soft surfaces such as carpets and rugs, sofas and beds. It was assumed that, in a typical home, 50% of the surfaces are hard surfaces and the other 50% are soft surfaces. For this assessment, the deterministic estimates of dust ingestion rates from Wilson et al. (2013) were used, with average values for the elder, adult, teen, child, and toddler of 2.5 mg/d, 2.5 mg/d, 2.2 mg/d, 31 mg/d, and 41 mg/d, respectively.

E.6.6 Sediment Intake

The estimated sediment ingestion rates from the literature for use in human health risk assessments are limited. In historical human health risk assessments, soil ingestion rates were used as a surrogate for sediment ingestion rates. However, it is not clear whether the use of soil ingestion as a surrogate is a conservative assumption, since, on the one hand, the soil exposures are expected to have higher durations than sediment, but, on the other hand, sediment has a greater adherence to skin (Wilson Scientific and Meridian 2011).

Wilson Scientific and Meridian (2011, 2012), in contractor reports to Health Canada's Contaminated Sites Division, developed central tendency sediment ingestion rates of 78 mg/d, 25 mg/d, and 28 mg/d for the child, teen, and adult, respectively, based on an analysis of estimated intakes from hand-to-mouth contact with sediment and incidental ingestion of water containing sediment (Wilson Scientific and Meridian 2011). In a follow-up report, Wilson Scientific and Meridian (2012) proposed average sediment ingestion rates of 90 mg/d to 120 mg/d for the child and 30 mg/d to 40 mg/d for the teen and adult. Additionally, they proposed mean sediment ingestion rates during in-water activities of 10 mg/d to 20 mg/d for all age categories for contact with suspended sediment. The authors recommended that the high end of these ranges be used for beaches, tidal flats, and riverbeds that are known to be used regularly by the general public.

Wilson et al. (2015) provided sediment ingestion rates based on hourly exposure to allow for the adjustment of the number of hours in contact with sediment as that time is expected to be highly variable depending on the location. The following rates of 72 mg/hr, 57 mg/hr, 18 mg/hr, and 20 mg/hr are provided for hand-to-mouth contact for the toddler, child, teen, and adult, respectively. This ingestion rate is only relevant for on-land activities such as playing in the sand on a beach where sediment is exposed. They also provide a suspended sediment ingestion rate of 7.7 mg/hr for all age groups for near-shore, in-water activities in shallow water (e.g., wading, walking, and playing in water).

E.6.7 Swimming Water Intake

Limited information related to the incidental ingestion of water while swimming is available. The U.S. EPA (2011) provides an estimate of ingestion of water while swimming for an adult and child from on a quantitative study by Dufour et al. (2006), based on results from swimming pool experiments. Dufour et al. (2006) considered that swimming behaviour of recreational pool swimmers may be similar to freshwater swimmers. Based on the information in U.S. EPA (2011), the mean hourly rate of 21 mL/hr for an adult was used for the adult, elder, and teen receptors, and the mean hourly rate of 49 mL/hr for a child was used for the child and toddler receptors.

The Chicago School of Public Health (Dorevitch et al. 2011) carried out a study of water ingestion during recreational activities. This study indicated that the upper confidence estimate of swimming activities was 35 mL/hr which is similar to the average of the adult and child ingestion rates provided by the U.S. EPA (2011).

The World Health Organization (WHO 2006) indicates that the amount of water ingested by swimmers and pool users depends on a range of factors, including experience, age, skill, and type of activity. The WHO (2006) indicates that a number of estimates have been made of possible intakes for children while participating in activities in swimming pools and similar environments, and indicates that the most convincing study was a pilot study by Evans et al. (2001). This study found that the average water intake by children (37 mL) was higher than the intake by adults (16 mL). In addition, the intake by adult men (22 mL) was higher than that by women (12 mL) and the intake by boys (45 mL) was higher than girls (30 mL). The upper 95th percentile intake for children was approximately 90 mL/d and therefore the WHO (2006) used a 'worst case' intake of 100 mL/d for a child.

In the guidelines for *Canadian Recreational Water Quality*, Health Canada (2012b) use an incidental water ingestion rate of 250 mL/d for a child. Health Canada indicates that this value is likely a conservative estimate of the incidental water ingestion rate and base their value on studies from the WHO (2003) and Evans et al. (2006). However, the WHO (2003) indicates that a swimmer with whole body contact can expect to ingest 100 mL/d to 200 mL/d during swimming.

Given this information, an uncertainty analysis was conducted with an incidental ingestion of 100 mL/d and 250 mL/d for a toddler and child and 50 mL/d for an adult.

E.6.8 Dermal Contact

Soil

Intake of COPC can occur *via* dermal contact with contaminated soil. Exposed skin surface area quantities for hands for the adult, teen, child, and toddler of 890 cm^2, 800 cm^2, 590 cm^2, and 430 cm^2, respectively, were obtained from Health Canada (2010). Exposed skin surface area quantities for arms and legs for the elder and adult, teen, child, and toddler of 8,220 cm^2, 7,200 cm^2, 4,550 cm^2, and 2,580 cm^2, respectively, were obtained from Health Canada (2012a). It is not considered appropriate to use the total body surface area for the calculation of intake from soil via dermal contact, since clothes provide protection to other areas of the body.

Single point estimates for soil loading to exposed skin (hands and arms and legs) were obtained from Health Canada (2012a); these values are 1 x 10^{-7} kg/cm^2-event for hands and 1 x 10^{-8} kg/cm^2-event for arms and legs. Soil loading rates for dermal exposure were calculated using equation (E-1). For dermal exposures, it is typically assumed that one event occurs each day of exposure.

$$DLR_{soil} = \left(SA_{hands} \times SL_{hands} + SA_{arms+legs} \times SL_{other}\right) \times \frac{1\ event}{d} \qquad \text{(E-1)}$$

Where:

DLR_{soil}	=	Dermal loading rate for soil (kg/d)
SA_{hands}	=	Surface area – hands (cm^2)
SL_{hands}	=	Soil loading – hands (kg/cm^2/event)
$SA_{arms+legs}$	=	Surface area – arms and legs (cm^2)
SL_{other}	=	Soil loading – other (kg/cm^2/event)

Dust

Similarly, intake of COPC can occur *via* dermal contact with indoor dust. Exposed skin surface areas for hands for the adult, teen, child, and toddler of 890 cm^2, 800 cm^2, 590 cm^2, and 430 cm^2, respectively, were obtained from Health Canada (2010). Indoor dust exposure was considered to occur through contact with hands, since clothes provide protection to other areas of the body and hands are the most likely to be in contact with indoor dust.

Single point estimates for soil loading to exposed skin (hands) were obtained from Health Canada (2011); this value is 2 x 10^{-7} kg/cm^2-event for hands. Dust loading rates for dermal exposure were calculated using equation (E-2). For dermal exposures, it is typically assumed that 1 event occurs each day of exposure.

$$DLR_{dust} = (SA_{hands} \times SL_{hands}) \times \frac{1\ event}{d} \tag{E-2}$$

Where:

DLR_{dust} = Dermal loading rate for dust (kg/d)
SA_{hands} = Surface area – hands (cm^2)
SL_{hands} = Soil loading – hands (kg/cm^2/event)

Sediment

In order to calculate exposure to contaminants in sediment via dermal contact, it is necessary to estimate the amount of sediment that adheres to the skin, known as sediment loading or sediment adherence. It should be noted that sediments that are underwater are likely to be washed off while wading in water, whereas wet sediments at the shoreline are likely to adhere to the skin. As with sediment ingestion, information on soil adherence has generally been used for sediment adherence.

For soil adherence to skin, Health Canada (2012a) Guidance on Human Health Preliminary Quantitative Risk Assessment recommends 0.1 mg/cm^2 /event for hands and 0.01 mg/cm^2/event for the rest of the body based on soil studies by Kissel et al. (1996, 1998).

Since wet soil is roughly similar to sediment, U.S. EPA (2004) guidance for dermal risk assessment recommends 0.2 mg/cm^2/day (geometric mean) based on studies of children playing with toys in wet soil (Kissel et al. 1998). For adult gardeners over 16 years old, the U.S. EPA (2004) recommends a soil adherence rate of 0.07 mg/cm^2/day (geometric mean).

For the child playing in sediment, the U.S. EPA's *Exposure Factors Handbook* (U.S. EPA 2011) recommends adherence factors of 0.04 to 21 mg/cm^2 based on geometric means of children 7 to 12 years old playing in tidal flats (Shoaf et al. 2005a), depending on the body part exposed. For the adult engaged in outdoor sports or activities with soil, the U.S. EPA (2011) recommends 0.03 mg/cm^2 to 0.16 mg/cm^2 (based on geometric means from Kissel et al. (1996) and Holmes et al. (1999). Shoaf et al. (2005b) provides adherence factors for adults clam digging on tidal flats, and adherence factors ranged from 0.02 mg/cm^2 to 0.88 mg/cm^2 based on geometric means.

As seen from the above discussion, the sediment adherence factors are as much as two orders of magnitude higher than the soil adherence factors. However, there is some evidence that, as the soil adherence increases over a certain critical level, which is equivalent to a monolayer on the skin, the fraction of the contaminant absorbed decreases (U.S. EPA 1998). While the level of loading equal to the monolayer has not been well established, the Massachusetts Department of Environmental Protection (MassDEP 2002) recommended a sediment adherence factor of 1 mg/cm^2 as the best estimate of sediment adherence corresponding to a monolayer of most sediment types. They reported that a high adherence factor of 22 mg/cm^2 is not a reasonable value to use, as it may substantially overestimate the dose of contaminant received from dermal contact with sediment. Therefore, the value of 1 mg/cm^2 was used in the assessment.

The Ontario Ministry of the Environment and Climate Change (MOECC 2014) developed sediment adherence factors which were weighted by body part and by season. The adherence factors selected for the child were based on a study by Shoaf et al. (2005a) of children playing in tidal flats. Adherence factors for the adult were selected as the higher of adults engaged in outdoor sports and adults engaged in activities with soil from the U.S. EPA *Exposure Factors Handbook* (U.S. EPA 2011). The teen was assumed to have the same adherence factors as the adult. This resulted in time-weighted adherence factors of 1.19 mg/cm^2, 0.11 mg/cm^2 and 0.11 mg/cm^2 for the child, teen and adult, respectively, for annual exposure. For exposure during the summer months, the weighted average was 3.85 mg/cm^2, 0.11 mg/cm^2, and 0.11 mg/cm^2 for the child teen and adult, respectively.

The Michigan Department of Community Health (2012), in co-operation with the Agency for Toxic Substances and Disease Registry, in evaluating the effects of an oil spill into the Kalamazoo River used a weighted sediment adherence factor of 2.98 mg/cm^2 for a child (ages 1 to 6) based on the study by Shoaf et al. (2005a). This assumed that children were wading in the river or damp shoreline and sediment would not have been washed off from contact with water. For adults, a soil adherence factor of 0.3 mg/cm^2 was used, which was from a study of adults working in a garden (MDEQ 2001).

For the current assessment, a weighted sediment adherence factor for skin for all life stages was used based on Shoaf et al. (2005a) for children and Shoaf et al. (2005b) for adults. The MADEP (2002) recommended sediment adherence factor for feet of 1 mg/cm^2 was used for the adult and child. Full body (hands, arms, legs, feet) exposure was considered for toddlers, while children were assumed to have feet and leg exposure. Teens, adults, and elders were assumed to have sediment exposure to feet, only.

Table E.8 Weighted sediment adherence factors for skin

Parameter	Toddler	Child	Teen	Adult
AF hands (mg/cm^2)	0.49	-	-	-
SA hands (cm^2)	430	-	-	-
AF forearms (mg/cm^2)	0.17	-	-	-
SA forearms (cm^2)	450	-	-	-
AF legs (mg/cm^2)	0.7	0.7	-	-
SA legs (cm^2)	1690	3070	-	-
AF feet (mg/cm^2)	1	1	0.58	0.58
SA feet (cm^2)	430	720	1080	1190
Total SA (cm^2)	3000	3790	1080	1190
Weighted average AF (mg/cm^2)	0.63	0.76	0.58	0.58
Weighted average AF (kg/cm^2)	6.3×10^{-7}	7.6×10^{-7}	5.8×10^{-7}	5.8×10^{-7}

Note: Based of Shoaf et al. (2005a) for children and Shoaf et al. (2005b) for adults. AF for feet for adult and child based on MADEP (2002).
Assumed forearms 50% of total arms. Feet surface area obtained from Richardson (1997). Other surface area values obtained from Health Canada (2012a).

The weighted sediment adherence factors in Table E.8 were used with the associated skin surface area assumed for each receptor to calculate sediment loading rates for dermal exposure, as shown in equation (E-3).

$$DLR_{sed} = SA \times AF_{sed} \tag{E-3}$$

Where:

DLR_{sed} = Dermal loading rate for sediment (kg/d)

SA	=	Surface area assumed for sediment exposure, see text (cm^2)
AF_{sed}	=	Weighted average sediment adherence factor (kg/cm^2)

Swimming Water

Intake of COPC can occur *via* dermal contact with surface water while swimming. Exposed skin surface area quantities for total body for the adult, teen, child, and toddler of 17640 cm^2, 15470 cm^2, 10140 cm^2, and 6130 cm^2, respectively, were obtained from Health Canada (2010).

For dermal exposures with water, a COPC-specific dermal permeability coefficient K_p in water is considered. For this assessment, all COPC have a K_p of $1x10^{-3}$ cm/hr, based on U.S. EPA (2004). Water loading rates for dermal exposure while swimming were calculated using equation (E-4).

$$DLR_{swimming} = \left(SA_{body} \times K_p\right) \times CF \qquad \text{(E-4)}$$

Where:

$DLR_{swimming}$	=	Dermal loading rate for swimming water (L/hr)
SA_{body}	=	Surface area – total body (cm^2)
K_p	=	Dermal permeability coefficient (cm/hr)
CF	=	Conversion factor – 1000 L/m^3 x $1m^3/100^3$ cm^3

E.6.9 Body Weight

The body weights (bw) of a toddler, child, teen and adult are needed to calculate daily intake rates (mg/(kg (bw) d)). For this assessment, the body weights used for the adult, teen, child, and toddler were 70.7 kg, 59.7 kg, 32.9 kg, and 16.5 kg, respectively (Health Canada 2010).

E.6.10 Summary of Receptor Characteristics

Intake rates of food were presented in Section E.6.1. Table E.9 provides a summary of the other (non-food) receptor characteristics for the toddler, child, teen, adult, and elder receptors selected for the assessment.

Table E.9 Summary of selected human receptor characteristics

Receptor Characteristic	Receptor				
	Toddler	Child	Teen	Adult	Elder
Water (L/d)	0.6	0.8	1.0	1.5	1.5
Soil Intake (mg dw/d)	14	21	1.4	1.6	1.5
Indoor Dust Intake (mg dw/d)	41	31	2.2	2.5	2.5
Sediment Intake – Wading (mg dw/hr)	7.7	7.7	7.7	7.7	7.7
Sediment Intake – Beach (mg dw/hr)	72	57	18	20	20
Soil Dermal Loading Rate (kg/d)	6.9×10^{-5}	1.1×10^{-4}	1.5×10^{-4}	1.7×10^{-4}	1.7×10^{-4}
Indoor Dust Dermal Loading Rate (kg/d)	8.6×10^{-5}	1.2×10^{-4}	1.6×10^{-4}	1.8×10^{-4}	1.8×10^{-4}
Sediment Dermal Loading Rate (kg/d)	1.7×10^{-3}	2.2×10^{-3}	6.3×10^{-4}	7.0×10^{-4}	7.0×10^{-4}
Body Weight (kg)	16.5	32.9	59.7	70.7	70.7

Notes: Food intake rates and medicinal tea intake rates are provided separately in Section E.6.1 and E.6.2, respectively.

E.7 Supermarket Intakes

Intakes of COPC from supermarket foods were considered for receptors with typical country and typical city diets as well as for the supermarket foods only receptors. Receptors with high country diets were assumed to not have additional intakes from supermarket foods.

Typical intakes of COPC from supermarket foods were obtained from literature and are presented in Table E.10. Canadian references were preferred; however, for antimony, references from other jurisdictions were considered in order to reduce double-counting of antimony intake from meat, as well as to incorporate more recent information. Health Canada (1979) does provide an estimate of antimony intake through food, although it is based on a United States study (ATSDR 1992). A more recent study from the United Kingdom (FSA 2009) provides information on food concentrations and intakes for antimony, and this study was selected for use in the assessment.

Table E.10 Summary of general Canadian supermarket food dietary intakes

Constituent	Intake (mg/kg-d)				Reference
	Adult/Elder	Teen	Child	Toddler	
Antimony	3.3×10^{-5}	5.0×10^{-5}	5.0×10^{-5}	7.7×10^{-5}	FSA (2009), with consideration of information presented in Health Canada (1979).
Arsenic	8.0×10^{-5}	1.0×10^{-4}	2.0×10^{-4}	3.0×10^{-4}	EC (1999), inorganic arsenic in food.
Manganese	0.056	0.059	0.087	0.11	Health Canada (2011).

Note: FSA –Food Standards Agency, EC – Environment Canada.

E.8 Exposure Frequency and Duration

The exposure assessment considers the frequency and duration of exposures to the various receptors via the pathways identified above. Exposure frequency refers to the frequency that a receptor experiences an exposure via a particular pathway, while exposure duration refers to the amount of time over the year that the behaviour occurs. The following sections provide the rationale for the exposure frequency and duration assumptions used in the assessment.

E.8.1 Food, Water, and Tea Exposure Frequency

The assessment considered exposure to food, drinking water, and medicinal for 7 days per week, 52 weeks per year. In most cases, country foods were assumed to be obtained from one location; however, two different locations were considered for fish and berries. For example for Ndilo and Dettah, people were assumed to get 10% of fish from North Yellowknife Bay and 90% of fish from South Yellowknife Bay. This was based on the findings from the dietary survey in 2012 that indicated that some people had some nets in North Yellowknife Bay. For berries, a concern was noted for children eating berries in Ndilo. As there were not enough berries in Ndilo to support the amount of berries being consumed, it was assumed that 5% of berries were obtained from Ndilo and the other 95% of berries came from areas more than 10 km from the Giant Mine, where most people go to gather berries.

Results from the dietary survey (Section E.5) were used to designate the areas where fish and berries were obtained for each receptor location. These assumptions are outlined in Table E.11.

Table E.11 Exposure assumptions for fish and berries

Food	Location	Fraction of Diet					
		Dettah	Ndilo	Latham Island	City of Yellowknife	Ingraham Trail	Townsite
Fish	North Yellowknife Bay (A2)	0.1	0.1	0	0	0	0
	South Yellowknife Bay (A3)	0.9	0.9	1	1	1	1
Berry	Ndilo	0	0.05	0	0	0	0
	Within 10 km of Giant Mine (T1 incl. Ndilo)	0	0	0.05	0	0	0
	Beyond 10 km of Giant Mine	1	0.95	0.95	1	1	1

Note: Fish and berry locations based on dietary survey results.

E.8.2 Soil Exposure Frequency

For outdoor soils, such as those that would occur outside a home, the exposure frequency was assumed to be four months (May to September), which represents the time when the soil is considered to be accessible. This translated into an exposure frequency of 5 days per week, 16 weeks per year. As mentioned in Section E.6.7, dermal exposures were assumed to occur one event per day of exposure.

Recreational soil exposures, such as from hiking, were assumed to occur on the weekend during the summer months, or for 2 days a week, 10 weeks a year. Half a day of soil ingestion was considered for the recreational soil exposures. Similar to outdoor soils, dermal exposures were assumed to occur one event per day of exposure.

For scenarios with recreational soil exposures, half a day of soil ingestion was considered during recreational soil activities, while an additional day of soil ingestion was considered from outdoor (outside a home) activities. This leads to a slight double counting for the soil ingestion pathway, since a day and a half of soil ingestion is considered. Similar for dermal exposures, on days with recreational soil activities, exposures from both the outdoor (outside a home) activities as well as recreational soil activities are considered (essentially nine days of soil exposure in a week). These assumptions lead to an overestimate of exposures for the recreational soil scenarios.

E.8.3 Indoor Dust Exposure Frequency

It was assumed that exposure to indoor dust would occur 7 days a week, 52 weeks a year. As mentioned in Section E.6.7, dermal exposures were assumed to occur one event per day of exposure.

E.8.4 Sediment Exposure Frequency

It was assumed that people would wade or visit the beach at Long Lake about 10 weeks year, or when the water is warm enough to wade. Wading was assumed to occur for 2 hours per day, 7 days per week, during the warmer weather.

E.8.5 Swimming Exposure Frequency

It was assumed that people would swim at Long Lake about 10 weeks year, or when the water is warm enough to swim. Swimming was assumed to occur for 1 hour per day, 3 days per week, during the warmer weather and in conjunction with wading, as described above.

E.8.6 Averaging Periods

Exposure is averaged over an averaging period, which is representative of the exposure frequency and duration. For the food, water, tea, and indoor dust exposure pathways, the averaging period was selected to be 52 weeks per year, consistent with the exposure frequency assumed for these pathways. In the current assessment, although exposures to soil and sediment are assumed to occur seasonally, exposure is consistent throughout the season, as opposed to periodic or at defined intervals over the course of the year. Therefore, for these pathways, the averaging period was selected to be consistent with the exposure frequency, or 16 weeks per year for outdoor soil, 10 weeks per year for recreational soil, sediment, and swimming exposures. This ensures that the exposures via these pathways are not underestimated.

E.8.7 Exposure Durations

For the consideration of potential effects from carcinogenic COPC, the various durations of exposure for each life stage were considered in order to estimate a lifetime risk to a receptor from exposure over their lifetime. A lifetime receptor was calculated assuming 4 years as a toddler, 6 years as a child, 8 years as a teen, 52 years as an adult, and 10 years as an elder, for a total of 80 years of exposure.

E.9 Exposure Scenarios and Sensitivity Assessments

Various exposure scenarios were considered for the human receptors selected for the assessment. Table E.12 provides a summary of the various exposure scenarios considered for each location.

Everyone was assumed in the base case exposure scenario to get their drinking water from the municipal source and to be exposed where they live to concentrations in the air, soil, and indoor dust. Thus, this scenario captures the unique exposure in their areas. Members of the YKDFN community (Ndilo and Dettah) were assumed to have either a purely supermarket food diet, a typical country food diet that is also supplemented with supermarket food, or a high country food diet. People in the City of Yellowknife were assumed to have a purely supermarket food diet. In addition, because the Metis community also lives there and has some avid hunters and fishers, it was assumed that people in Yellowknife would also eat some country food as well as supermarket food. It was assumed that the Ingraham Trail and Latham Island resident would also have a similar country food diet to the City of Yellowknife. An unrealistic scenario was also evaluated where it was assumed that someone with a typical country food diet was living at the former Townsite. This scenario is used to demonstrate the impact of the remedial actions on the former Townsite location.

Table E.12 also indicates the various additional assessments that were completed for each exposure scenario. In addition to the consumption of food based on the indicated diets, the additional assessments considered the following:

- Ingestion of medicinal tea for adults and elders.
- Ingestion of mushrooms for adults and elders only in City of Yellowknife as the Metis community indicated that they ate mushrooms.
- Ingestion of drinking water from South Yellowknife Bay (for Dettah receptors), North Yellowknife Bay (for Ndilo receptors), and Back Bay (for Latham Island receptors).
- Ingestion of organs (moose, fish liver, ptarmigan/grouse heart, and ptarmigan/grouse gizzards and liver) for adults and elders.
- Wading in near-shore sediments of South Yellowknife Bay (for Dettah receptors), North Yellowknife Bay (for Ndilo receptors), Back Bay (for Latham Island receptors), Long Lake (for City of Yellowknife receptors), and Giant Townsite (for the hypothetical Townsite receptors).

- Visiting the beach at Long Lake for the City of Yellowknife receptors.
- Swimming at Long Lake for the City of Yellowknife receptors.
- Recreational use of the Giant Mine, including berry collection, for the hypothetical current Townsite receptors. This scenario was evaluated to demonstrate the differences between current exposures and future exposures at the former Townsite after remedial activities have occurred.

The results for these exposure scenarios are provided in Appendix H.

The objective of the risk assessment is to determine what the effects of the remedial activities at the Giant Mine will have on the residents in the vicinity of the site. The remedial actions at the site involve the capping of the tailings, the remediation of arsenic concentrations in the disturbed areas of the site to the GNWT Industrial Criterion, the fencing of areas with arsenic concentrations above 3000 mg/kg, and moving the water treatment discharge pipe to near the mouth of Baker Creek. These remedial activities will not have any effect on the unique location exposures that were evaluated in the base case. In addition, remedial activities will not impact the concentrations in the country foods, as none of the samples were obtained from the Giant Mine. The remedial activities will allow access to the Giant Mine for recreational activities such as walking, running, cycling etc., and this exposure was evaluated in the future scenario. The effect of the treated water discharge near the mouth of Baker Creek was evaluated using modelling to determine what the water and sediment concentrations would be in Back Bay and North Yellowknife Bay. Thus, a future scenario involved drinking water from North Yellowknife Bay.

Table E.12 Summary of exposure scenarios for HHRA – current conditions

Location	Diet	Additional Assessments							
		Medicinal Tea	Mushroom	Drinking Water	Organs	Wading	Swimming at Long Lake	Beach at Long Lake	Recreational Use of Giant Mine (including Berry Collection)
Dettah	Typical YKDFN	x	o	x	x	x	o	o	o
	High YKDFN	x	o	o	x	o	o	o	o
	Supermarket	o	o	o	o	o	o	o	o
Ndilo	Typical YKDFN	x	o	x	x	x	o	o	o
	High YKDFN	x	o	o	x	o	o	o	o
	Supermarket	o	o	o	o	o	o	o	o
Latham Island	Typical City of Yellowknife	x	o	x	x	x	o	o	o
	Supermarket	o	o	o	o	o	o	o	o
City of Yellowknife	Typical NSMA	x	x	o	x	x	x	x	o
	Supermarket	o	o	o	o	o	o	o	o
Ingraham Trail	Typical City of Yellowknife	x	o	o	x	o	o	o	o
Townsite	Typical City of Yellowknife	o	o	o	o	x	o	o	x

x – Scenario completed. o – Scenario not assessed.

Based on the results (Appendix H) for the scenarios considered for current conditions (Table E.12), scenarios were determined to assess future conditions following planned remediation activities at the site. Since the Dettah, Ingraham Trail, and Latham Island receptors were shown to have lower and similar exposures, respectively, compared with the Ndilo receptors, the assessment of future conditions focused on Ndilo receptors, as well as City of Yellowknife and future Townsite receptors. It was assumed that people in Ndilo would spend some time on the Giant Mine doing recreational activities. It was also assumed that, while they were on the site, they may pick some berries if they were in season (assumed to be 5% of total berry consumption). An evaluation of a City of Yellowknife resident spending time at the Giant Mine for recreational activities was also evaluated, including 5% of berry consumption from the Giant Mine.

At the former Townsite and marina, the remedial actions involve clean-up of the soils to the arsenic GNWT residential criterion. No plans have been made for the final land use in this area; however, the risk assessment has evaluated the strictest land use where someone would live in this area. The scenarios and additional assessments completed for future conditions are outlined in Table E.13.

Table E.13 Summary of exposure scenarios for HHRA – future conditions

Location	Diet	Assessments	
		Wading	Recreational Use of Giant Mine (including Berry Collection)
Ndilo	Typical YKDFN	x	x
City of Yellowknife	Typical NSMA	o	x
Townsite	Typical City of Yellowknife	x	x

x – Scenario completed. o – Scenario not assessed.

E.9.1 Sensitivity Assessment

A number of assumptions have gone into the risk assessment in order to evaluate realistic, yet conservative, estimates of exposure. A few sensitivity assessments were carried out to see the effect of some of these assumptions on the results.

The first sensitivity analysis was related to country food concentrations. An average value for the samples was used to reflect what people would eat food from a wide variety of areas. To determine whether this assumption was realistic or not and would result in a substantial change in the results, a sensitivity assessment was completed using the maximum measured concentrations for the country foods.

In the risk assessment, it was assumed that 5% of berries for the people living in Ndilo came from the community to account for the fact that children have been reported eating berries from bushes around Ndilo. Although it is unlikely to occur, since there are not enough berry bushes to support this, a sensitivity assessment was completed to evaluate the consumption of 100% of berries from Ndilo.

One moose sample obtained from the voluntary sampling had an arsenic level of 0.65 mg/kg wet weight and was obtained from a shoulder blade sample with very little meat on it. The meat was scraped off the bone and, therefore, this sample is likely not representative of meat but is more indicative of levels in the bone. In addition, the concentration of arsenic in moose liver collected from the area is much lower than this measured concentration. However, since moose represents the most consumed meat from the 2017 Dietary Survey Update and to ensure that potential risks were not being misrepresented, a sensitivity assessment was completed using the arsenic concentration of 0.65 mg/kg wet weight from this moose sample.

The concentration or arsenic in ptarmigan was an order of magnitude higher than concentrations measured in background (0.02 mg/kg ww vs. 0.004 mg/kg ww). Therefore, the sensitivity analysis considered that ptarmigan/grouse made up all the wild game that people ate.

Although the assumption of indoor dust equal to 70% outdoor soil concentrations is an accepted practice, a sensitivity assessment was completed to address the uncertainty around this assumption. An assessment was completed to illustrate the potential exposures assuming that indoor dust is equal to (or 100% of) outdoor soil concentrations.

An additional uncertainty involved the arsenic bioaccessibility in animals. A value of 50% was used based on the measurements in hare in Yellowknife from a study by Koch et al. (2013). The sensitivity assessment looked at the consideration of 100% bioaccessibility of arsenic in animals, even though it is well known that arsenic in food samples are not 100% available.

There have been several “hot spots” identified in soils in the community of Ndilo. The sensitivity analysis evaluated the impact of cleaning up the three highest “hot spots” in the Ndilo community.

It is very difficult to quantify the effects of climate change in the future. In the Developer’s Assessment Report (DAR; INAC/GNWT 2010), the Canadian Climate Change Scenarios Network (CCCSN) assessment indicated that precipitation may increase by up to 15% over the next 50 years. As the future assessment was evaluating a 100 year scenario, it was assumed the change in precipitation could be as high as 30%. The increased precipitation could lead to increased run-off and soil erosion, with a subsequent increase in environmental concentrations. In an attempt to evaluate this effect, the sensitivity assessment looked at the effect of increasing the water and sediment concentrations and, consequently, fish concentrations by 30%.

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LIST OF ATTACHMENTS

ATTACHMENT E.1

QUESTIONNAIRE FOR 2017 DIETARY SURVEY WORKSHOPS

APPENDIX E – ATTACHMENT 1: QUESTIONNAIRE FOR 2017 DIETARY SURVEY WORKSHOPS

Workshop Questionnaire for January 17th and 18th, 2017 Workshops

Caribou

Previous information collected in your community showed that 89% of people from Ndilo and Dettah ate caribou 4 days a week. Now that caribou is not available, what do you eat instead? Other foods such as moose, fish? Store-bought food? A mixture of store-bought and traditional food?

Serving size – 85g or 3 oz

Moose

From our discussions in the community, moose is hunted mainly in the fall but can also be hunted any time if you see one. Previous information collected showed that about half of people from Ndilo and Dettah ate this much moose meat 1 day every three weeks or about 17 times a year.

How often do you eat moose in the fall (every day, 2 to 4 days a week; once a week)? What about other times of the year (once every 2 weeks, once every 3 weeks)? Do you eat this much meat at a meal? or would you eat this much over several meals in a day? How much would you eat if you ate less or more? How about children how much would they generally eat? Where are you most likely to go to hunt for moose?



How many of you eat moose liver? The previous study said that about a quarter of people from Ndilo and Dettah ate moose liver 1 day every 5 weeks or about 10 times a year. Is this how many times you would eat in the fall? Would you eat more than 10 times a year? How much? One person ate this much moose liver in a day. Would you eat more liver/ how much? How about less liver/how much? What about children how much would they generally eat?


What about moose heart? How much do you eat and how often? What about children. Do they eat heart?

Rabbit

We understand that rabbits are harvested year round; however, more are collected in the fall when they are white. Previous information in a dietary survey showed that about a quarter of people from Ndilo and Dettah ate this much rabbit meat 1 day every three weeks or about 17 times a year.

How many eat rabbit meat every day in the fall? How many eat rabbit meat 2 days a week in the fall? How many eat rabbit meat once a week in the fall? How many eat rabbit meat once every 2 weeks? How about in the winter and spring, how often would you eat rabbit (< 1 per week, every few weeks, a couple times per week, every day)? How about in the summer, how often would you eat rabbit (every day, 2 to 4 times a week, 1 per week, every few weeks)? Do you eat this much meat at a meal? or would you eat this much over several meals in a day? How much would you eat if you ate less or more? How about children how much would they generally eat?
Where are you most likely to go to trap rabbits?

Muskrat

Muskrat are generally trapped in March and April. The previous study showed that about a little more than a quarter of people from Ndilo and Dettah ate muskrat. Do you eat muskrat? How many of you ate muskrat in the last year?

One to two people ate this much muskrat meat 1 day every three weeks or about 17 times a year. How many eat muskrat meat once every 3 weeks in the spring? How many eat muskrat meat once every 3 weeks in the spring? How many eat muskrat meat once a week in the spring? Would you eat muskrat in the winter? How about the summer or fall? How many times would you eat?

Do you eat this much meat at a meal? or would you eat this much over several meals in a day? How much would you eat if you ate less or more? How about children do they eat muskrat? How much would they generally eat? Where are you most likely to go to trap muskrat?

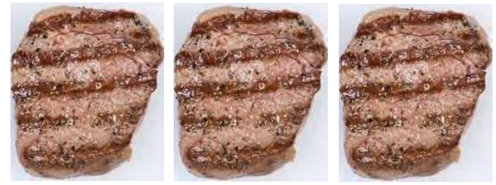
Beaver

Beavers are generally trapped when the ice is thick enough to travel. Most of the trapping seems to be done in March and April (spring). Do you eat beaver? How many of you ate beaver in the last year?

The previous study showed about a quarter of people from Ndilo and Dettah ate beaver 1 day every five weeks or about 10 times a year. How many eat beaver meat once every 5 weeks in the spring? How many eat beaver meat once every 3 weeks? How many eat beaver meat once every 2 weeks? Would you eat beaver in the winter? How about the summer or fall? How many times would you eat?

One person ate this much beaver meat in a day. Do you eat this much meat at a meal/day? How much would you eat if you ate less or more? How about children do they eat beaver? How much would they generally eat? Where are you most likely to go to trap beaver?

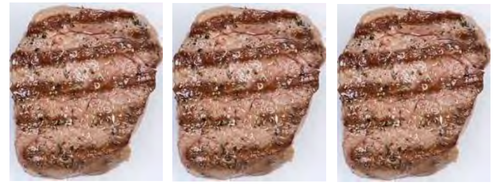
Grouse



Spruce grouse are most likely harvested in the fall and winter but are also caught if seen. Previous information showed that about 1 in 5 people from Ndilo and Dettah ate grouse meat 1 day every 5 weeks or about 10 times a year.

Would you eat grouse every week in the fall/winter? How about once a month? How about in the spring and summer would you eat any grouse? Would you eat more than 10 times a year? About 1 or 2 people ate this much grouse meat in a day. How much do you eat? How many grouse would you have for a family meal? What about children how much would they generally eat? Where are you most likely to go to hunt grouse?

Ptarmigan



Ptarmigan seem to be harvested in the late fall through to the end of winter or early spring. Previous information showed that about 1 in 5 people from Ndilo and Dettah ate ptarmigan meat 1 day every 5 weeks or about 10 times a year.

Would you eat ptarmigan every week in the fall/winter? How about once a month? How about in the spring and summer would you eat any ptarmigan? Would you eat more than 10 times a year?

About 1 or 2 people ate this much ptarmigan meat in a day. How much do you eat? How many ptarmigan would you have for a family meal? What about children how much would they generally eat? Where are you most likely to go to hunt ptarmigan?

Duck

Ducks are reported to be harvested from the spring through to the fall. The previous study showed that about half the people from Ndilo and Dettah ate duck meat 1 day every 3 weeks or about 17 times a year.

In the spring to fall time of harvest would you eat duck? Once a week? Twice a week? Every two weeks? Every three weeks? What about in the winter – how often would you eat duck? Would you eat more than 10 times a year? One person ate this much duck meat in a day. How much would you eat? How many ducks would you have for a family meal? What about children how much would they generally eat? Where are you most likely to go to hunt duck?

Canada Goose

Canada Geese are generally hunted in the spring (late April). The previous study showed that about 1 in 3 people from Ndilo and Dettah ate goose meat 1 day every 5 weeks or about 10 times a year. Did you eat any goose in the last year?

In the spring would you eat goose? Once a week? Once a month? Every three weeks? What about in the winter – would you save a goose for Christmas? What about at other times such as spring or summer, would you eat any goose? Would you eat more than 10 times a year? How much would you eat? Would one goose be good for a family meal? What about children how much would they generally eat? Where are you most likely to go to hunt Canada goose?

Fish serving size

Whitefish

Whitefish are reported to be caught year round. Previous information showed that about 8 in 10 people from Ndilo and Dettah ate whitefish approximately 1 day a week. How many of you eat whitefish? Would you eat more than one day a week?

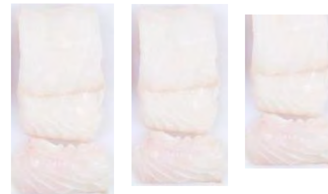
About 25 people said they ate this much whitefish in a day. Would you eat more than this? Would you eat less? How much? How many whitefish would you eat in a week? How about children, how much would they eat? Where would you go to fish for whitefish?

Trout

Trout are reported to be caught year round. Previous information showed that a little less than 8 out of 10 people from Ndilo and Dettah ate trout 1 day every 2 to 3 weeks or 21 times a year. How many of you eat trout? Would you eat more than one day every 2 week? Would you eat once per week?

About 25 people said they ate this much trout in a day. Would you eat more than this? Would you eat less? How much? How many trout would you eat in a week? How about children, how much would they eat? Where would you go to fish for trout?

Connie



From information we have gathered, it seems that connie are rarely caught. Previous information in the dietary survey showed that 1 in 5 people from Ndilo and Dettah ate connie 1 day every 3 weeks or 17 times a year. How many of you ate connie in the last year? Would you eat more than 17 times a year? Less than 17 times a year? 10 times a year? Less than 5 times a year?

About 1 to 2 people people said they ate this much connie in a day. Would you eat more than this? Would you eat less? How much? How about children, how much would they eat? Where would you go to fish for connie?

Pike

Pike have been reported to be caught for dog food. Previous information showed that about 1 in 3 people from Ndilo and Dettah ate pike 1 day every 5 weeks or 10 times a year. How many of you ate pike in the last year? Do you mainly use for dog food?

One person said they ate this much pike in a day. Would you eat more than this? Would you eat less? How much? How about children, would they eat pike? how much would they eat? Where would you go to fish for pike?

 Serving Size equivalent to ½ cup of berries – 50 g berries

Berries

A previous study indicated that more than half the people in the community consume berries about 1 to 2 days per week when they are in season (spring, summer or fall). Would you eat berries every day in season? Once a week?

They generally eat about this much berries in a day. How much would you typically eat in a day (winter (frozen)/spring/summer/fall)? How about children, how much would they eat? Where would you go to gather berries?

Rose Hips

The previous study indicated that about 7 in 100 people from Ndilo and Dettah ate Rose Hips about 1 day every 2 weeks. Rose Hips are harvested in the fall and early winter. How many of you eat Rose Hips? Would you eat rose hips twice a month? Once a month?

How much do you eat? How often? Do you eat the rose hips raw? Do you make tea with them? If you make tea, how do you prepare the tea? How about children, do they eat rose hips? how much would they eat? Where would you go to gather rose hips?

Labrador Tea

The previous study indicated that about 14 in 100 people from Ndilo and Dettah consume Labrador Tea about 1.5 days a week. When do you collect Labrador Tea? How many of you drink Labrador Tea? How often?

How do you prepare the tea? How about children, would they drink Labrador Tea? how much would they drink? Where would you go to gather Labrador tea?

Mushrooms

The previous survey indicated that about 4 in 100 people from Ndilo and Dettah ate mushrooms about 1 day every 5 weeks. How many of you eat mushrooms? Do you only eat in the summer when they are available? Would you eat once a week in the summer? Every couple of weeks?

How much do you eat? How about children, how much would they eat? Where would you go to gather mushrooms?

Chives

The previous study indicated that about 3 in 100 people from Ndilo and Dettah ate chives about 1 day a week. How many of you eat chives? How often would you eat chives? Do you put in food or just eat raw?

How much do you eat? How about children, would they eat chives? Where would you go to gather chives?

Store Bought Foods

In 2014, a study conducted with Dettah indicated that about 94% of the population ate traditional food (meat and fish); 40% said most of their food was traditional food; 40% said about half of their food was traditional food and about 20% said they ate very little traditional food.

How much store bought food do you eat? Do you eat store bought meat 2 to 3 days a week? Do you eat more or less times a week? How about fish, do you eat store bought fish once or twice a week? Do you eat more or less times a week?

APPENDIX F

HUMAN HEALTH EXPOSURE ASSESSMENT

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APPENDIX F: HUMAN HEALTH EXPOSURE ASSESSMENT

The various assumptions and components that comprised the human health exposure assessment are provided in this appendix, including bioavailability and speciation assumptions, calculated exposure point concentrations (EPCs), exposure equations, and a sample calculation.

F.1 Qualitative Assessment

The initial screen to identify constituents of potential concern (COPC) in soil and water for the Human Health Risk Assessment (HHRA) was described in detail in Appendix D. The screening process for soils identified that antimony, arsenic, cadmium, lead, manganese, vanadium, and zinc were COPC from a consideration of all the soil data at the Giant Mine.

In trying to determine the COPC to carry through for a quantitative evaluation in Ndilo, Dettah, Latham Island, City of Yellowknife, and Ingraham Trail, a qualitative assessment was carried out involving a comparison of the measured concentrations of antimony, arsenic, cadmium, lead, manganese, vanadium, and zinc at each of these locations to the human health component of appropriate guidelines. The human health component of the Canadian Council of Ministers of the Environment (CCME) agricultural soil quality guidelines (CCME 2017) or the human health component of the Ontario Ministry of the Environment and Climate Change (MOECC), formerly the Ontario Ministry of the Environment (MOE 2011) (for antimony and vanadium) were used. The human health components have been derived to be protective of human health. If the soil concentrations were below these human health components, the COPC was not considered further. A check was also made to background concentrations, and if the concentration was below the background, then the COPC was not considered further. The development of background concentrations is discussed in Appendix C.

As this report is a Detailed Quantitative Human Health Risk Assessment, the 95% Upper Confidence Limit of the Mean (95% UCLM) was used in the qualitative assessment to represent a reasonable maximum exposure when there were more than 10 samples. The 95% UCLM was obtained using ProUCL. ProUCL is a statistical program that provides 95% UCLM recommendations (based on data distribution, data set size, skewness, and percentage of non-detect observations) on how to obtain an accurate 95% UCLM. ProUCL may suggest more than one 95% UCLM estimate. It is noted that the CCME

(2016) suggest that the BCA bootstrap approach from ProUCL can be used for the majority of datasets.

Table F.1 provides the summary statistics for concentrations of the soils in Ndilo. There are 47 samples for arsenic and 90 samples for each of cadmium, lead, and vanadium. Only 10 samples are available for both antimony and manganese. The table below shows that only antimony and arsenic have 95% UCLM concentrations that exceed the guidelines and background concentrations in Ndilo. For all the other COPC, both the 95% UCLM as well as the 95th percentile values are below guidelines. For manganese, all measured concentrations are below background.

Table F.1 Summary of concentrations of COPC in the soils in Ndilo

COPC	N	N<MDL	Soil Concentration (mg/kg)							
			Min	Max	Average	SD	95th Percentile	95% UCLM	Human Health Component [a]	BG
Antimony	10	0	0.3	79	29	27	70	45	7.5	2.2
Arsenic	47	0	7.0	1060	327	299	917	429	12	94
Cadmium	90	2	0.03	2.8	0.29	0.36	0.60	0.32	1.4	-
Lead	90	0	1.3	158	11	18	26	19	140	20
Manganese	10	0	6.0	31	19	9.0	30	25	-	165
Vanadium	90	1	1.0	105	31	16	49	34	39	68

Note: N – Number of samples; MDL – Method Detection Limit; UCLM – Upper Confidence Limit of Mean; BG – background; '-' – No value available.
[a] Human health component of the Canadian Council of Ministers of the Environment (CCME 2017) agricultural land use guideline supplemented by the Ontario Ministry of the Environment and Climate Change (MOE 2011) soil quality guideline component if CCME value unavailable. The component values for antimony and vanadium are from the MOE (2011); these values are based on an agricultural scenario similar to the CCME and are deemed appropriate for use.
COPC in **bold** are carried forward to a quantitative assessment.

Table F.2 provides the summary statistics for concentrations of the soils in Latham Island. There are very few soil samples collected on Latham Island itself; however, there are many other samples collected for Ndilo, which should have similar concentrations and soil characteristics; therefore, the two data sets were combined. There are 53 samples for arsenic and over 90 samples for cadmium, lead, and vanadium. Only 12 samples are available for antimony and manganese. Similar to Ndilo, only antimony and arsenic have 95% UCLM concentrations that exceed the guidelines and background.

Table F.2 Summary of concentrations of COPC in the soils in Latham Island

COPC	N	N<MDL	Soil Concentration (mg/kg)							
			Min	Max	Average	SD	95th Percentile	95% UCLM	Human Health Component [a]	BG
Antimony	12	0	0.30	79	25	27	67	39	7.5	2.2
Arsenic	53	0	5.9	1060	293	297	906	385	12	94
Cadmium	90	2	0.03	2.8	0.29	0.36	0.59	0.32	1.4	-
Lead	90	0	1.3	158	11	18	26	19	140	20
Manganese	12	0	6.1	49	21	13	39	27	-	165
Vanadium	90	1	1.0	105	31	16	49	34	39	68

Note: N – Number of samples; MDL – Method Detection Limit; UCLM – Upper Confidence Limit of Mean; BG – background; '-' – No value available. COPC in **bold** are carried forward to a quantitative assessment.
[a] Human health component of the Canadian Council of Ministers of the Environment (CCME 2017) agricultural land use guideline supplemented by the Ontario Ministry of the Environment and Climate Change (MOE 2011) soil quality guideline component if CCME value unavailable. The component values for antimony and vanadium are from the MOE (2011); these values are based on an agricultural scenario similar to the CCME and are deemed appropriate for use.

Table F.3 provides the summary statistics for concentrations of the soils in the City of Yellowknife. There are 260 samples for arsenic and 34 samples for each of antimony and manganese. Only nine samples are available for cadmium, lead, and vanadium, which were obtained from a mushroom sampling program by Obst (2014). The table shows that, in the City of Yellowknife the 95% UCLM concentration of arsenic exceeds the guideline and background. The 95% UCLM for manganese exceeds the background concentration as well. For lead and vanadium, there are only 9 samples and the maximum concentrations are below guidelines or background. The maximum concentration of cadmium at 2 mg/kg is just above the guideline of 1.4 mg/kg; however, all other concentrations are measured at 0.1 or 0.2 mg/kg, thus, cadmium is not considered further.

Table F.3 Summary of concentrations of COPC in the soils in City of Yellowknife

COPC	N	N<MDL	Soil Concentration (mg/kg)							
			Min	Max	Average	SD	95th Percentile	95% UCLM	Human Health Component [a]	BG
Antimony	34	2	0.1	17	2.1	3.3	7.3	3.7	7.5	2.2
Arsenic	260	0	3.6	1190	90	135	301	110	12	94
Cadmium	9	1	0.05	2	0.5	0.6	1.4	NA	1.4	-
Lead	9	0	4	126	39	41	112	NA	140	20
Manganese	34	0	1.6	1890	236	425	1026	364	-	165
Vanadium	9	0	10	60	25	14	47	NA	39	68

Note: N – Number of samples; MDL – Method Detection Limit; UCLM – Upper Confidence Limit of Mean; BG – background; '-' – No value available. COPC in **bold** are carried forward to a quantitative assessment.
[a] Human health component of the Canadian Council of Ministers of the Environment (CCME 2017) agricultural land use guideline supplemented by the Ontario Ministry of the Environment and Climate Change (MOE 2011) soil quality guideline component if CCME value unavailable. The component values for antimony and vanadium are from the MOE (2011); these values are based on an agricultural scenario similar to the CCME and are deemed appropriate for use.

Table F.4 provides the summary statistics for concentrations of the soils along the Ingraham Trail. There are very few samples available. Based on this small dataset, the 95% UCLM concentration of antimony exceeds the guideline. The dataset for manganese was skewed, and, thus, the 95th percentile was used for comparison. The 95th percentile manganese concentration is above background. For arsenic, the 95% UCLM concentration is below background and for all other COPC, the maximum concentrations are below guidelines or background. Additional samples of soils along the Ingraham Trail were collected by students from Queen's University in 2017 and provided in a report from the Northwest Territories Geological Survey (Jamieson et al. 2017). Appendix P provides the information. The consideration of the 16 additional samples along the Ingraham Trail results in lower concentrations and thus the qualitative assessment provided here is unchanged.

Table F.4 Summary of concentrations of COPC in the soils in Ingraham Trail

COPC	N	N<MDL	Soil Concentration (mg/kg)							
			Min	Max	Average	SD	95th Percentile	95% UCLM	Human Health Component [a]	BG
Antimony	12	0	0.4	69	8.6	20	38	65	7.5	2.2
Arsenic	12	0	7.1	127	32	34	96	57	12	94
Cadmium	2	0	0.2	0.5	0.35	0.21	0.49	NA	1.4	-
Lead	2	0	22	122	72	71	117	NA	140	20
Manganese	12	0	15	500	79	135	285	NA	-	165
Vanadium	2	0	10	20	15	7	20	NA	39	68

Note: N – Number of samples; MDL – Method Detection Limit; UCLM – Upper Confidence Limit of Mean; BG – background; '-' – No value available.
[a] Human health component of the Canadian Council of Ministers of the Environment (CCME 2017) agricultural land use guideline supplemented by the Ontario Ministry of the Environment and Climate Change (MOE 2011) soil quality guideline component if CCME value unavailable. The component values for antimony and vanadium are from the MOE (2011) - these values are based on an agricultural scenario similar to the CCME and are deemed appropriate for use.
COPC in **bold** are carried forward to a quantitative assessment.

Table F.5 provides the summary statistics for concentrations of the soils in Dettah. Chemistry data are only available for arsenic, antimony, and manganese and again there is only a small dataset. The maximum concentration of arsenic is above guidelines and background. The maximum concentrations of antimony and manganese are below guidelines or background. Additional samples of soils in Dettah were collected by students from Queen's University in 2017 (Jamieson et al. 2017). Appendix P provides the information. The consideration of the two additional samples in Dettah results in lower concentrations and thus the qualitative assessment provided here is unchanged.

Table F.5 Summary of concentrations of COPC in the soils in Dettah

COPC	N	N<MDL	Soil Concentration (mg/kg)						
			Min	Max	Average	SD	95th Percentile	Human Health Component [a]	BG
Antimony	8	0	0.17	6.2	2.4	2.4	6.0	7.5	2.2
Arsenic	9	0	7.2	144	44	50	133	12	94
Manganese	8	0	5.8	59	28	17	53	-	165

Note: N – Number of samples; MDL – Method Detection Limit; UCLM – Upper Confidence Limit of Mean; BG – background; '-' – No value available.
[a] Human health component of the Canadian Council of Ministers of the Environment (CCME 2017) agricultural land use guideline supplemented by the Ontario Ministry of the Environment and Climate Change (MOE 2011) soil quality guideline component if CCME value unavailable. The component values for antimony and vanadium are from the MOE (2011) - these values are based on an agricultural scenario similar to the CCME and are deemed appropriate for use.
COPC in **bold** are carried forward to a quantitative assessment.

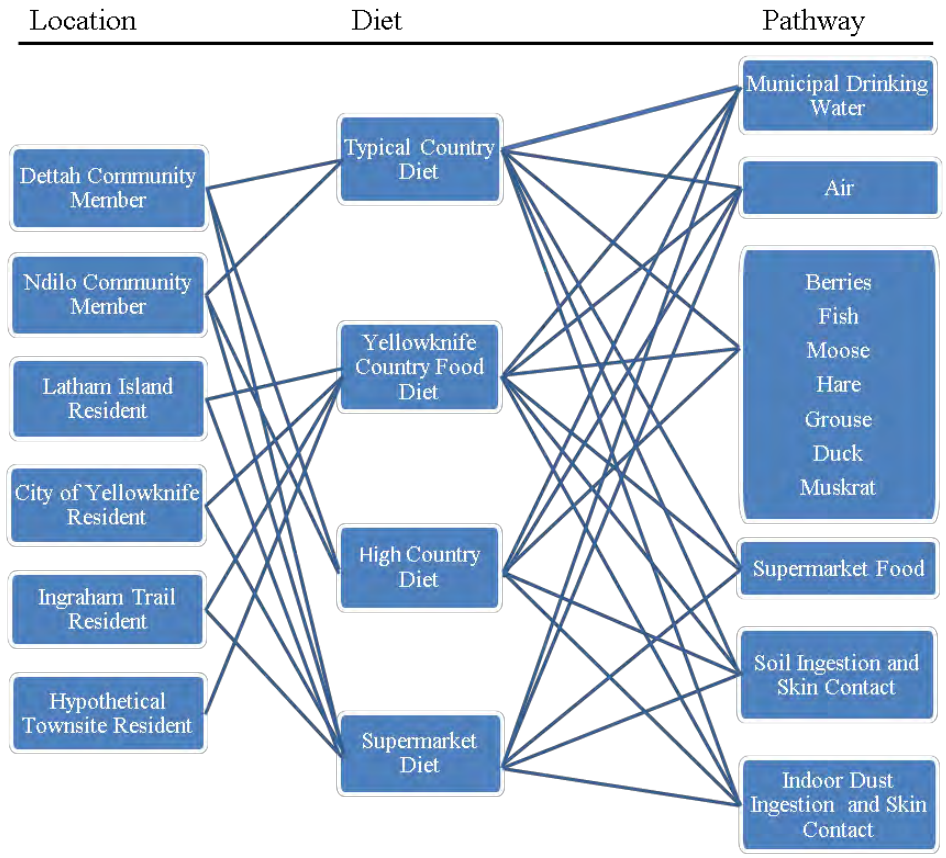
Based on the qualitative analysis on the soils, concentrations of cadmium, lead, and vanadium are below guidelines and/or background and, thus, do not represent a risk from an HHRA perspective. Arsenic, antimony, and manganese are the only COPC carried forward for a quantitative analysis.

F.2 Exposure Scenarios

F.2.1 Current

The exposure assessment estimated exposures to people living in the vicinity of the Giant Mine with diets characterized in Appendix E at specific locations of interest. The exposure scenario that is considered to represent exposures at every location (i.e., base case) is provided in Figure F.1. It was assumed in this scenario that the source of drinking water for all residents was the municipal source and that all people would be exposed to concentrations in the air, soil, and indoor dust where they live. Thus, this scenario captures the unique exposure in their areas. Members of the Yellowknives Dene First Nation (YKDFN) community (Ndilo and Dettah) were assumed to have either a purely supermarket food diet, a typical country food diet that is also supplemented with supermarket food, or a high country food diet. People in the City of Yellowknife were assumed to have a purely supermarket food diet. In addition, because the Metis community also lives there and has some avid hunters and fishers, it was assumed that these people would eat some country food as well as supermarket food. It was assumed that the Ingraham Trail resident would also have a similar country food diet as the City of Yellowknife country food eaters. An unrealistic scenario was also evaluated where it was assumed that someone with a typical country food diet was living at the former Townsite. This scenario is used to demonstrate the impact of the remedial actions on the former Townsite location.

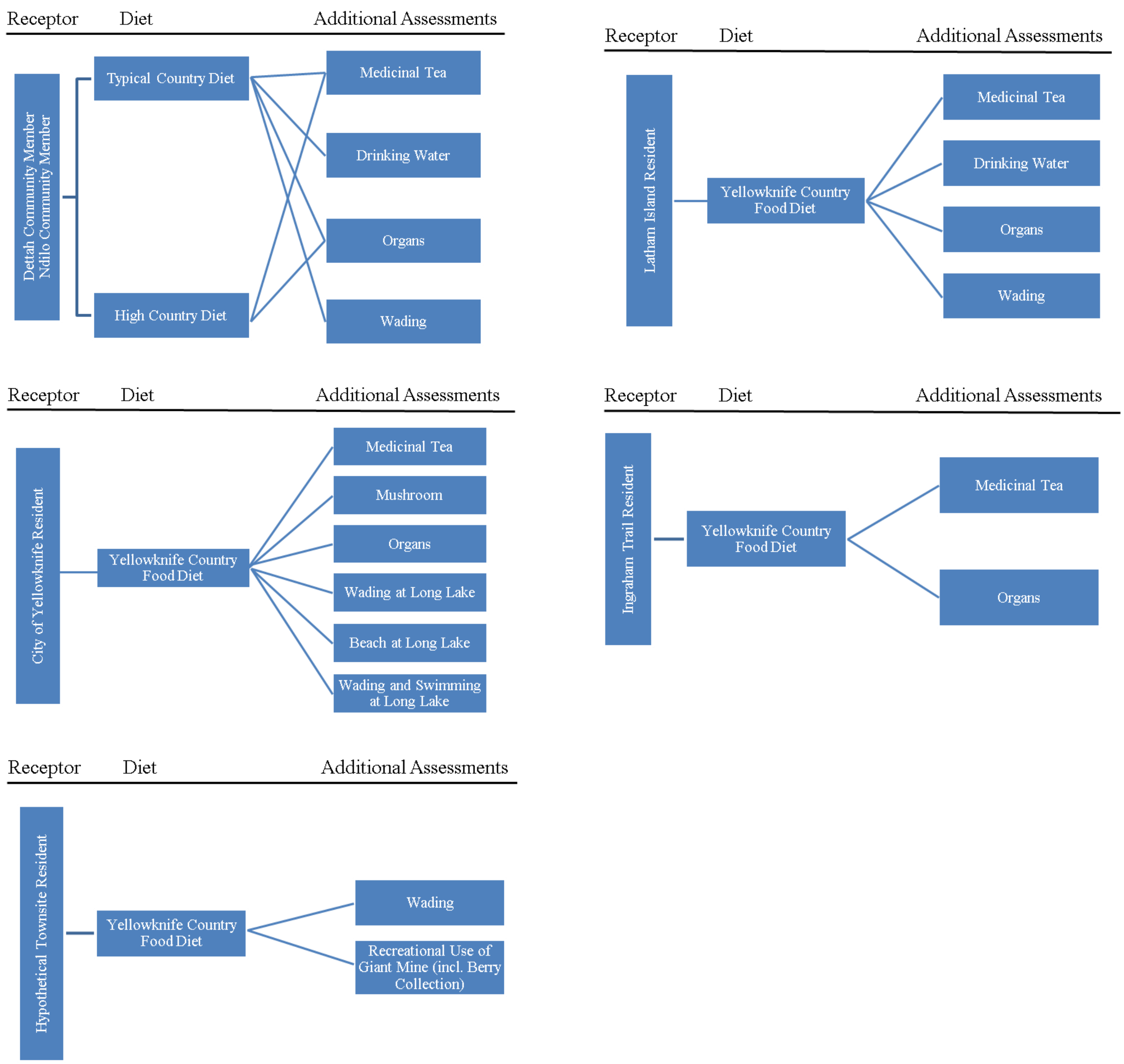
Figure F.1 Base case exposure scenario



Other scenarios were also considered that were added to the base case. These scenarios are summarized in Figure F.2. The scenarios for Ndilo and Dettah involve the assumption that people in these two communities would drink water from Yellowknife Bay instead of from the municipal source and that they would also wade in the shallow shoreline sediments. In addition, it was assumed that organs from moose, fish, and birds would be eaten and that they would drink medicinal tea. The exposures for the different scenarios were added to the base case scenario. These same scenarios were considered for the Latham Island resident.

The Metis indicated in the dietary survey that they consumed mushrooms and, therefore, this scenario was considered for the City of Yellowknife resident that has a country food diet. In addition, the Fred Henne Campground and Long Lake were identified as areas where residents like to go and camp and swim/wade; thus, this scenario was considered. Eating organ meat and drinking medicinal tea was also evaluated for the City of Yellowknife resident, as well as the Ingraham Trail resident. For the unrealistic scenario at the former Townsite, it was assumed that people would wade in the shallow sediments. This wading scenario is also used to evaluate exposures at the boat launch and marina areas as the sediment concentrations are similar. An unrealistic scenario where people could access the Giant Mine under current conditions was also used to help frame the impact of the remedial activities.

Figure F.2 Additional exposure scenarios considered



F.2.2 Future

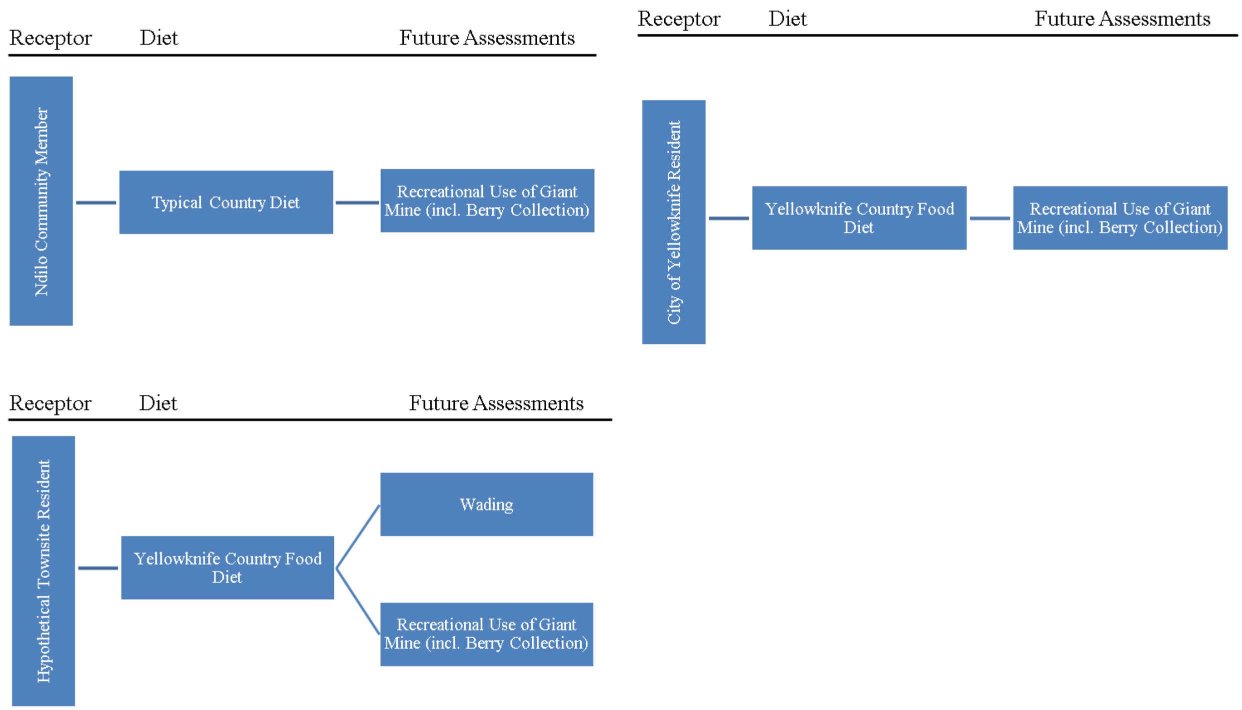
The objective of the HHRA is to determine the effects of the remedial activities at the Giant Mine on the residents in the vicinity of the site. The remedial actions at the site involve the capping of the tailings, the remediation of arsenic concentrations in the disturbed areas of the site to the GNWT industrial criterion, active management in the form of excavation and/or fencing of areas with arsenic concentrations above

3000 mg/kg, and moving the water treatment discharge pipe to near the mouth of Baker Creek. These remedial activities will not have any effect on the unique location exposures that were evaluated in the base case. In addition, remedial activities will not impact on the concentrations in the country foods, as none of the samples were obtained from the Giant Mine. The remedial activities will allow access to the Giant Mine for recreational activities such as walking, running, cycling etc., and this exposure was evaluated in the future scenario. The effect of relocating the treated water discharge to near the mouth of Baker Creek was evaluated using modelling (see Appendix K) to determine the future water and sediment concentrations in Back Bay and North Yellowknife Bay. The modelling determined that the concentrations in the future are expected to be no different than the current measured concentrations.

Figure F.3 provides a summary of the exposure scenarios considered for future conditions. As seen in the future scenario, it was assumed that people in Ndilo would spend some time at the Giant Mine doing recreational activities. It was also assumed that, while they were on the site, they may pick some berries if they were in season (assumed to be 5% of total berry consumption). An evaluation of a City of Yellowknife resident spending time at the Giant Mine for recreational activities was also evaluated, including 5% of berry consumption from the site.

At the former Townsite, the remedial actions involve clean-up of the soils to the arsenic GNWT residential criterion. No plans have been made for the final land use in this area; however, the risk assessment has evaluated the strictest land use where someone would live in this area. Additional details on exposure assumptions and scenario selection are provided in Appendix E.

Figure F.3 Exposure scenarios for future conditions



F.3 Bioavailability/Bioaccessibility

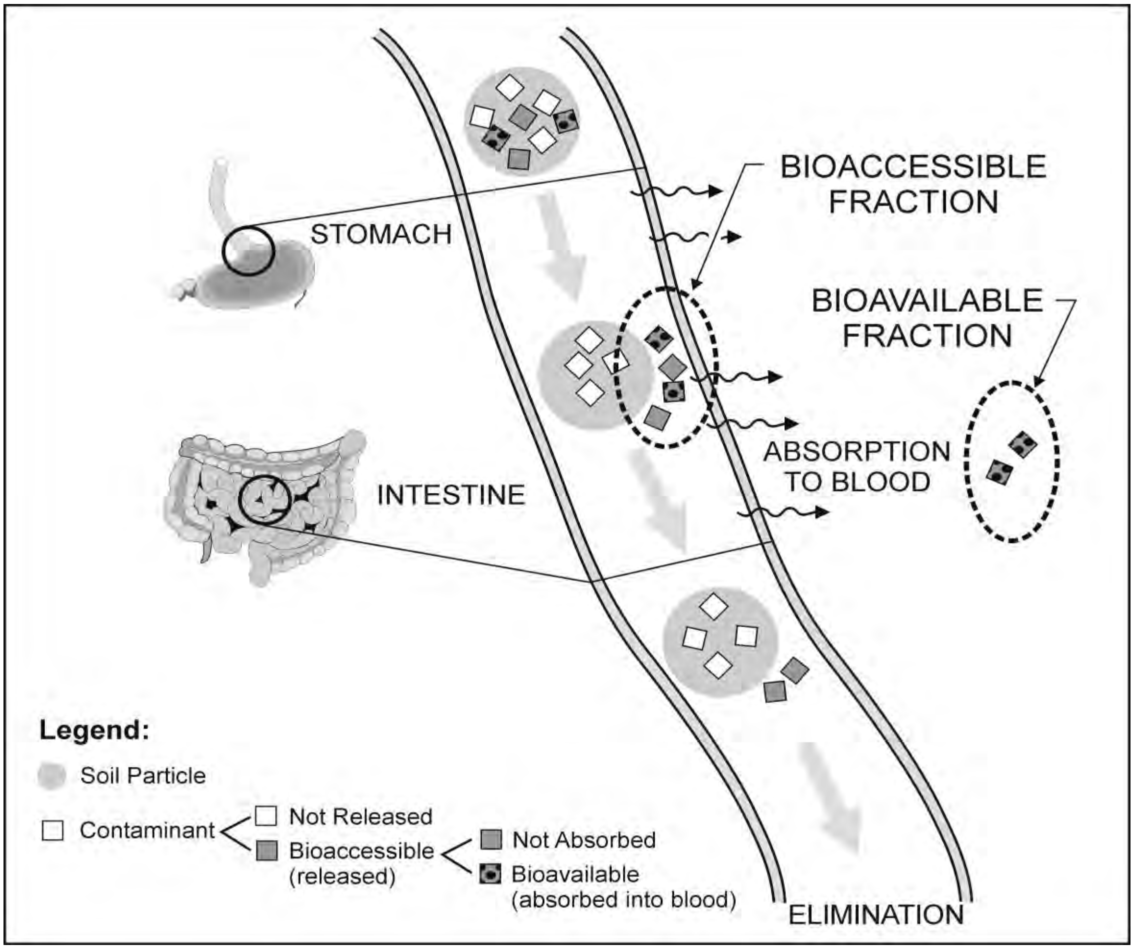
Oral bioavailability is defined as the fraction of an administered dose that reaches the central blood compartment from the gastrointestinal tract. Bioavailability defined in this manner is commonly referred to as "absolute bioavailability".

Relative bioavailability refers to comparative bioavailabilities of different forms of a substance or for different exposure media containing the substance (i.e., bioavailability of a metal from soil relative to its bioavailability from water). This is generally referred to as a Relative Absorption Factor (RAF). This is discussed in Section F.6 for dermal absorption.

The oral bioaccessibility of a substance is the fraction of the administered dose that is soluble in a gastrointestinal environment and is available for absorption (into the central blood compartment). The bioaccessible fraction is not necessarily equal to the RAF but depends on the relation between results from a particular *in vitro* test system and an appropriate *in vivo* model. Oral bioaccessibility is the measure of arsenic availability that is considered for the risk assessment.

Figure F.4 provides a schematic representation of the difference between bioaccessibility and bioavailability.

Figure F.4 Schematic representation of bioaccessibility and bioavailability



For the Giant HHRA, it was important to examine the bioaccessibility of arsenic in particular since it was the primary chemical associated with the activities at the Giant Mine and it is present in many different chemical forms (e.g., arsenopyrite, arsenic trioxide, etc.). Some of these forms can be absorbed into the bloodstream while others cannot. In this study, laboratory analyses of soils, sediments, fish tissue, and plants were conducted to determine the levels of arsenic that were available for exposure.

For the purposes of the Giant Mine, data on arsenic bioaccessibility in soils, sediments, and fish were obtained from samples collected in the study area as part of sampling programs for the Giant Mine Remediation Program (GMRP). Bioaccessibility data for arsenic in plants and wildlife were obtained from a publication by Koch et al. (2013)

related to bioaccessibility and speciation of arsenic in country foods from contaminated sites in Canada where Giant Mine was part of the study.

The bioaccessibility of antimony and manganese were assumed to be 100% for this study, as there were no available data. This represents a conservative assumption.

F.3.1 Bioaccessibility in Soils

As part of the GMRP, soil samples were collected across the Giant Mine, and a subset of the samples were sent for analysis of arsenic bioaccessibility at Royal Military College (RMC). Samples were obtained from both disturbed and undisturbed areas at the Giant Mine. These samples were reviewed and considered in determination of the bioaccessibility or arsenic in soils at the Giant Mine.

In addition, soils were collected at the former Giant Mine Townsite area and off site at Long Lake where people camp and a subset of the samples were sent for bioaccessibility analyses.

F.3.1.1 Undisturbed Soils on Giant Mine

The data for bioaccessibility for the undisturbed soils was obtained from a Golder (2016a) report entitled *Arsenic Characterization Undisturbed Areas Giant Mine, Yellowknife NT.* According to this report, 10 shallow soil samples were collected in the undisturbed areas of the Giant Mine, and all were submitted to Dr. Iris Koch at the RMC to conduct arsenic bioaccessibility testing using the Environmental Sciences Group (ESG) glycine method. The glycine method simulates the leaching of material from the soils into the gastrointestinal tract and is considered to measure the fraction of arsenic that is available for absorption. Figure F.5 provides a map of the Giant Mine indicating the locations of the samples that were sent for bioaccessibility testing, and Table F.6 provides a summary of the bioaccessibility results for the undisturbed soils. Undisturbed soils are defined as soils where no mining or milling activities occurred. These areas are characterized by bedrock outcrops, wetlands, and forested areas.

As seen from the table, even though the total arsenic in the undisturbed soils ranged from 135 mg/kg to 3,700 mg/kg, there is no corresponding increase in the % bioaccessibility of arsenic. In fact, the lowest arsenic concentration in soils reports a bioaccessibility over 100%. Golder (2016a) reports that they believed that the total arsenic measured in this sample (IV-F-2) that came from a forested area may have been low due to the heterogeneity and organic content issues associated with the sample and that this sample was not considered to be reliable. For the purposes of the risk assessment, an average concentration was used to apply to the undisturbed soils. Based on nine samples (minus IV-F-2), the average arsenic bioaccessibility was 38% for the undisturbed soils. This value was considered to be a reasonable representation of the bioaccessibility of arsenic in the undisturbed soils at the Giant Mine as seven of the nine samples have bioaccessibility values in the 22% to 43% range (mean 31%).

Figure F.5 Map showing locations of bioaccessibility samples in undisturbed soils

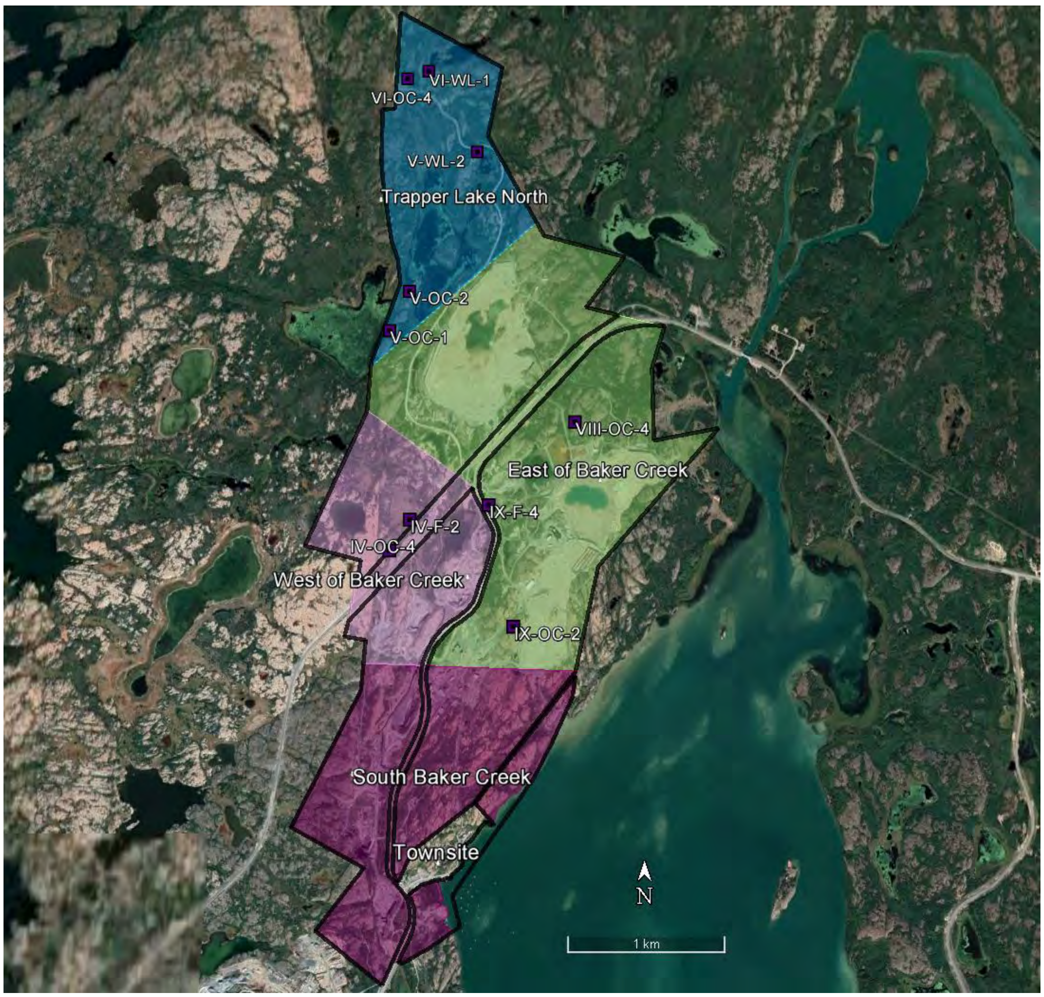


Table F.6 Summary of arsenic bioaccessibility results for undisturbed soils

Sample ID	Medium	Depth (mbgs)	Arsenic (mg/kg)	Bioaccessibility	
				BA As (mg/kg)	Ba As (%)
IV-OC-4	Soil	0-0.1	3700	803	22
IX-OC-2	Soil	0-0.1	660	287	43
VIII-OC-4	Soil	0-0.1	790	223	28
VI-OC-4	Soil	0-0.1	510	123	24
V-OC-1	Soil	0-0.1	960	208	22
V-OC-2	Soil	0-0.1	205	133	65
IV-F-2	Soil	0-0.1	135	229	170
IX-F-4	Soil	0-0.1	200	85	43
V-WL-2	Soil	0-0.1	240	150	63
VI-WL-1	Soil	0-0.1	770	267	35

Note: Sample IV-F-2 is not considered reliable. The average bioaccessibility of the other nine samples is 38%.

F.3.1.2 Disturbed Soils on Giant Mine

The data for bioaccessibility for the disturbed soils was obtained from a Golder (2016a) report entitled *Arsenic Characterization Disturbed Areas Giant Mine, Yellowknife NT*. A total of 82 samples were collected in disturbed areas of the Giant Mine. These were tailings areas and the Mill area. A subset of these samples (38 samples were sent for bioaccessibility analysis at RMC). Figure F.6 provides a map of the Giant Mine indicating the locations of the samples of disturbed soils that were sent for bioaccessibility testing, and Table F.7 provides a summary of the bioaccessibility results for the disturbed soils. Concentrations of arsenic in the tailings areas ranged from 665 mg/kg to 2,848 mg/kg and the % bioaccessibility ranged from 21% to 90%. Average bioaccessibilities in the tailings basins were as follows:

- south tailings basin – 50%;
- central tailings basin – 43%;
- north tailings basin – 36%; and
- northwest tailings basin – 48%.

The average overall bioaccessibility in the four tailings basins was 44%. For the Mill Area, arsenic concentrations ranged from 590 mg/kg to 5300 mg/kg, with an average bioaccessibility of 16%. The average arsenic bioaccessibility of the disturbed soils is 36% and was used to represent future conditions on the Giant Mine. The ERA considered the bioaccessibility for the different areas.

Figure F.6 Map showing locations of bioaccessibility samples in disturbed soils

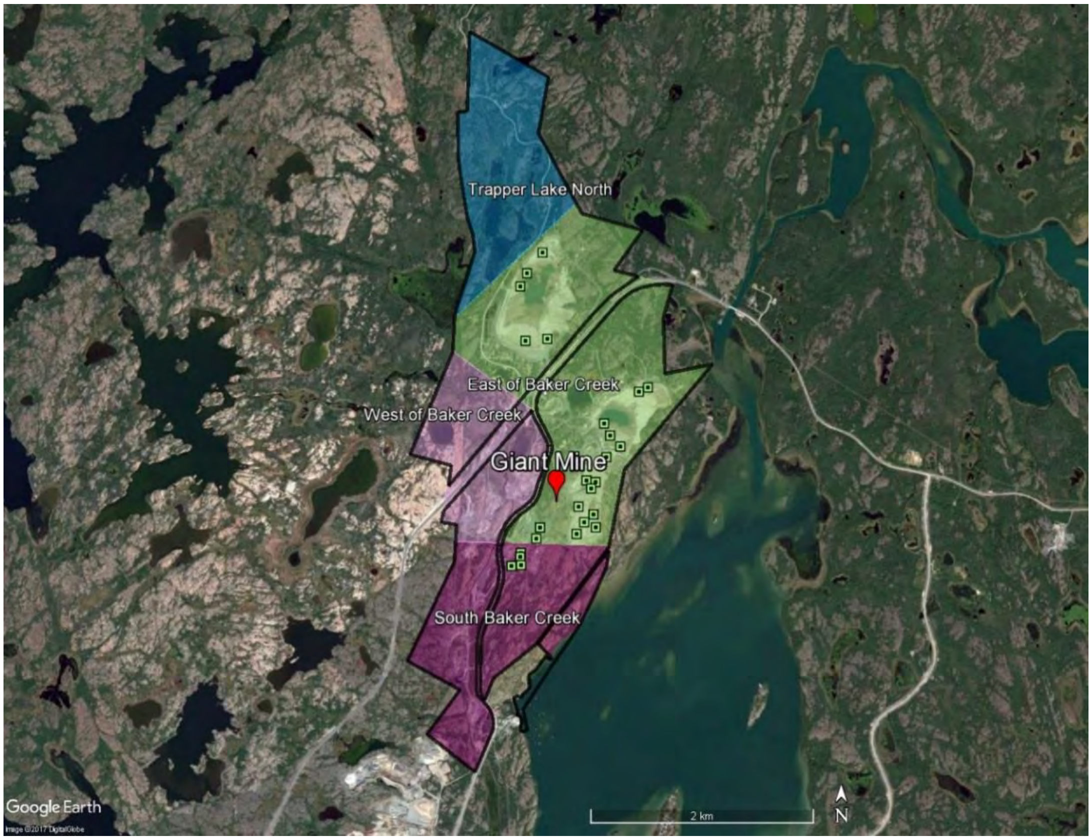


Table F.7 Summary of arsenic bioaccessibility results for disturbed soils

Sample Location	Sample ID	Depth (m bgs)	Total Arsenic (mg/kg)	Bioaccessibility	
				BA As (mg/kg)	BA As (%)
South Tailings Basin	ST-SS-01-1	0.0 - 0.10	3,150	1,207	38
	ST-SS-02-1	0.0 - 0.10	2,800	1,612	58
	ST-SS-03-1	0.0 - 0.10	2,800	1,064	38
	ST-SS-03-3	0.20 - 0.30	3,000	2,302	77
	ST-SS-04-1	0.0 - 0.10	2,850	1,171	41
	ST-SS-04-2	0.10 - 0.20	3,400	1,074	32
	ST-SS-05-1	0.0 - 0.10	2,400	1,657	69
Central Tailings Basin	CT-SS-01-1	0.0 - 0.10	2,800	1,135	41
	CT-SS-02-1	0.0 - 0.10	2,400	1,095	46
	CT-SS-03-1	0.0 - 0.10	2,667	835	31
	CT-SS-04-1	0.0 - 0.10	1,800	720	40
	CT-SS-04-3	0.20 - 0.30	2,800	1,478	53
	CT-SS-05-1	0.0 - 0.10	2,600	1,146	44
North Tailings Basin	NT-SS-01-1	0.0 - 0.10	3,000	997	33
	NT-SS-01-2	0.10 - 0.20	3,100	665	21
	NT-SS-02-1	0.0 - 0.10	3,100	733	24
	NT-SS-03-1	0.0 - 0.10	3,100	1,381	45
	NT-SS-03-3	0.20 - 0.30	3,200	1,250	39
	NT-SS-04-1	0.0 - 0.10	2,700	687	25
	NT-SS-05-1	0.0 - 0.10	2,667	1,756	66
Northwest Tailings Basin	NWT-SS-01-1	0.0 - 0.10	3,150	2,848	90
	NWT-SS-01-2	0.10 - 0.20	3,700	1,838	50
	NWT-SS-02-1	0.0 - 0.10	4,800	1,292	27
	NWT-SS-03-1	0.0 - 0.10	2,900	1,354	47
	NWT-SS-03-3	0.20 - 0.30	3,200	887	28
	NWT-SS-04-1	0.0 - 0.10	3,950	2,497	63
	NWT-SS-05-1	0.0 - 0.10	3,300	989	30
Mill Area	TP15-01-1	0.0 - 0.10	5,300	391	7.4
	TP15-01-2	0.10 - 0.50	3,600	131	3.6
	TP15-02-1	0.0 - 0.10	2,000	269	13
	TP15-02-4	1.0 - 1.5	1,400	314	22
	TP15-03-1	0.0 - 0.10	4,400	374	8.5
	TP15-03-3	0.50 - 1.0	840	87	10
	TP15-04-1	0.0 - 0.10	2,300	265	12
	TP15-05-1	0.0 - 0.10	2,950	336	11
	TP15-05-3	0.5 - 1.1	2,300	2	0.10
	TP15-06-1	0.0 - 0.10	2,167	378	17
	TP15-06-3	0.50 - 1.0	590	341	58

Note: The average bioaccessibility of the undisturbed soils is 36%.

F.3.1.3 Former Townsite

As part of the data gaps analysis for the risk assessment, it was determined that additional soil data as well as bioaccessibility information was needed for soils in the former Townsite area. Golder collected this additional information in the summer of 2016 and provided the results in a technical memo entitled *Giant Mine Data Report- Human Health and Ecological Risk Assessment Data Gaps* (Golder 2016b). Ten soil samples were collected and eight samples were sent to RMC for bioaccessibility analysis. Figure F.7 provides a map of the former Townsite indicating the locations of the samples that were sent for bioaccessibility testing, and Table F.8 provides a summary of the bioaccessibility results for the former Townsite soils. As seen from the table, the arsenic concentrations in the soil ranged from 280 mg/kg to 4,300 mg/kg and the bioaccessibility ranged from 7% to 54%. The average bioaccessibility of the 8 samples is 30%. This is similar to the bioaccessibility for the disturbed soils on the Giant Mine.

Figure F.7 Map showing locations of bioaccessibility samples for former Townsite soils

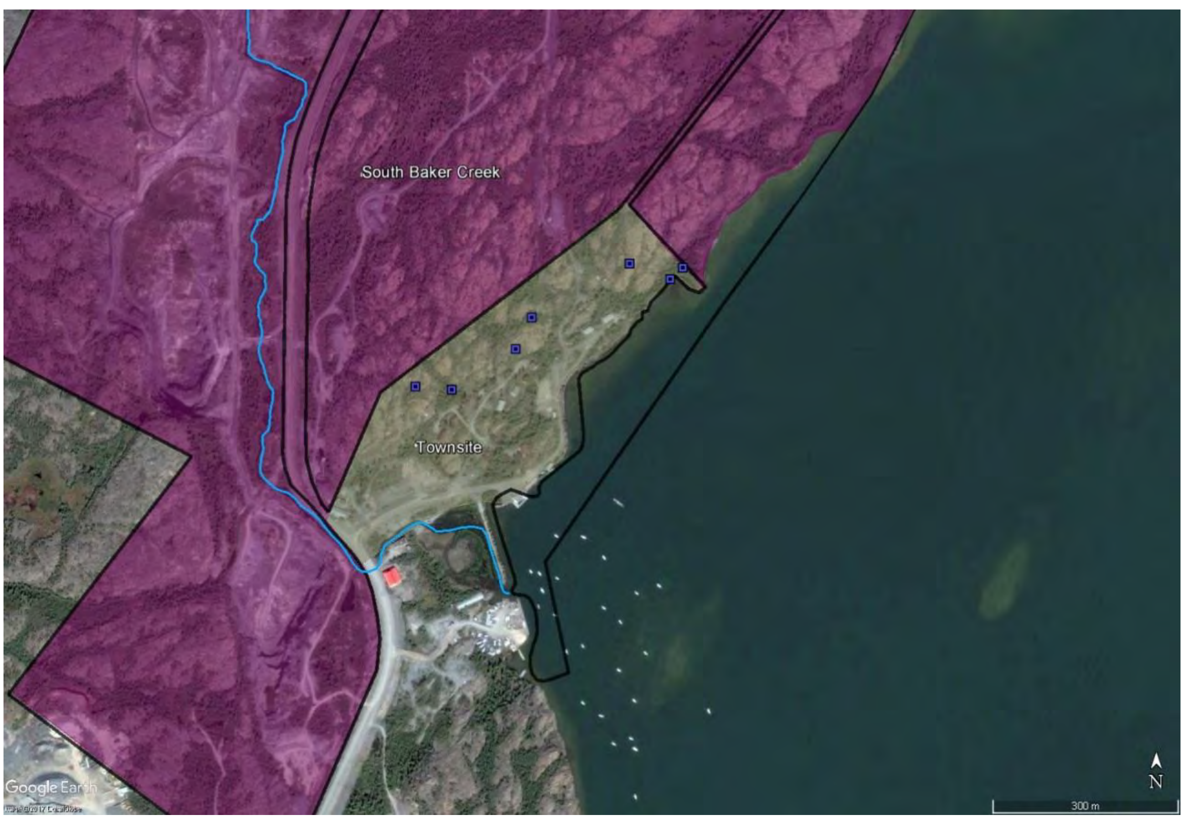


Table F.8 Summary of arsenic bioaccessibility results for former Townsite soils

Sample ID	BA Conc. (mg/kg dw)	Soil Conc. (mg/kg dw)	% As BA
SL-F-01-1 B2	100	1400	7.1
TS-F-02-1 B2	156	290	54
SL-F-03-1	63	280	22
SL-F-08-1	124	300	41
TS-OC-02-1 B2	310	1100	28
TS-OC-01-1 B2	561	2000	28
TS-OC-04-1 B2	274	1800	15
SL-OC-04-1	1803	4300	42

Note: The average bioaccessibility of the former Townsite soils is 30%.

F.3.1.4 Fred Henne Campground

As part of the data gaps analysis for the risk assessment, it was determined that additional soil data as well as bioaccessibility information was needed for soils at the Fred Henne Campground on Long Lake. This area is near the airport and is used by people in the Yellowknife area. Golder collected this additional information in the summer of 2016 and provided the results in a technical memo entitled *Giant Mine Data Report – Human Health and Ecological Risk Assessment Data Gaps* (Golder 2016b). Ten soil samples were collected at ten campsites focussing on areas where people would set up tents. Five samples were sent to RMC for bioaccessibility analysis.

Figure F.8 provides a map of indicating the locations of the soil samples in the Fred Henne Campground that were sent for bioaccessibility testing and Table F.9 provides a summary of the bioaccessibility results for the soils at the Fred Henne Campground. As seen from the table, the arsenic concentrations in the soil ranged from 50 mg/kg to 210 mg/kg, and the bioaccessibility was fairly consistent and ranged from 30% to 42%. The average bioaccessibility of the five samples is 36%. This is similar to the bioaccessibility for the undisturbed soils on the Giant Mine.

Figure F.8 Map showing locations of bioaccessibility samples for Fred Henne Campground soils

Table F.9 Summary of arsenic bioaccessibility results for Fred Henne Campground soils

Sample ID	BA Conc. (mg/kg dw)	Soil Conc. (mg/kg dw)	% As BA
16-Long Lake S-2	50	160	31
16-Long Lake S-3	49	160	30
16-Long Lake S-7	29	73	39
16-Long Lake S-8	89	210	42
16-Long Lake S-10	19	50	38

Note: The average bioaccessibility of the soils at the Fred Henne Campground is 36%.

F.3.2 Bioaccessibility in Sediments

F.3.2.1 Baker Creek

The Golder (2015) report entitled *Assessment of Arsenic in Sediment/Surface Water in Upper Baker Creek - Giant Mine Lease and Adjacent Lands* provides information on sediment samples collected in the upper reaches of Baker Creek. Ten sediment samples from Reaches 6 and 7 to 11 in Baker Creek were sent to RMC for bioaccessibility analysis.

Figure F.9 provides a map of Baker Creek indicating the locations of the samples that were sent for bioaccessibility testing, and Table F.10 provides a summary of the bioaccessibility results for the sediments in the upper reaches of Baker Creek. As seen from the table, the arsenic concentrations in the sediments ranged from 140 mg/kg to 1,500 mg/kg, and the bioaccessibility ranged from 9% to 44%. The average bioaccessibility in Reach 7 to 11 (all samples with the exception of BC-R6-001 [in Reach 6]) is 17%. For Reach 6, the single bioaccessibility in the sample of 44% was used in the risk assessment. This is the highest recorded bioaccessibility value in Baker Creek, therefore it may represent a conservative value for Reach 6.

Figure F.9 Map showing locations of bioaccessibility samples for sediments in Baker Creek

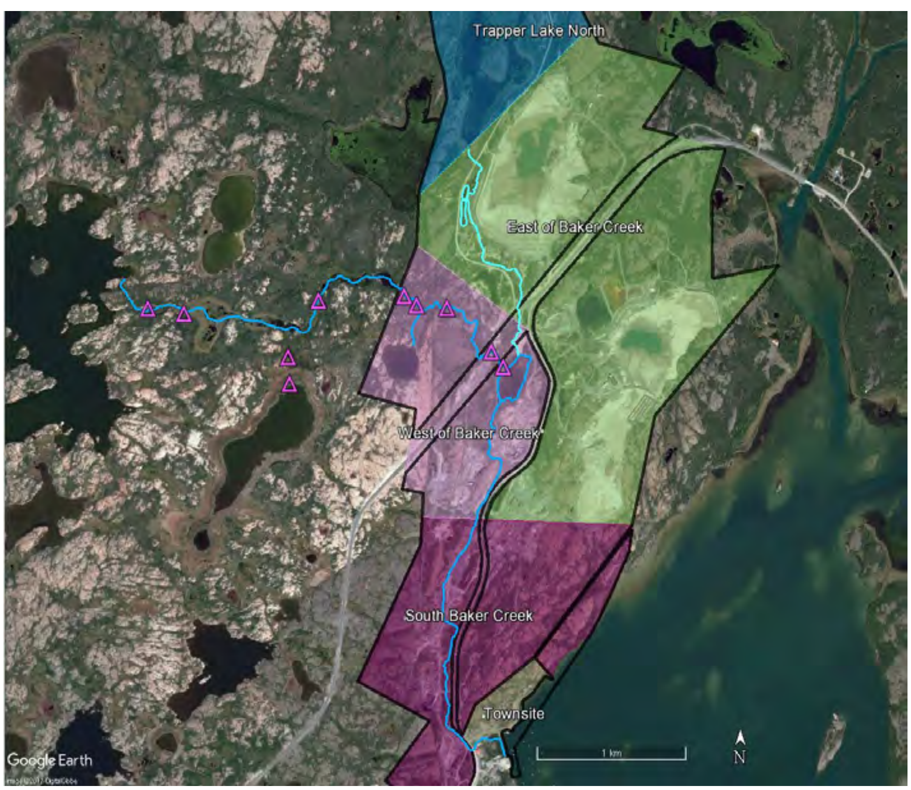


Table F.10 Summary of arsenic bioaccessibility results for sediments in Baker Creek

Sample ID	Arsenic Concentration (mg/kg dw)			% Arsenic Bioaccessibility
	Original Sediment	Dewatered Sediment	Bioaccessible (dewatered)	
BC-R6-001	340	380	166	44
BC-R07-002	180	180	58	32
BC-R09-015	320	310	37	12
BC-R09-018	220	250	30	12
BC-R09-020	140	140	21	15
BC-R10-028	550	560	81	14
BC-R10-039	350	410	53	13
BC-R11-029	220	260	47	18
UL1-042	460	510	113	22
UL1-043	1500	1400	123	9

Note: The average bioaccessibility of the sediments in Reaches 7 to 11 in Baker Creek is 17%.

F.3.2.2 Former Townsite

As part of the data gaps analysis for the risk assessment, it was determined that additional sediment data as well as bioaccessibility information was needed for sediments along the shoreline in the former Townsite area. This information is important to evaluate the potential for people wading in the shallow water in that area currently and in the future. Golder collected this additional information in the summer of 2016 and provided the results in a technical memo entitled *Giant Mine Data Report - Human Health and Ecological Risk Assessment Data Gaps* (Golder 2016b). Ten sediment samples were collected along the shoreline, and ten samples were sent to RMC for bioaccessibility analysis. Figure F.10 provides a map of the shoreline along the former Townsite indicating the locations of the samples that were sent for bioaccessibility testing, and Table F.11 provides a summary of the bioaccessibility results for the former sediments along the shoreline of the former Townsite. As seen from the table, the arsenic concentrations in the sediments ranged from 64 mg/kg to 1400 mg/kg and the bioaccessibility ranged from 16% to 35%. The average bioaccessibility of the 10 sediment samples is 26%. This is similar (slightly lower) to the bioaccessibility for the soils in this area, which is around 30%.

Figure F.10 Map showing locations of bioaccessibility samples for sediments along the shoreline of the former Townsite

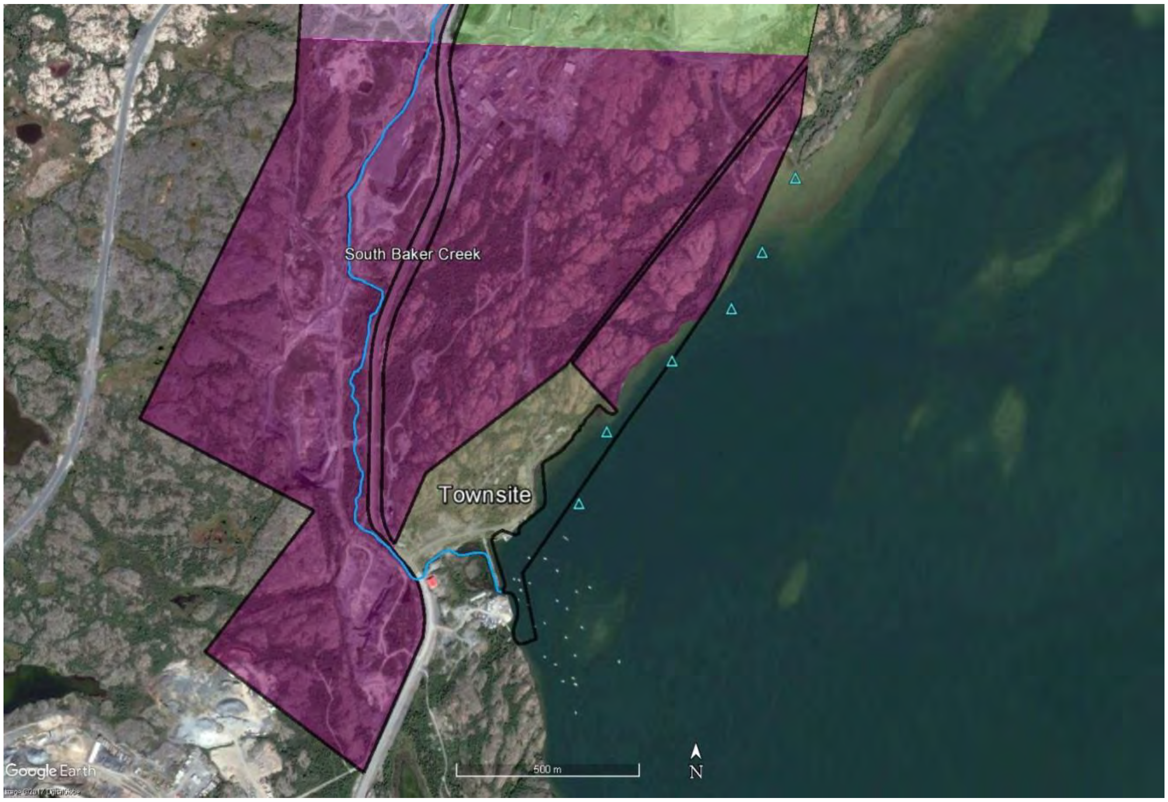


Table F.11 Summary of arsenic bioaccessibility results for sediments along the shoreline of the former Townsite

Sample ID	Depth (cm)	BA Conc. (mg/kg dw)	Sediment Conc. (mg/kg dw)	% As BA
2016 SQ-A-1	0 - 5	150	825	18
2016 SQ-A-2	5-10	130	840	16
2016 SQ-B-1	0 - 5	130	370	35
2016 SQ-B-2	5-10	157	670	23
2016 SQ-C-1	0 - 5	17	62	28
2016 SQ-O-50-1	5-10	269	1200	22
2016 SQ-O-50-3	0 - 5	337	1400	24
2016 SQ-1S-100-1	0-10	108	350	31
2016 SQ-2S-100-1	0 - 5	214	630	34
2016 SQ-2S-100-3	>10	88	320	28

Note: The average bioaccessibility of the sediments along the shoreline at the former Townsite is 26%.

F.3.2.3 Long Lake

As part of the data gaps analysis for the risk assessment, it was determined that additional sediment data as well as bioaccessibility information was needed for shallow sediments along the shoreline of Long Lake. This information is very helpful, as people swim and use the beach area at Long Lake. Golder collected this additional information in the summer of 2016 and provided the results in a technical memo entitled *Giant Mine Data Report - Human Health and Ecological Risk Assessment Data Gaps* (Golder 2016b). Ten sediment samples were collected along the public beach, day use, and boat launch areas. Five samples were sent to RMC for bioaccessibility analysis. Figure F.11 provides a map indicating the locations of the sediment samples in Long Lake that were sent for bioaccessibility testing, and Table F.12 provides a summary of the bioaccessibility results for the sediments in Long Lake. As seen from the table, the arsenic concentrations in the sediments ranged from 9 mg/kg to 100 mg/kg and the bioaccessibility ranged from 30% to 55%. The average bioaccessibility of the 5 samples is 45%.

Figure F.11 Map showing locations of bioaccessibility samples for shallow sediments in Long Lake

Table F.12 Summary of arsenic bioaccessibility results for shallow sediments in Long Lake

Sample ID	BA Conc. (mg/kg dw)	Sediment Conc. (mg/kg dw)	% As BA
16-Long Lake S-2	3.4	9	38
16-Long Lake S-3	6	20	30
16-Long Lake S-7	49	100	49
16-Long Lake S-8	23	42	55
16-Long Lake S-10	9.4	18	52

Note: The average bioaccessibility of the shallow sediments in Long Lake is 45%.

F.3.3 Bioaccessibility in Fish

Stantec (2014), in a report entitled *Analysis of Contaminants in Tissues of Fish Captured in the Yellowknife Bay Area, NT*, provides bioaccessibility data on large-bodied fish such as northern pike, lake whitefish, and inconnu caught at the mouth of Baker Creek and various areas in Yellowknife Bay, including a background area (Horseshoe Island for lake whitefish and northern pike, and Mackenzie Island for inconnu). Fish samples were sent to RMC for bioaccessibility testing. The results of the bioaccessibility testing for lake whitefish, northern pike, and inconnu are provided in Table F.13, Table F.14, and Table F.15, respectively. The arsenic concentrations are provided on a dry weight (dw) basis.

From Table F.13, it can be seen that for many of the locations, composite samples for lake whitefish were submitted for the bioaccessibility testing. In Baker Creek, the arsenic concentrations ranged from 0.43 mg/kg to around 1 mg/kg, and the bioaccessibility ranged from 42% to 137%. There were 2 samples with arsenic bioaccessibility values that were reported as 120 % and 137%, and these samples were not considered in the evaluation. The average bioaccessibility of the remaining fish samples in Baker Creek was 78%. In Back Bay, the arsenic concentrations ranged from 0.45 mg/kg to 1.6 mg/kg, and the bioaccessibility ranged from 54% to 127%. The one sample with a bioaccessibility of 127% was not considered. The average bioaccessibility for lake whitefish in Back Bay was 71%. In Mosher Island (South Yellowknife Bay), the arsenic concentrations ranged from 0.47 mg/kg to 1.5 mg/kg and the bioaccessibility ranged from 25% to 102%. The average bioaccessibility for lake whitefish in South Yellowknife Bay was 70%, which is the same as in Back Bay. At the background location (Horseshoe Island), the arsenic concentrations ranged from 0.3 mg/kg to 0.76 mg/kg, and the bioaccessibility ranged from 46% to 119%. The average bioaccessibility for lake whitefish in background was 72%, which is the same as in Back Bay.

Table F.13 Summary of arsenic bioaccessibility results for lake whitefish

	Fish ID							
Baker Creek	**Comp. of BCWF01 BCWF05**	**Comp. of BCWF03 BCWF18**	**Comp. of BCWF04 BCWF08**	**Comp. of BCWF06 BCWF12 BCWF16**	**Comp. of BCWF09 BCWF20 BCWF24**	**Comp. of BCWF13 BCWF23 BCWF21**	**Comp. of BCWF14 BCWF07**	**Comp. of BCWF17 BCWF19**
Fish Conc. mg/kg dw	1.02	0.43	0.47	0.69	0.83	0.83	0.66	0.81
BA Conc. mg/kg dw	0.76	0.59	0.47	0.29	0.79	1	0.33	0.82
%BA	75	137	102	42	94	120	50	102
Back Bay	**BBWF-501**	**BBWF-502**	**BBWF-503**	**BBWF-504**	**BBWF-505**	**BBWF-506**	**Comp. of BBWF04 BBWF13**	**Comp. of BBWF07 BBWF14**
Fish Conc. mg/kg dw	0.51	0.97	0.5	0.68	0.45	0.74	1.61	0.78
BA Conc. mg/kg dw	0.32	0.73	0.27	0.5	0.27	0.63	1.4	0.82
%BA	62	75	54	74	59	85	86	127
Mosher Island (South YK Bay)	**Comp. of MIWF01 MIWF22 MIWF03 MIWF23**	**Comp. of MIWF02 MIWF18**	**Comp. of MIWF06 MIWF21**	**Comp. of MIWF07 MIWF19**	**Comp. of MIWF09 MIWF15**	**Comp. of MIWF10, MIWF11**	**Comp. of MIWF12 MIWF13 MIWF08**	**Comp. of MIWF14 MIWF17 MIWF20**
Fish Conc. mg/kg dw	0.97	1.3	1.5	0.99	0.84	0.63	0.47	1
BA Conc. mg/kg dw	0.72	0.77	1	0.25	0.73	0.64	0.36	0.68
%BA	74	62	69	25	87	102	78	66
Horseshoe Island (Background)	**Comp. of HIWF01 HIWF22 HIWF21**	**Comp. of HIWF02 HIWF07**	**Comp. of HIWF03 HIWF10, HIWF16**	**Comp. of HIWF04 HIWF13 HIWF19**	**Comp. of HIWF05 HIWF06 HIWF20**	**Comp. of HIWF09 HIWF11 HIWF18**	**Comp. of HIWF12 HIWF14**	**HIWF17**
Fish Conc. mg/kg dw	0.76	0.33	0.44	0.35	0.6	0.62	0.3	0.4
BA Conc. mg/kg dw	0.35	0.4	0.39	0.21	0.34	0.62	0.25	0.42
%BA	46	119	83	62	57	99	84	104

From Table F.14, it can be seen that in Baker Creek the arsenic concentrations in northern pike ranged from 1.1 mg/kg to 2.3 mg/kg, and the bioaccessibility ranged from 20% to 58%. The average bioaccessibility of northern pike in Baker Creek was 44%. In Back Bay, the arsenic concentrations ranged from 0.72 mg/kg to 1.2 mg/kg, and the bioaccessibility ranged from 32% to 90%. The average bioaccessibility for northern pike in Back Bay was 64%. In Mosher Island (South Yellowknife Bay), the arsenic concentrations ranged from 0.88 mg/kg to 1.4 mg/kg, and the bioaccessibility ranged from 40% to 86%. The average bioaccessibility for northern pike in South Yellowknife Bay was 57%. At the background location (Horseshoe Island), the arsenic concentrations ranged from 0.47 mg/kg to 0.87 mg/kg, and the bioaccessibility ranged from 64% to 87%. The average bioaccessibility for northern pike in background was 78%.

Table F.14 Summary of arsenic bioaccessibility results for northern pike

	Fish ID							
Baker Creek	**BCNP-501**	**BCNP-502**	**BCNP-505**	**BCNP-508**	**BCNP-510**	**BCNP-512**	**BCNP-513**	**BCNP-515**
Fish Conc. mg/kg dw	1.1	1.1	2.3	1.6	1.8	1.8	1.3	1.5
BA Conc. mg/kg dw	0.59	0.62	0.46	0.63	1	0.88	0.4	0.58
%BA	54	57	20	40	58	49	31	39
Back Bay	**BBNP-501**	**BBNP-502**	**BBNP-503**	**BBNP-504**	**BBNP-506**	**BBNP-508**	**BBNP-511**	**BBNP-520**
Fish Conc. mg/kg dw	0.94	1.2	0.75	0.68	0.72	0.78	0.9	0.89
BA Conc. mg/kg dw	0.84	0.89	0.58	0.42	0.32	0.25	0.59	0.65
%BA	90	74	78	61	44	32	66	73
Mosher Island (South YK Bay)	**MINP-503**	**MINP-505**	**MINP-507**	**MINP-508**	**MINP-510**	**MINP-511**	**MINP-513**	**MINP-516**
Fish Conc. mg/kg dw	0.88	1.3	0.61	1.2	1	1.4	1.1	2
BA Conc. mg/kg dw	0.56	0.64	0.53	0.72	0.63	0.56	0.47	0.94
%BA	64	49	86	60	63	40	45	47
Horseshoe Island (Background)	**HINP-502**	**HINP-503**	**HINP-506**	**HINP-507**	**HINP-513**	**HINP-514**	**HINP-516**	**HINP-521**
Fish Conc. mg/kg dw	0.5	0.87	0.48	0.57	0.51	0.58	0.47	0.48
BA Conc. mg/kg dw	0.4	0.55	0.37	0.46	0.38	0.49	0.36	0.41
%BA	80	64	77	81	75	84	78	87

From Table F.15, it can be seen that there are no samples of inconnu from Baker Creek and Back Bay. In Mosher Island (South Yellowknife Bay), the arsenic concentrations ranged from 0.23 mg/kg to 0.48 mg/kg. The bioaccessibility for the inconnu samples were all below detection limits, and the only value reported was 39%. At the background location (Mackenzie Island), the arsenic concentrations ranged from 0.38 mg/kg to 0.62 mg/kg and the bioaccessibility ranged from 33% to 51%. The average bioaccessibility for inconnu from background (Mackenzie Island) was 38%.

Table F.15 Summary of arsenic bioaccessibility results for inconnu

Mosher Island (South YK Bay)	Fish ID							
	YKB10I NCO026	YKB10I NCO027	YKB10I NCO028	YKB10I NCO029	YKB10I NCO034	YKB10I NCO036	YKB10I NCO037	YKB10I NCO038
Fish Conc. mg/kg dw	0.28	0.29	0.28	0.28	0.23	0.41	0.48	0.46
BA Conc. mg/kg dw	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	0.19	<0.14
%BA	<50	<48	<51	<50	<62	<34	39	<30
Mackenzie Island (Background)	**YKB10I NCO002**	**YKB10I NCO007**	**YKB10I NCO012**	**YKB10I NCO017**	**YKB10I NCO018**	**YKB10I NCO021**	**YKB10I NCO022**	**YKB11I NCO001**
Fish Conc. mg/kg dw	0.38	0.52	0.42	0.52	0.63	0.62	0.59	0.46
BA Conc. mg/kg dw	0.19	0.17	0.19	0.21	0.21	0.22	0.2	0.15
%BA	51	32	45	40	33	35	34	33

Table F.16 provides as summary of the bioaccessibility values for the large-bodied fish at the Baker Creek outlet and locations in Yellowknife Bay. For the ecological risk assessment, the average bioaccessibility values at the various locations were used. The average bioaccessibility for all the fish samples in Baker Creek is 61%. For Back Bay, the average bioaccessibility was 68% and for South Yellowknife Bay and background the average bioaccessibility is 55% and 62%, respectively.

Table F.16 Summary of average arsenic bioaccessibility values for all the fish species and locations

Location	Baker Creek Outlet	Back Bay	Mosher Island	Background
Lake Whitefish				
% Bioaccessibility	78	71	70	72
Northern Pike				
% Bioaccessibility	44	65	57	78
Inconnu				
% Bioaccessibility	NA	NA	39	37

F.3.4 Bioaccessibility in Vegetation at Giant Mine

As part of the data gaps analysis for the risk assessment, it was determined that additional vegetation data as well as bioaccessibility information was needed for vegetation present on Giant Mine. This information is very helpful for the ecological risk assessment, as animals consume plants. Golder collected this additional information in the summer of 2016 and provided the results in a technical memo entitled *Giant Mine Data Report-Human Health and Ecological Risk Assessment Data Gaps* (Golder 2016b). Leaves of cranberry and alder were collected to represent terrestrial forbs and shrubs. Five alder samples and five cranberry samples were sent to RMC for bioaccessibility analysis. Figure F.12 provides a map of indicating the locations of the alder and cranberry samples that were sent for bioaccessibility testing and Table F.17 provides a summary of the bioaccessibility results for the alder and cranberry leaves at the Giant Mine. The concentrations are provided on a wet weight (ww) basis.

As seen from the table, the arsenic concentrations in the vegetation ranged from 0.9 mg/kg ww to 35 mg/kg ww and the % bioaccessibility ranged from 14% to 56%. The average bioaccessibility of the ten samples is 34%. This value was used for all vegetation on the Giant Mine, as this was considered to be a reasonable representation of the availability of arsenic in plants. Koch et al. (2013) carried out some analyses of cranberry and Labrador tea samples from the Giant Mine. Four samples (two cranberry and two Labrador tea) in all were analyzed for bioaccessibility. The two cranberry samples had bioaccessibilities of 19% and 60% and the Labrador tea samples had lower bioaccessibility values of 10% and 17%. The average of these four plant samples is around 27%, which is in line with the 34% bioaccessibility value that is being used in this report for vegetation at the Giant Mine. For the consumption of Labrador tea, an average bioaccessibility of the two samples of 15% has been used.

Figure F.12 Map showing locations of bioaccessibility samples for alder and cranberry leaves at Giant Mine

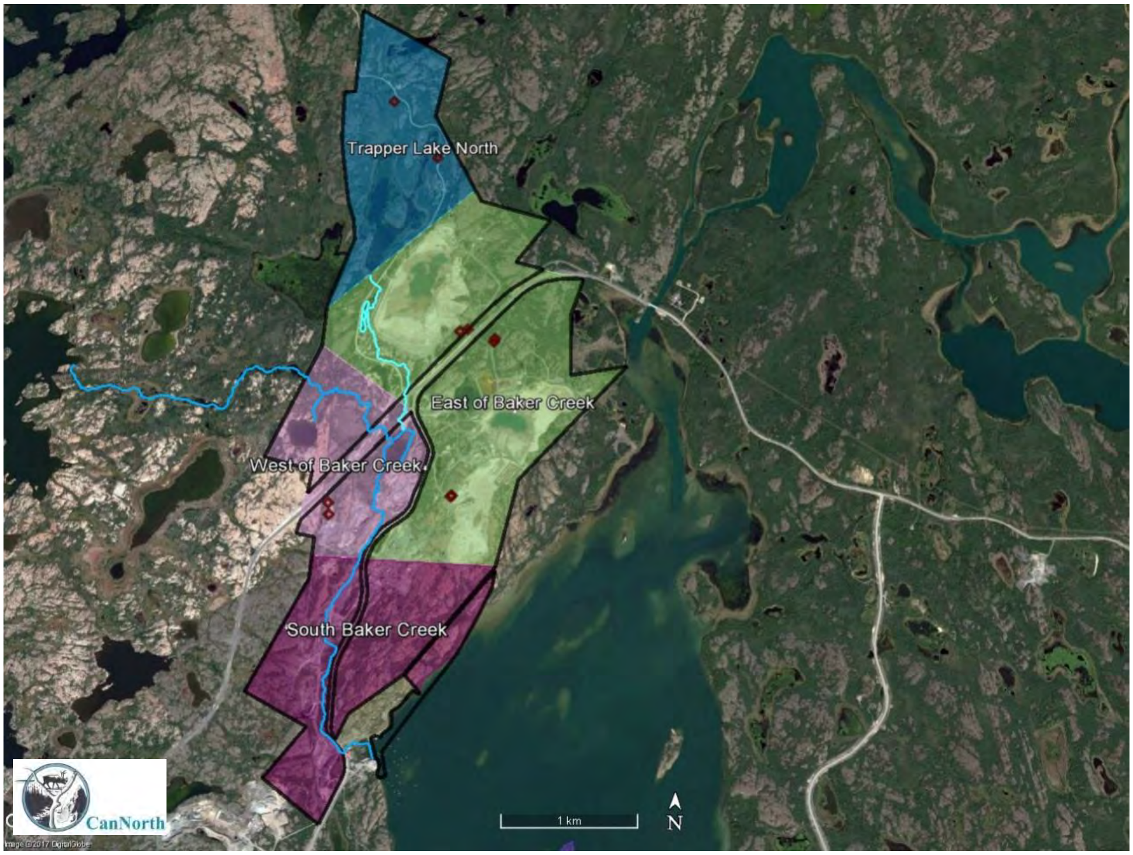


Table F.17 Summary of arsenic bioaccessibility results for alder and cranberry leaves at Giant Mine

Sample ID	Location	Plant Type	BA Conc. (mg/kg ww)	Foliage Conc. (mg/kg ww)	% As BA
16-Giant -AL-BIO-01	Trapper Lake	Alder Leaves	0.7	1.6	44
16-Giant -AL-19-BIO	West Baker Creek	Alder Leaves	0.6	1.4	43
16-Giant -AL-51-BIO	Near North Tailings Pond	Alder Leaves	2.2	15	14
16-Giant -AL-60-BIO	Near North west Tailings Pond	Alder Leaves	1.1	5.9	19
16-Giant -AL-61-BIO	East Quadrant	Alder Leaves	0.87	3.5	25
16-Giant -CB-13-BIO	West Baker Creek	Cranberry Leaves	2.4	5.5	44
16-Giant -CR-15-BIO	Trapper Lake	Cranberry Leaves	0.5	0.94	56
16-Giant -CR-51-BIO	Near North Tailings Pond	Cranberry Leaves	4.6	12	38
16-Giant -CR-59-BIO	Near North west Tailings Pond	Cranberry Leaves	10	35	28
16-Giant -CR-61-BIO	East Quadrant	Cranberry Leaves	1.4	5.9	24

Note: The average bioaccessibility of the alder and cranberry leaves at the Giant Mine is 34%.

F.3.5 Bioaccessibility in Hare and Mushrooms

Koch et al. (2013) carried out some analyses of hare samples obtained from contaminated and uncontaminated sites in Yellowknife. Four hare samples were obtained from contaminated areas and three hare samples were obtained from uncontaminated areas and all were analyzed for bioaccessibility using the physiologically-based extraction test (PBET) method. Table F.18 provides a summary of the results from the Koch et al. (2013) paper. As seen from the paper, the highest bioaccessibility of hare in contaminated areas was 54%, and the highest bioaccessibility of hare in uncontaminated areas was 76%. Koch et al. (2013) noted that about 56% of the arsenic in the hare in the uncontaminated area was arsenobetaine. As seen from the table, the PBET testing considered gastric and gastric plus intestional bioaccessibility; however, there was no significant difference between the two methods and, therefore, all samples were considered. For the purposes of the risk assessment, an average bioaccessibility of 38% was used to represent small mammals (hare) on contaminated areas and an average bioaccessibility of 50% was used to represent small mammals (hare) from uncontaminated areas. Analyses were also conducted for hares from uncontaminated areas in Nova Scotia, and an average bioaccessibility of 49% was reported. In the absence of data for other animals, a bioaccessibility of 50% was used to represent the bioaccessibility in the flesh of moose, grouse, hare, duck/goose, muskrat, beaver, and grouse.

Table F.18 Summary of arsenic bioaccessibility results for hare from Yellowknife area

Sample	Location	BA Conc. (mg/kg ww)	Hare As Conc. (mg/kg ww)	% As BA
CYK12010G	Yellowknife, Contaminated	0.32	0.6	52
CYK12010GI	Yellowknife, Contaminated	0.33	0.6	54
CYK22010G	Yellowknife, Contaminated	0.15	0.55	27
CYK22010GI	Yellowknife, Contaminated	0.17	0.55	30
CYK32010G	Yellowknife, Contaminated	0.2	0.54	36
CYK32010GI	Yellowknife, Contaminated	0.2	0.54	37
CYK42010G	Yellowknife, Contaminated	0.2	0.58	34
CYK42010GI	Yellowknife, Contaminated	0.2	0.58	36
UCYK2010G	Yellowknife, Uncontaminated	0.063	0.18	34
UCYK2010GI	Yellowknife, Uncontaminated	0.076	0.18	42
UCYK12000G	Yellowknife, Uncontaminated	0.054	0.102	53
UCYK12000GI	Yellowknife, Uncontaminated	0.078	0.102	76
UCYK22000G	Yellowknife, Uncontaminated	<0.02	0.016	-
UCYK22000GI	Yellowknife, Uncontaminated	<0.02	0.016	-

Note: G – Gastric; GI – gastric+intestinal.

Koch et al. (2013) also conducted bioaccessibility tests on mushrooms from the Yellowknife area. Table F.19 presents a summary of the results. As seen in the table, the PBET testing considered gastric and gastric plus intestinal bioaccessibility; however, there was no significant difference between the two methods and, therefore, all samples were considered. The average bioaccessibility for mushrooms of 70% was used in the assessment.

Table F.19 Summary of arsenic bioaccessibility results for mushrooms from Yellowknife area

Sample	Mushroom As Conc. (mg/kg ww)	BA Conc. (mg/kg ww)	% As BA
BoleteYKG	2.3	1	45
BoleteYKGI	2.3	1	45
Agaricussp.YK1G	4.8	2.7	58
Agaricussp.YK1GI	4.8	2.8	59
Agaricussp.YK2G	1.2	1.1	91
Agaricussp.YK2GI	1.2	1.2	94
Agaricussp.YK3G	2.7	1.8	69
Agaricussp.YK3GI	2.7	1.8	68
Agaricussp.YK4G	4.2	3.4	80
Agaricussp.YK4GI	4.2	3.6	84

Note: G – Gastric; GI – gastric+intestinal.

F.3.6 Summary of Arsenic Bioaccessibility Values Used in the HHRA

Based on the bioaccessibility values provided in the sections above, the specific assumptions for arsenic bioavailability for the HHRA are provided in Table F.20. The soil bioaccessibility values for Long Lake and the former Townsite were all based on soil samples collected in those areas. For the Giant Mine site, the remedial plans indicate that an area of the site with arsenic concentrations above 3,000 mg/kg will be fenced. This area contains the disturbed soils and, thus, only the undisturbed soils represent exposure for humans. Thus, a bioaccessibility of 38% representing undisturbed soils was used. Dust was assumed to have the same bioaccessibility as soil.

For sediments, the bioaccessibility was based on measured data for Long Lake and the Townsite. For the rest of Yellowknife Bay, it was assumed that the bioaccessibility in the Townsite sediments was representative. This value seems reasonable, as it is lower than the sediments in Long Lake and the undisturbed soils at the Giant Mine.

For fish, it was assumed for lake whitefish, inconnu, and lake trout that the bioaccessibility was represented by the average value for all fish analyzed in Yellowknife Bay (e.g., Back Bay, Mosher Island, and background locations).

For medicinal tea, mushrooms, and hare, the bioaccessibility values were obtained from the literature for samples collected in the Yellowknife area (Koch et al. 2013). In the absence of data for other animals, it was assumed that the bioaccessibility of arsenic in the hare of 50% was considered to be representative.

The bioaccessibility of arsenic in other media (e.g., water, air, berry, organs, and lake trout) was assumed to be 100% in the absence of other information.

Table F.20 Summary of arsenic bioaccessibility assumptions for HHRA

Media	Location	Bioavailability Assumption	Rationale	Data Reference
Soil/Dust	Fred Henne Campground	36%	Average of five samples from Fred Henne Campground	Site-specific Golder (2016a), Table 17
	Townsite	30%	Average of eight samples from Townsite	Site-specific Golder (2016a), Table 4
	Giant	38%	Average of nine samples representative of undisturbed soils	Site-specific Golder (2016a)
	All off-site locations including Background	38%	Assumed to be represented by undisturbed soils	-
Sediment	Long Lake	45%	Average of five samples from Long Lake	Site-specific Golder (2016b), Table 17
	Townsite	26%	Average of 10 samples from shoreline of Townsite	Site-specific Golder (2016b), Table 2
	Yellowknife Bay, including BG	26%	Assume same as shoreline Townsite sediments since in Yellowknife Bay	-
Lake Whitefish	All	73%	Average of Back Bay, Mosher Island, and Background	Site-specific Stantec (2014), Appendix C
Inconnu	All	38%	Average of Mosher Island and Background	Site-specific Stantec (2014), Appendix C
Northern Pike	All	67%	Average of Back Bay, Mosher Island, and Background	Site-specific Stantec (2014), Appendix C
Medicinal Tea	All	15%	Average of two samples from literature for Yellowknife area.	Koch et al. (2013)
Mushroom	All	70%	Average of 10 samples from literature for Yellowknife area.	Koch et al. (2013)

Media	Location	Bioavailability Assumption	Rationale	Data Reference
Hare	All	50%	Average of hare muscle from uncontaminated areas from literature for Yellowknife area	Koch et al. (2013)
Moose	All	50%	Assumed to be the same as average of hare muscle from contaminated areas from literature for Yellowknife area	Koch et al. (2013)
Grouse	All	50%	Assumed to be the same as average of hare muscle from contaminated areas from literature for Yellowknife area	Koch et al. (2013)
Duck	All	50%	Assumed to be the same as average of hare muscle from contaminated areas from literature for Yellowknife area	Koch et al. (2013)
Muskrat	All	50%	Assumed to be the same as average of hare muscle from contaminated areas from literature for Yellowknife area	Koch et al. (2013)
Beaver	All	50%	Assumed to be the same as average of hare muscle from contaminated areas from literature for Yellowknife area	Koch et al. (2013)
Goose	All	50%	Assumed to be the same as average of hare muscle from contaminated areas from literature for Yellowknife area	Koch et al. (2013)

F.4 Arsenic Speciation

Chemicals such as arsenic are found in different forms in the environment. Speciation is the process of determining the proportions of actual chemical forms in a sample, since the chemical form can affect the bioavailability and relative toxicity of the chemical. For example, in fish, there are many forms of arsenic both in an inorganic and organic form. Many forms of inorganic arsenic are considered to be toxic (see Appendix G); however, arsenobetaine (an organic form of arsenic) is considered to be the non-toxic (ATSDR 2007). The incorporation of speciation information in fish and other plants helps to increase the accuracy of, and confidence in, the health risk predictions. The discussion below focuses on arsenobetaine, as all other arsenic species are considered to be as toxic as inorganic arsenic.

The summaries presented in the section focus on the portion of arsenobetaine found in fish species as well as mushrooms. This portion of arsenic assumed to be present as arsenobetaine was removed from the arsenic concentration in order to more accurately represent the potential risks from consumption of arsenic in fish and mushrooms. Arsenobetaine speciation data were available for the fish species lake whitefish, inconnu, and northern pike as well as for mushroom. There were no data on arsenic speciation in lake trout and, therefore, it was assumed that none of the arsenic present was in the form of arsenobetaine.

F.4.1 Arsenobetaine Speciation in Fish

In addition to bioaccessibility data, Stantec (2014) also provides arsenobetaine speciation data for large-bodied fish. The results of the arsenobetaine speciation testing for lake whitefish, northern pike, and inconnu are provided in Table F.13, Table F.14, and Table F.15, respectively. The concentrations are provided on a dw basis.

From Table F.13, it can be seen that, for many of the locations, composite samples for lake whitefish were submitted for the speciation testing. In Baker Creek, the arsenic concentrations ranged from 0.43 mg/kg to around 1 mg/kg, and the arsenobetaine ranged from 50% to 145%. There were two samples with arsenobetaine values that were over 100%, and these samples were not considered in the evaluation. The average % arsenobetaine of the remaining fish samples in Baker Creek was 67 %. In Back Bay, the arsenic concentrations ranged from 0.45 mg/kg to 1.6 mg/kg, and the % arsenobetaine ranged from 38% to 95%. The average % arsenobetaine for lake whitefish in Back Bay was 65%, which is the similar to Baker Creek. In Mosher Island (South Yellowknife Bay), the arsenic concentrations ranged from 0.47 mg/kg to 1.5 mg/kg and the % arsenobetaine ranged from 7% to 78%. The average % arsenobetaine for lake whitefish in South Yellowknife Bay was 59%. At the background location (Horseshoe Island), the arsenic concentrations ranged from 0.3 mg/kg to 0.76 mg/kg, and the % arsenobetaine ranged from 31% to 58%. The average % arsenobetaine for lake whitefish in background was 43%.

Table F.21 Summary of arsenobetaine speciation results for lake whitefish

Baker Creek	Fish ID							
	Comp. of BCWF01 BCWF05	Comp. of BCWF03 BCWF18	Comp. of BCWF04 BCWF08	Comp. of BCWF06 BCWF12 BCWF16	Comp. of BCWF09 BCWF20 BCWF24	Comp. of BCWF13 BCWF23 BCWF21	Comp. of BCWF14 BCWF07	Comp. of BCWF17 BCWF19
Fish Conc. mg/kg dw	1.02	0.43	0.47	0.69	0.83	0.83	0.66	0.81
Arsenobetaine Conc. mg/kg dw	0.89	0.3	0.24	0.18	1.1	1.2	0.33	0.42
%AB	87	70	51	26	133	145	50	52
Back Bay	**BBWF-501**	**BBWF-502**	**BBWF-503**	**BBWF-504**	**BBWF-505**	**BBWF-506**	**Comp. of BBWF04 BBWF13**	**Comp. of BBWF07 BBWF14**
Fish Conc. mg/kg dw	0.51	0.97	0.5	0.68	0.45	0.74	1.61	0.78
Arsenobetaine Conc. mg/kg dw	0.26	0.69	0.21	0.45	0.17	0.5	1.4	0.74
%AB	51	71	42	66	38	68	87	95
Mosher Island (South YK Bay)	**Comp. of MIWF01 MIWF22 MIWF03 MIWF23**	**Comp. of MIWF02 MIWF18**	**Comp. of MIWF06 MIWF21**	**Comp. of MIWF07 MIWF19**	**Comp. of MIWF09 MIWF15**	**Comp. of MIWF10, MIWF11**	**Comp. of MIWF12 MIWF13 MIWF08**	**Comp. of MIWF14 MIWF17 MIWF20**
Fish Conc. mg/kg dw	0.97	1.3	1.5	0.99	0.84	0.63	0.47	1
Arsenobetaine Conc. mg/kg dw	0.76	0.96	0.11	0.22	0.66	0.32	0.21	0.66
%AB	78	63	7	22	78	51	45	66
Horseshoe Island (Background)	**Comp. of HIWF01 HIWF22 HIWF21**	**Comp. of HIWF02 HIWF07**	**Comp. of HIWF03 HIWF10, HIWF16**	**Comp. of HIWF04 HIWF13 HIWF19**	**Comp. of HIWF05 HIWF06 HIWF20**	**Comp. of HIWF09 HIWF11 HIWF18**	**Comp. of HIWF12 HIWF14**	**HIWF17**
Fish Conc. mg/kg dw	0.76	0.33	0.44	0.35	0.6	0.62	0.3	0.4
Arsenobetaine Conc. mg/kg dw	0.35	0.19	0.18	0.15	0.27	0.19	0.12	0.16
%AB	46	58	41	43	45	31	40	40

From Table F.14, it can be seen that in Baker Creek the arsenic concentrations in northern pike ranged from 1.1 mg/kg to 2.3 mg/kg, and the % arsenobetaine ranged from 9% to 38%. The average % arsenobetaine in northern pike in Baker Creek was 24%. In Back Bay, the arsenic concentrations ranged from 0.72 mg/kg to 1.2 mg/kg, and the % arsenobetaine ranged from 33% to 73%. The average % arsenobetaine in northern pike in

Back Bay was 43%. In Mosher Island (South Yellowknife Bay), the arsenic concentrations ranged from 0.88 mg/kg to 1.4 mg/kg and the % arsenobetaine ranged from 22% to 43%. The average % arsenobetaine for northern pike in South Yellowknife Bay was 29%. At the background location (Horseshoe Island), the arsenic concentrations ranged from 0.47 mg/kg to 0.87 mg/kg, and the % arsenobetaine ranged from 34% to 57%. The average % arsenobetaine in northern pike in background was 44%.

Table F.22 Summary of arsenobetaine speciation results for northern pike

Baker Creek	**Fish ID**							
	BCNP-501	**BCNP-502**	**BCNP-505**	**BCNP-508**	**BCNP-510**	**BCNP-512**	**BCNP-513**	**BCNP-515**
Fish Conc. mg/kg dw	1.1	1.1	2.3	1.6	1.8	1.8	1.3	1.5
Arsenobetaine Conc. mg/kg dw	0.42	0.46	0.2	0.17	0.43	0.43	0.18	0.51
%AB	38	42	9	10	24	24	14	34
Back Bay	**BBNP-501**	**BBNP-502**	**BBNP-503**	**BBNP-504**	**BBNP-506**	**BBNP-508**	**BBNP-511**	**BBNP-520**
Fish Conc. mg/kg dw	0.94	1.2	0.75	0.68	0.72	0.78	0.9	0.89
Arsenobetaine Conc. mg/kg dw	0.36	0.88	0.39	0.24	0.29	0.26	0.36	0.32
%AB	38	73	52	35	40	33	40	36
Mosher Island (South YK Bay)	**MINP-503**	**MINP-505**	**MINP-507**	**MINP-508**	**MINP-510**	**MINP-511**	**MINP-513**	**MINP-516**
Fish Conc. mg/kg dw	0.88	1.3	0.61	1.2	1	1.4	1.1	2
Arsenobetaine Conc. mg/kg dw	0.21	0.28	0.26	0.4	0.36	0.31	0.29	0.47
%AB	24	22	43	33	36	22	26	24
Horseshoe Island (Background)	**HINP-502**	**HINP-503**	**HINP-506**	**HINP-507**	**HINP-513**	**HINP-514**	**HINP-516**	**HINP-521**
Fish Conc. mg/kg dw	0.5	0.87	0.48	0.57	0.51	0.58	0.47	0.48
Arsenobetaine Conc. mg/kg dw	0.22	0.36	0.17	0.25	0.24	0.2	0.27	0.23
%AB	44	41	35	44	47	34	57	48

From Table F.23, it can be seen that there are no samples of inconnu from Baker Creek and Back Bay. In Mosher Island (South Yellowknife Bay), the arsenic concentrations ranged from 0.23 mg/kg to 0.48 mg/kg. The % arsenobetaine for the inconnu samples were all below detection limits with the exception of three samples with an average % arsenobetaine of 26%. At the background location (Mackenzie Island), the arsenic concentrations ranged from 0.38 mg/kg to 0.62 mg/kg, and the % arsenobetaine ranged from 18% to 24% with two samples below detection limits. The average % arsenobetaine for inconnu in background was 20%.

Table F.23 Summary of arsenobetaine speciation results for inconnu

Mosher Island (South YK Bay)	Fish ID							
	YKB10I NCO026	**YKB10I NCO027**	**YKB10I NCO028**	**YKB10I NCO029**	**YKB10I NCO034**	**YKB10I NCO036**	**YKB10I NCO037**	**YKB10I NCO038**
Fish Conc. mg/kg dw	0.28	0.29	0.28	0.28	0.23	0.41	0.48	0.46
Arsenobetaine Conc. mg/kg dw	<0.055	0.092	0.079	<0.055	<0.055	<0.055	0.087	<0.055
%AB	<20	31	28	<20	<24	<13	18	<12
Mackenzie Island (Background)	**YKB10I NCO002**	**YKB10I NCO007**	**YKB10I NCO012**	**YKB10I NCO017**	**YKB10I NCO018**	**YKB10I NCO021**	**YKB10I NCO022**	**YKB11I NCO001**
Fish Conc. mg/kg dw	0.38	0.52	0.42	0.52	0.63	0.62	0.59	0.46
Arsenobetaine Conc. mg/kg dw	0.067	<0.055	0.084	0.11	0.12	<0.055	0.12	0.11
%AB	18	<11	20	21	19	<9	20	24

Table F.24 provides as summary of the average % arsenobetaine values for the large-bodied fish at the Baker Creek outlet and locations in Yellowknife Bay. For the ecological risk assessment, the average % arsenobetaine values at the various locations were used. The average % arsenobetaine for all the fish samples in Baker Creek is 46%. For Back Bay, the average % arsenobetaine was 54%, and for South Yellowknife Bay and background, the average % arsenobetaine is 38% and 36%, respectively.

Table F.24 Summary of average arsenobetaine speciation for all the fish species and locations

Location	Baker Creek Outlet	Back Bay	Mosher Island	Background
Lake Whitefish				
% Arsenobetaine	67	65	59	43
Northern Pike				
% Arsenobetaine	24	43	29	44
Inconnu				
% Arsenobetaine	NA	NA	26	20

F.4.2 Speciation in Wildlife and Mushrooms

Koch et al. (2013) also conducted speciation tests on mushrooms from the Yellowknife area. Table F.25 presents a summary of the results for arsenobetaine, which is considered to be the non-toxic form of arsenic. As seen in the table, for most of the samples the % arsenobetaine ranges between 38% and 43%. For two samples, the % arsenobetaine was under 10%. The average % arsenobetaine for mushrooms of 33% was used in the assessment.

Table F.25 Summary of arsenobetaine concentrations in mushrooms from Yellowknife area

Sample	Mushroom As Conc. (mg/kg ww)	Arsenobetaine Conc. (mg/kg ww)	% As BA
Agaricussp.YK1G	4.8	0.43	9
Agaricussp.YK1GI	4.8	0.38	8
Agaricussp.YK2G	1.2	0.49	40
Agaricussp.YK2GI	1.2	0.51	43
Agaricussp.YK3G	2.7	1.3	48
Agaricussp.YK3GI	2.7	1.1	41
Agaricussp.YK4G	4.2	1.6	38
Agaricussp.YK4GI	4.2	1.7	40

Note: G – Gastric; GI – gastric+intestinal; average % arsenobetaine was 33%.

F.4.3 Summary of Arsenobetaine Values Used in the HHRA

The specific assumptions for arsenic speciation with respect to arsenobetaine content for use in the HHRA are provided in Table F.26. As seen from the table, for lake whitefish, northern pike, and inconnu, the % arsenobetaine was represented by the average % arsenobetaine from all locations in Yellowknife Bay (Back Bay, Mosher Island, and background locations).

For mushrooms, the % arsenobetaine was based on literature values pertaining to samples collected in the Yellowknife area. For all other samples, speciation of arsenic was not accounted for.

Table F.26 Summary of arsenic speciation assumptions

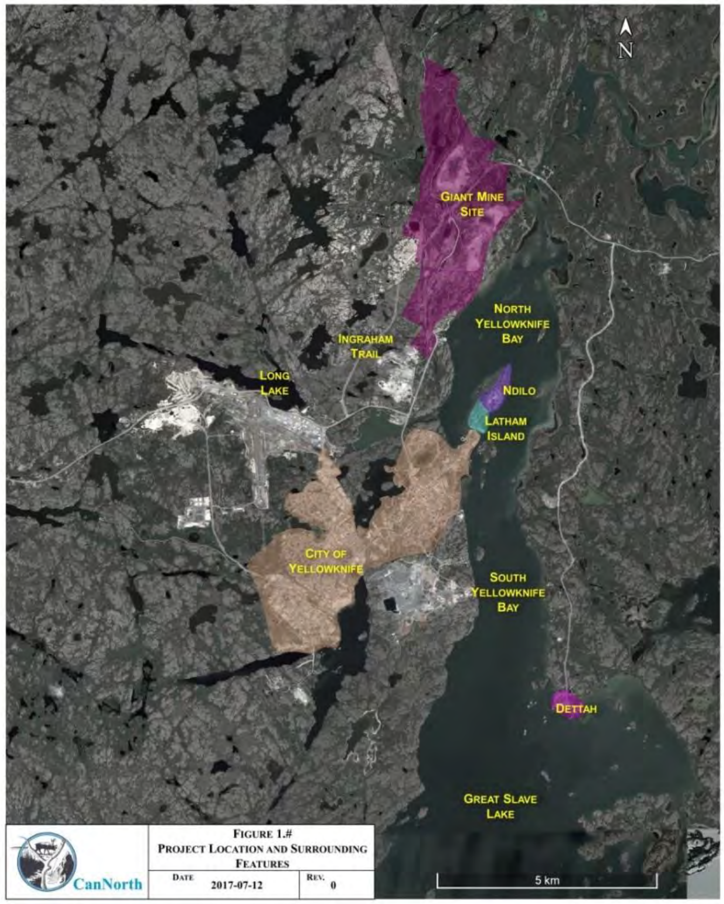
Media	Location	Arsenobetaine Assumption	Rationale	Data Reference
Lake Whitefish	All	59%	Average of Back Bay and Mosher Island	Stantec (2014), Appendix C
Inconnu	All	23%	Average of Mosher Island and Background	Stantec (2014), Appendix C
Northern Pike	All	35%	Average of Baker Creek Outlet, Back Bay, Mosher Island, and Background	Stantec (2014), Appendix C
Mushroom	All	33%	Average of eight samples	Koch et al. (2013)

F.5 Exposure Point Concentrations

Exposure point concentrations (EPCs) are estimations of the concentration of a chemical in the environment and are generally a conservative estimate of the average chemical concentration in the environment.

The developed EPCs for each location considered for the HHRA are provided in the following sections. Figure F.13 shows the locations considered in the development of the EPCs.

Figure F.13 Locations considered for the development of EPCs



F.5.1 Current

Available site data and details on the data handling are provided in Appendix B. For the purposes of determining EPCs, the United States Environmental Protection Agency (U.S. EPA 2002) recommends the 95% UCLM as being a reasonable estimate of the concentration that an individual will likely be exposed to over time. For Detailed Quantitative Human Health Risk Assessments, Health Canada also supports the use of the 95% UCLM (Health Canada 2010a). Thus, for the HHRA, this statistic was used as the EPC where sufficient data are available. The approach for developing the EPCs for all media (other than food) at the various HHRA receptor locations are as follows:

- If a sufficient number of samples was available (i.e., 10 or more samples), the 95% UCLM was selected as the EPC, which is considered to be a reasonable estimate of what the receptor will be exposed to over time.

- If there were insufficient samples (i.e., less than 10), the 95th percentile or the maximum concentration was selected as the EPC on a case-by-case basis after examination of the data.

The 95% UCLM was calculated using ProUCL, which is a statistical program that provides 95% UCLM recommendations (based on data distribution, data set size, skewness, and percentage of non-detect observations) on how to obtain an accurate 95% UCLM. ProUCL may suggest more than one 95% UCLM estimate; in these cases, the highest appropriate 95% UCLM was selected. It is noted that the CCME (2016) suggest that the BCA bootstrap approach from ProUCL can be used for the majority of datasets; the selection of the highest 95% UCLM that may be greater than the BCA bootstrap recommendation is, therefore, a conservative approach.

Country Food

All receptor locations were assumed to consume country food at the same EPCs derived from measured concentrations. Measured concentrations were based on the results of the voluntary samples that were collected (Appendix B) and are presented in Table F.27. In the case of country food, the average concentrations were used with the exception of fish where there was a large number of samples and the 95%UCLM was used. For berries and fish, assumptions were made related to where each receptor location would source these food items; these assumptions are outlined in Appendix E. The gathering location map for berries is provided in Figure F.14, and the fishing location map is provided in Figure F.15. Figure F.16 shows a summary of the locations of the voluntary samples within 50 km of the site. Fish samples were represented by whitefish as the measured concentrations of lake trout and inconnu (which are also reported to be eaten) were similar. Therefore, lake whitefish was used as a surrogate for consumption of fish. Figure F.17 provides a schematic representation of the concentrations of arsenic, antimony, and manganese in country food in comparison to background.

Table F.27 Summary of EPCs – country food

Country Food	Location	Concentration (mg/kg ww)			Statistic	Remarks
		Arsenic	Antimony	Manganese		
Berries	Ndilo	0.11	0.007	16.1	Average	Average of six samples including raspberries, Saskatoon berries and rose hips
	T1 (incl. Ndilo)	0.11	0.004	17.5	Average	Average of 14 samples including cranberries, raspberries, Saskatoon berries and rose hips
	Beyond T1	0.04	0.001	20.2	Average	Average of six samples including five cranberry and one raspberry sample
Fish	North Yellowknife Bay (A2)	0.21	0.03	0.15	95% UCLM except Antimony (MDL)	Assumed to be represented by 36 whitefish samples
	South Yellowknife Bay (A3)	0.18	0.03	0.15	95% UCLM except antimony (MDL), manganese (95th percentile)	Assumed to be represented by 21 whitefish samples
Moose	Measured	0.04	0.002	0.25	Average	Average of five samples
Hare	Measured	0.10	0.01	0.19	Average	Average of five samples
Ptarmigan/ Grouse	Measured	0.04	0.015	0.39	Average except arsenic (geomean)	Average of nine samples; arsenic concentration is based on the geometric mean due to the skewed data set
Duck/Goose	Measured	0.05	0.002	0.53	Average for duck and goose	Average of four samples
Muskrat/ Beaver	Measured	0.03	0.01	0.21	Average of beaver and muskrat	Average of four samples

Note: T1 is within 10 km of the site.

Figure F.14 Hunting/trapping/gathering location reference map

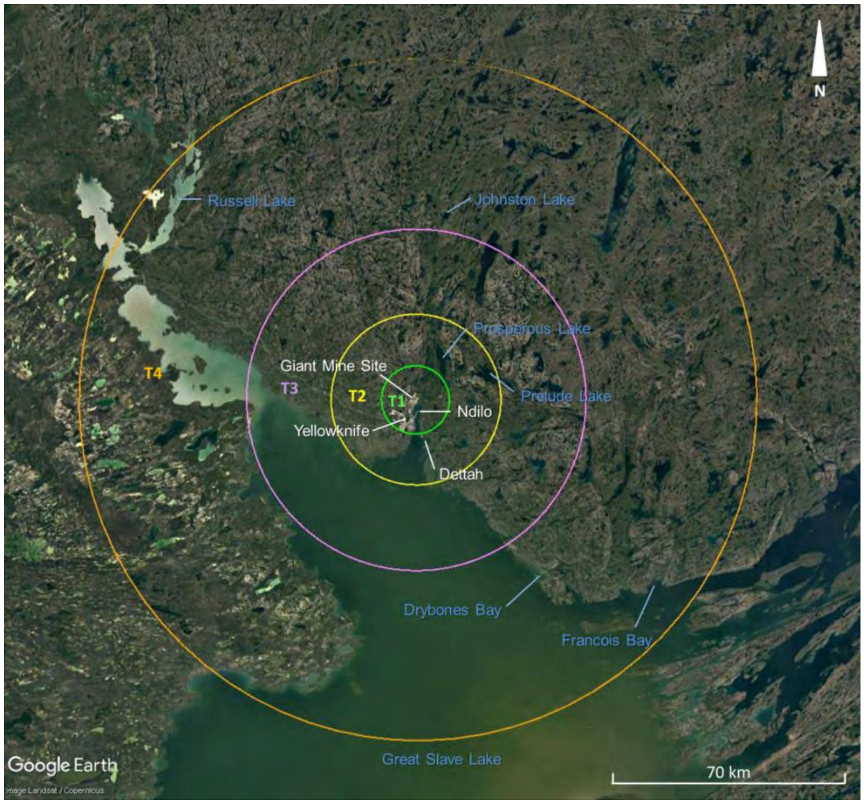


Figure F.15 Fishing location reference map

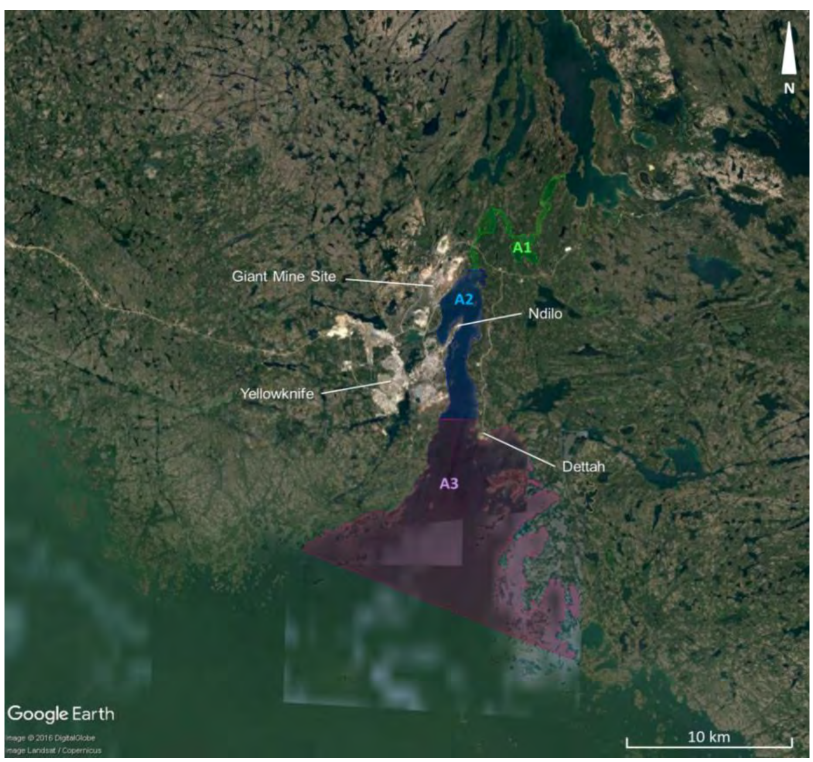


Figure F.16 Voluntary Samples from within 50 km of the Giant Mine

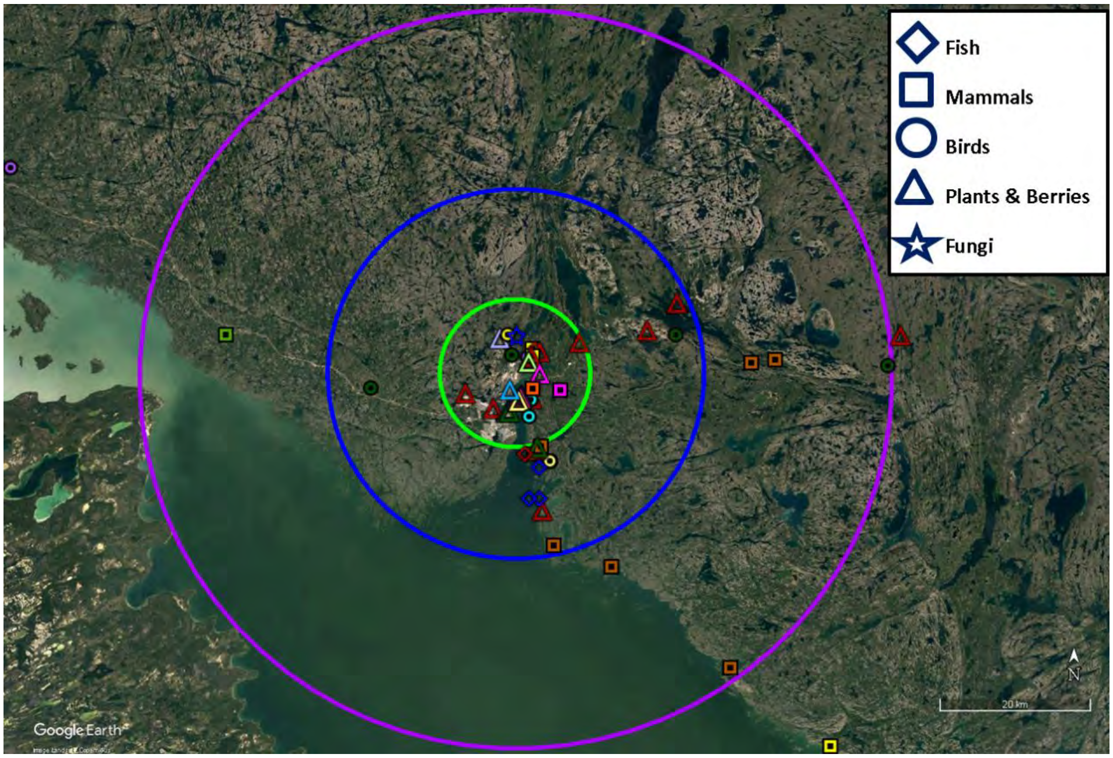
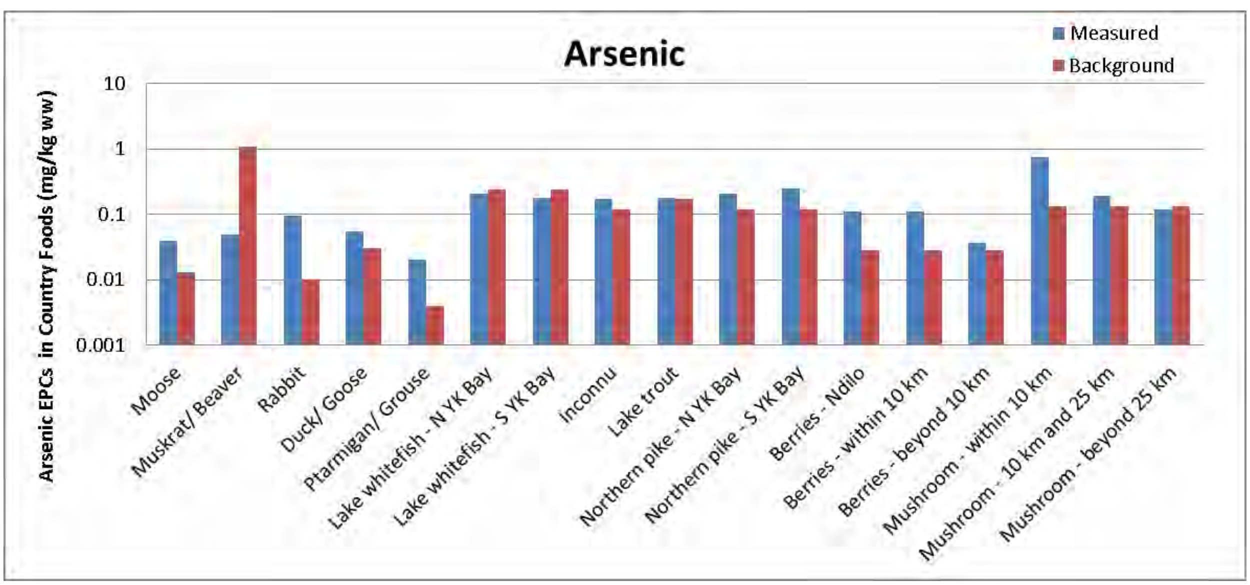
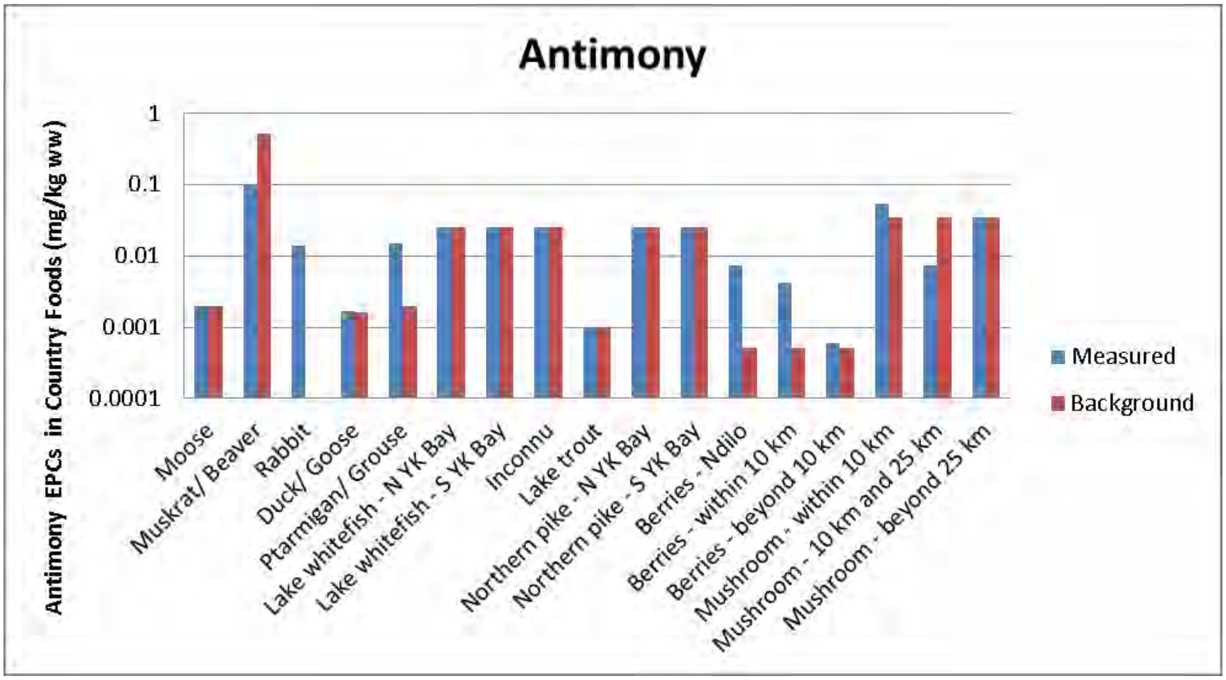
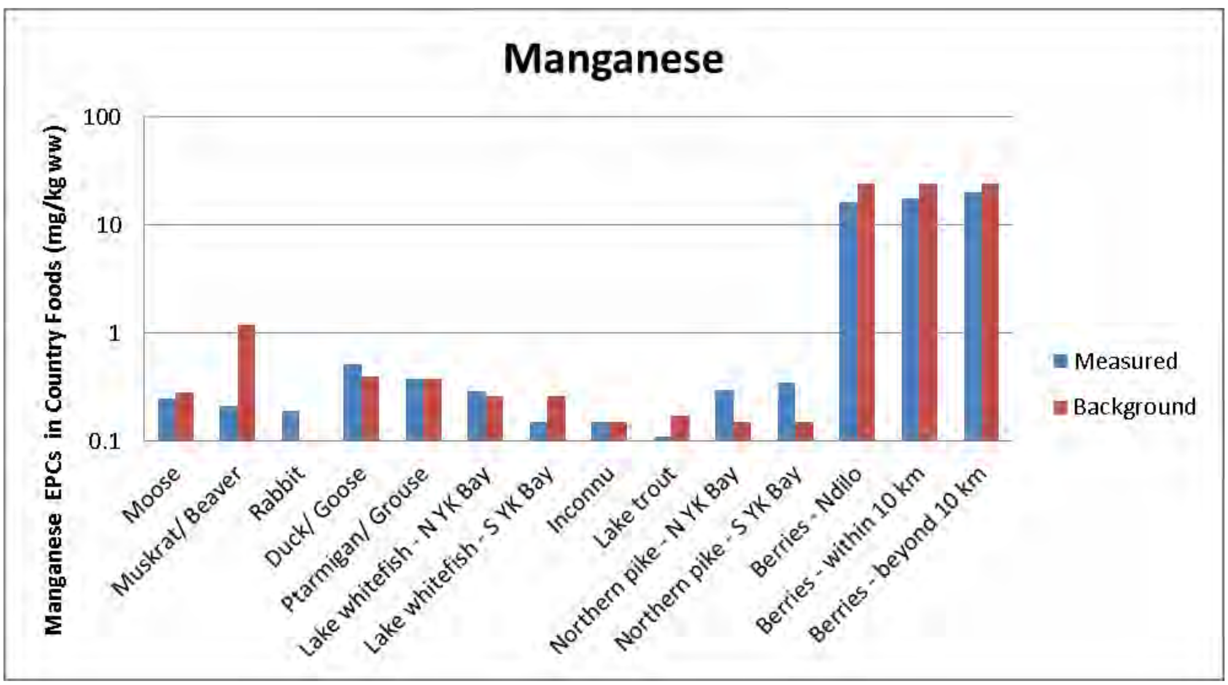


Figure F.17 Schematic representation of concentrations in country foods as compared to background







The EPCs considered for the additional assessments for medicinal tea, ingestion of mushrooms, organ consumption, and berries from the Giant Mine (for the future scenario) are summarized in Table F.28.

Table F.28 Summary of EPCs – additional assessments for country food

Media	Location	Concentration (mg/kg ww)			Statistic
		Arsenic	Antimony	Manganese	
Berries (Future)	Giant Mine	6.4	0.54	269	95% UCLM of berry shoots and leaves
Medicinal Tea	All Areas (incl. Ndilo)	0.48	0.04	188	Average of four samples
Mushroom	City of YK	See Appendix P			
Organ - Moose	All Areas	0.007	0.001	1.2	Max of one heart and one liver sample
Organ – Fish Liver	North YK Bay (A2)	0.32	0.02	1.2	Average of 20 samples
	South YK Bay (A3)	0.15	0.03	1.2	Average of 40 samples
Organ – Ptarmigan Heart	All Areas	0.09	0.002	0.51	Average of nine heart samples
Organ – Ptarmigan Gizzard and Liver	All Areas	1.1	0.007	10.7	Average of nine gizzard and liver samples
Organ – All	All Areas	0.24	0.02	1.8	Weighted (by ingestion rate) average of moose organs, fish livers, and ptarmigan heart, gizzard, and liver)

A number of sensitivity assessments were completed related to country foods. The sensitivity analyses only focused on arsenic. The two scenarios that result in changes to the EPCs for country food are:

- Country food – Average concentrations of arsenic were used in the assessment as shown in Table F.27, as it was unlikely that people would eat all their country foods at the maximum concentration. Nonetheless, the use of maximum measured concentrations was considered in the sensitivity assessment (summarized in Table F.29).
- Moose – One moose sample obtained from the voluntary sampling had an arsenic level of 0.65 mg/kg wet weight. This sample was determined to be an outlier. The sensitivity analysis examined the effect of consuming moose meat at this concentration.

Table F.29 Summary of arsenic EPCs – sensitivity assessments for country food

Media	Location	Concentration (mg/kg ww) Arsenic	Statistic	Remarks
Maximum Concentration Assumption				
Moose	All Areas	0.07	Maximum of six samples	Assumes arsenic bioaccessibility assumption of 50%
Hare	All Areas	0.09	Maximum of five samples	Assumes arsenic bioaccessibility assumption of 50%
Ptarmigan/Grouse	All Areas	0.29	Maximum of eight samples	Assumes arsenic bioaccessibility assumption of 50%; arsenic concentration is based on the geometric mean due to the skewed data set
Duck	Measured	0.07	Maximum of five samples for duck and goose	Assumes arsenic bioaccessibility assumption of 50%
Muskrat	Measured	0.06	Maximum of four beaver and muskrat samples	Assumes arsenic bioaccessibility assumption of 50%

F.5.1.1 Exposure Point Concentrations by Location

Air quality monitoring in the area has shown that the concentrations in Yellowknife are similar (see Appendix B), and the values used in the assessment are provided in this section for the various locations.

There are no measured indoor dust samples for use in the HHRA and, therefore, assumptions were made to estimate an indoor dust concentration at the receptor locations. There are a number of published studies that discuss how indoor dust concentrations can be derived from outdoor soil concentrations. Oomen and Lijzen (2004) provides a summary of various research papers, published in the late 1980s to late 1990s, that have reported the contribution of exterior soil to interior house dust. The percent of soil in house dust ranges from 8% (Sterling et al. 1998) to >80% (Hawley 1985). Based on an analysis of these studies, Oomen and Lijzen (2004) conclude that most studies suggest that approximately 30% to 50% of house dust originated from exterior soil. They also note that the U.S. EPA (1998) Integrated Exposure Uptake Biokinetic (IEUBK) model for lead uses a default value of 70% (i.e., 0.7 g soil/g dust), which is based on an analysis of empirical data describing the relationship between soil and dust lead concentrations measured from a variety of residential communities. Based on all of this information, Oomen and Lijzen (2004) indicate that a range of 30% to 70% of exterior soil in house dust is a good estimate for the exposure assessment of house dust.

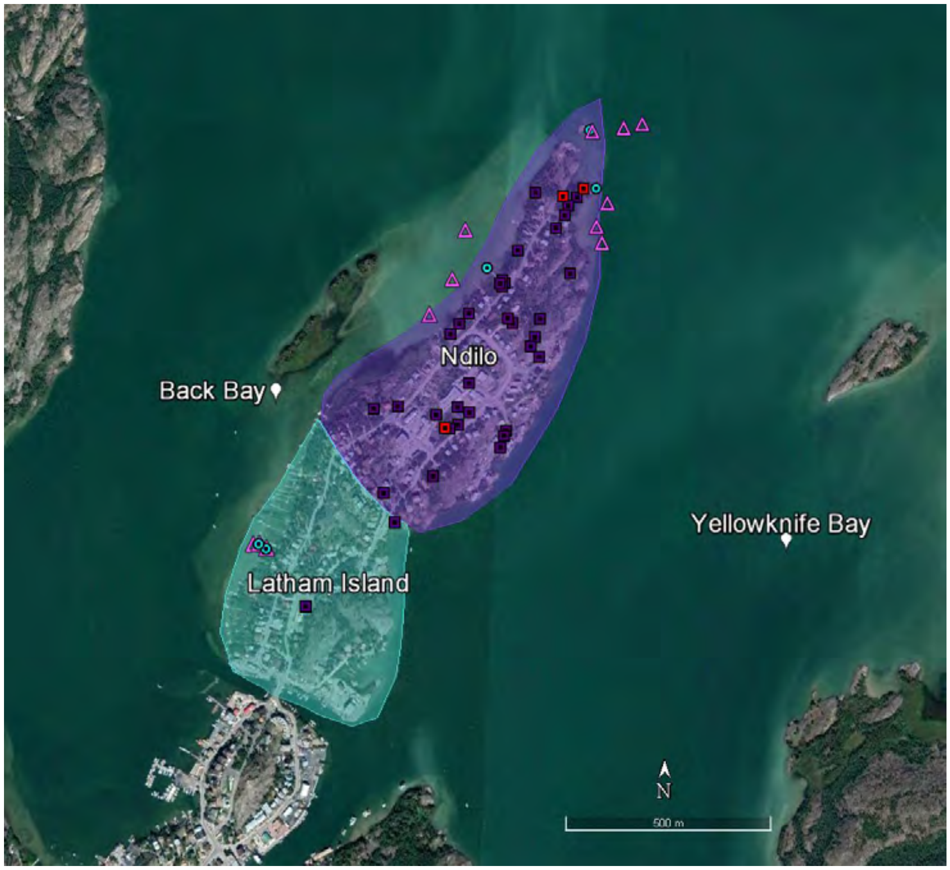
Partridge (2016) conducted studies near a smelter site in Colorado and found that the data from his study demonstrated that only about 32% of the outdoor soil was found in indoor dust, indicating that the IEUBK (U.S. EPA 1998) default assumption of 70% may be conservative. Calabrese and Stanek (1992) also determined that approximately 31% of outdoor soil is found in indoor dust.

Based on this discussion, the default U.S. EPA value of 70% was used to determine the concentration of arsenic, antimony, and manganese in indoor dust from outdoor soil and represents an upper range of the reported literature studies.

Ndilo

The sampling locations for water, soil, and sediments for Ndilo are shown on Figure F.18. As seen from the figure, there is adequate soil coverage to develop a reasonable estimate of soil exposure. It should be noted that the samples shown in the figure only represent shallow soil samples (<10cm depth). Similarily, the sediment samples represent a reasonable estimate of the wading scenario. Yellowknife Bay is quite large and the three sampling locations for water are reasonable. It should be noted that the concentrations of arsenic, antimony, and manganese in North Yellowknife Bay are all below Health Canada drinking water guidelines. The EPCs used in the risk assessment for Ndilo are shown in Table F.31. For soils, there were enough samples that the 95% UCLM was used to represent exposure. For sediment, the exposure was represented by the maximum concentration.

Figure F.18 Sampling locations for water, soil, and sediments in Ndilo



Several arsenic "hot spots" have been identified in soils in the community of Ndilo (indicated in red in Figure F.18 above). Therefore, a sensitivity analysis was conducted to evaluate the impact of remediating the three highest "hot spots" in the Ndilo community. The arsenic concentrations associated with this sensitivity analysis are also included in Table F.31.

Latham Island

The sampling locations for water, soil, and sediments for Latham Island are shown on Figure F.18. As seen from the figure, there are very few samples available. Since Latham Island is so close to Ndilo, the samples were consolidated together to calculate the Latham Island exposure. The sediment samples in Latham Island were specifically collected for the risk assessment to address concerns about children wading at this location. It should be noted that the concentrations of arsenic, antimony, and manganese in Back Bay are all below Health Canada drinking water guidelines.The EPCs used in the risk assessment are shown in Table F.32. There are enough soil and sediment samples that the 95% UCLM was used to represent exposure.

Dettah

The sampling locations for water, soil, and sediments for Dettah are shown on Figure F.19. As seen from the figure, there are not many soil samples available; however, these samples represent the only data that has been collected. The water and sediment samples were considered to be adequate to represent the wading scenario and the drinking water scenario. It should be noted that the concentrations of arsenic, antimony, and manganese in South Yellowknife Bay are all below Health Canada drinking water guidelines. The EPCs used in the risk assessment are shown in Table F.33. There are only a small number of soil samples available at Dettah, and arsenic was the only COPC measured. The two highest arsenic soil concentrations were from the hill in Dettah and the Marina. None of these locations are where people live. Thus, a 95% UCLM was developed to represent the residential exposure scenario in Dettah. The maximum concentration was used to represent the sediment exposure. Two additional soil samples were collected in Dettah as shown in Appendix P.

Figure F.19 Sampling locations for water, soil, and sediments in Dettah

City of Yellowknife

The sampling locations for soil samples for City of Yellowknife are shown on Figure F.20. These locations only represent sampling locations where coordinates are available.

Antimony and manganese EPCs were based on these sampling locations. For arsenic, a total of 260 soil samples were used to develop the EPCs. Thus, the available data represented a reasonable estimate of soil exposures. The EPCs used in the risk assessment are shown in Table F.34. These were represented by the 95% UCLM.

In addition to considering the exposure from living in Yellowknife, additional evaluations were carried out related to camping and swimming/wading activities at the Fred Henne Campground and Long Lake. Figure F.21 shows the locations of the soil, water, and sediment sampling locations, and Table F.35 provides the EPCs used in the assessment. The arsenic soil concentrations at the Fred Henne Campground are below background and, thus, anyone camping at this location will not experience increased risk. The maximum measured sediment concentration was used to represent the exposure while wading and the 95% UCLM of measured water concentrations was used to represent exposure while swimming.

Figure F.20 Soil sampling locations in City of Yellowknife

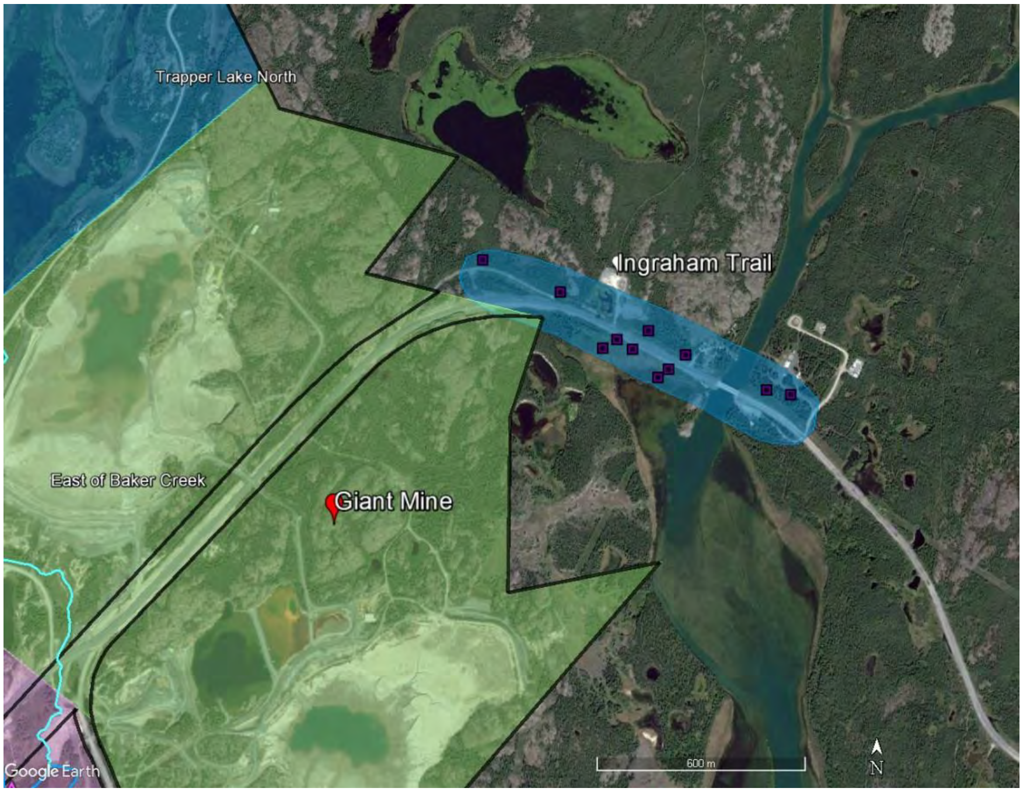
Figure F.21 Soil, water, and sediment sampling locations in Fred Henne Campground and Long Lake

Ingraham Trail

The sampling locations for soil samples for Ingraham Trail near Giant Mine are shown on Figure F.22. These locations are considered to represent exposures for people living along this part of the Trail. The EPCs for soil used in the risk assessment are shown in Table F.36. The 95th percentile value of the data set was used to represent the residential exposure.

Additional soil samples were collected along the Ingraham Trail as part of studies by Queen's University (Jamieson et al. 2017), these locations are shown in Appendix P. As seen from the information in Appendix P, the EPCs developed below are higher than the EPCs with the additional data provided in Appendix P and thus represents a conservative estimate of the EPCs on the Ingraham Trail.

Figure F.22 Soil sampling locations on Ingraham Trail near Giant Mine



Former Townsite

The sampling locations for soil and sediment samples at the former Townsite are shown on Figure F.23. These samples were used to evaluate the unrealistic scenario that someone would live at this location without any remediation. The sediment samples were used to assess a wading scenario. This wading scenario also accounts for someone currently using the boat launch or the nearby marina, as the sediment concentrations were considered to be representative of conditions in those areas. The EPCs used in the risk assessment are shown in Table F.37. The 95% UCLM was used to represent exposures at the Townsite.

Figure F.23 Soil and sediment sampling locations at former Townsite

Drinking Water

All receptor locations were assumed to obtain water from the municipal supply. These concentrations are summarized in Table F.30. Additional assessments were completed for the ingestion of drinking water from South Yellowknife Bay (for Dettah receptors), North Yellowknife Bay (for Ndilo receptors), and Back Bay (for Latham Island receptors). All the concentrations in the table are below the Health Canada drinking water guidelines.

Table F.30 Summary of current EPCs – drinking water

Media	Location	Concentration (mg/L)			Statistic
		Arsenic	Antimony	Manganese	
Drinking Water	Municipal	0.002	0.0002	0.002	95% UCLM except Antimony (Yellowknife River BG, 95%ile)
	South Yellowknife Bay	0.001	0.0001	0.001	95% UCLM
	North Yellowknife Bay	0.002	0.0004	0.003	95% UCLM
	Back Bay	0.002	0.0003	0.003	95% UCLM

Table F.31 Summary of current EPCs – Ndilo

Media	Concentration			Units	Location	Statistic	Remarks
	Arsenic	Antimony	Manganese				
Sediment	32	2.7	544	mg/kg dw	Ndilo (N Yellowknife Bay)	Max	-
Air	$2x10^{-6}$	$3x10^{-6}$	0	mg/m^3	Ndilo Community	Mean, TSP, Ndilo	Based on monitoring data
Soil	429	45.0	25.0	mg/kg dw	Ndilo Community	95% UCLM	-
	370	-	-	mg/kg dw	Ndilo Community, with remediation of "hot spots"	95% UCLM	-
Dust	300	31.5	18	mg/kg dw	Ndilo Community	-	Factor of 0.7 applied to outdoor soil based on U.S. EPA (1998)

Table F.32 Summary of current EPCs – Latham Island

Media	Concentration			Units	Location	Statistic	Remarks
	Arsenic	Antimony	Manganese				
Sediment	18	0.8	260	mg/kg dw	Latham Island	95% UCLM	-
Air	$2x10^{-6}$	$3x10^{-6}$	0	mg/m^3	Latham Island	Mean, TSP, Ndilo except geometric mean for Arsenic	Based on monitoring data from Ndilo
Soil	385	38.5	27.3	mg/kg dw	Latham Island	95% UCLM	-
Dust	270	27.0	19	mg/kg dw	Latham Island	-	Factor of 0.7 applied to outdoor soil based on U.S. EPA (1998)

Table F.33 Summary of current EPCs – Dettah

Media	Concentration			Units	Location	Statistic	Remarks
	Arsenic	Antimony	Manganese				
Sediment	7.0	0.48	348	mg/kg dw	Dettah (S Yellowknife Bay)	Max	-
Air	$2x10^{-6}$	$3x10^{-6}$	0	mg/m^3	Dettah Community	Mean, TSP, Yellowknife and Ndilo	Based on monitoring data in community
Soil	76	6.2	59.0	mg/kg dw	Dettah Community	Max, except arsenic based on BCA bootstrap UCLM	-
Dust	53	4.3	41	mg/kg dw	Dettah Community	-	Factor of 0.7 applied to outdoor soil based on U.S. EPA (1998)

Table F.34 Summary of current EPCs – City of Yellowknife

Media	Concentration			Units	Location	Statistic	Remarks
	Arsenic	Antimony	Manganese				
Air	$2x10^{-6}$	$3x10^{-6}$	0	mg/m^3	City of Yellowknife	Mean, TSP, Yellowknife except geometric mean for Arsenic	Based on monitoring data in community
Soil	110	3.7	364.0	mg/kg dw	City of Yellowknife	95% UCLM	-
Dust	77	2.6	255	mg/kg dw	City of Yellowknife	-	Factor of 0.7 applied to outdoor soil based on U.S. EPA (1998)

Table F.35 Summary of current EPCs – Long Lake and Fred Henne Campground

Media	Concentration			Units	Location	Statistic
	Arsenic	Antimony	Manganese			
Sediment	21.4	0.43	56.9	mg/kg dw	Long Lake	Max from along sediments in water along the beach
Soil	74	11	336	mg/kg dw	Campground	95% UCLM
Surface Water	0.05	0.002	0.20	mg/L	Long Lake	95% UCLM

Table F.36 Summary of current EPCs – Ingraham Trail

Media	Concentration			Units	Location	Statistic	Remarks
	Arsenic	Antimony	Manganese				
Air	$2x10^{-6}$	$3x10^{-6}$	0	mg/m^3	City of Yellowknife	Mean, TSP, Yellowknife except geometric mean for Arsenic	Based on monitoring data in community
Soil	96	38.2	285.0	mg/kg dw	Ingraham Trail	95^{th} percentile	-
Dust	67	26.7	199	mg/kg dw	Ingraham Trail	-	Factor of 0.7 applied to outdoor soil based on U.S. EPA (1998)

Table F.37 Summary of current EPCs – Townsite

Media	Concentration			Units	Location	Statistic	Remarks
	Arsenic	Antimony	Manganese				
Sediment	935	0	0	mg/kg dw	Giant Townsite	95% UCLM	-
Air	$2x10^{-6}$	$3x10^{-6}$	0	mg/m^3	City of Yellowknife	Mean, TSP, Yellowknife except geometric mean for Arsenic	-
Soil	991	76.0	1179	mg/kg dw	Giant Townsite	95% UCLM	-
Dust	694	53.2	825	mg/kg dw	Giant Townsite	-	Factor of 0.7 applied to outdoor soil based on U.S. EPA (1998)
Recreational Soil	2766	162	969	mg/kg dw	Giant Mine	95% UCLM	-

F.5.2 Future

The remedial actions at the site involve the capping of the tailings, the remediation of arsenic concentrations in the disturbed areas of the site to the GNWT industrial criterion, the active management, in the form of excavation and/or fencing, of areas with arsenic concentrations above 3,000 mg/kg, and moving the water treatment discharge pipe to near the mouth of Baker Creek. These remedial activities will not have any effect on the unique location exposures described above. In addition, remedial activities will not impact on the concentrations in the country foods, as none of the samples were obtained from the Giant Mine. The effect of the treated water discharge near the mouth of Baker Creek was evaluated using modelling to determine what the water and sediment concentrations would be in Back Bay and North Yellowknife Bay. It should be noted that the future predicted concentrations are no different that the range of current measured concentrations.

The EPCs associated with future conditions for the assessment are provided in Table F.38. The following sections provide rationale for the derivation of the future EPCs for sediment and soil.

Table F.38 Summary of future EPCs

Media	Concentration			Units	Location	Remarks
	Arsenic	Antimony	Manganese			
Sediment	30	-	-	mg/kg dw	Townsite	Near shore sediments dredged and covered; concentration of 30 mg/kg dw
	40	-	-	mg/kg dw	North Yellowknife Bay	Based on modelling (Appendix K).
Berries	1.1	0.28	350	mg/kg ww	Giant Mine	Calculated using transfer factor approach and remediated soil concentration
Soil	160	16	220	mg/kg dw	Townsite	Soil remediated to GNWT residential criterion
	747	49	1083	mg/kg dw	Giant Mine	Calculated assuming areas with arsenic concentrations greater than 3,000 mg/kg are fenced (inaccessible)

Soil

For the former Townsite, the GMRP indicates that arsenic in the soils will be cleaned up to the GNWT residential criterion of 160 mg/kg. Soil remedial objectives have not been established for antimony and manganese and, thus, assumptions were made as to what the future concentrations will be. Based on the measured soil data (Table F.39) at two locations in the former Townsite where arsenic concentrations are close to the residential GNWT criterion (YK126 and YK302), the antimony soil concentrations are about 10%

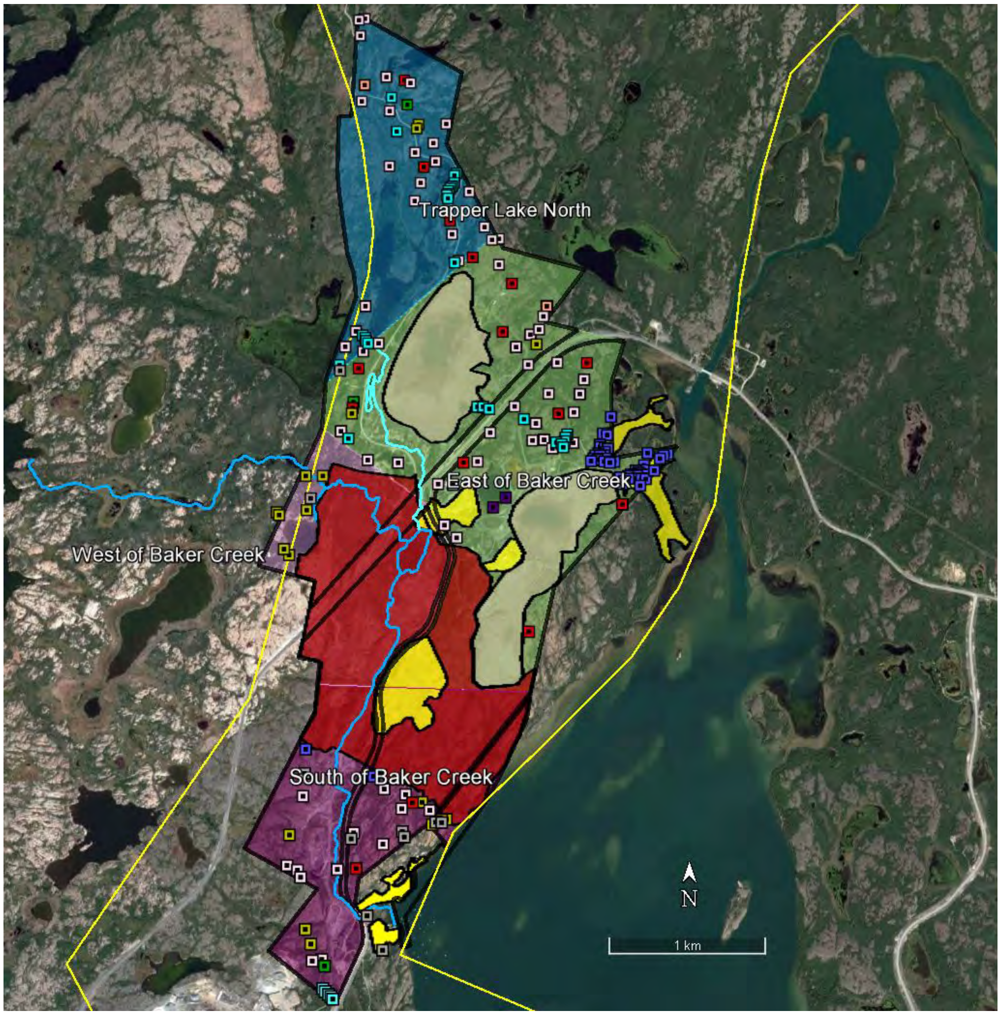
of the arsenic soil concentrations, and manganese soil concentrations are approximately 40% higher than arsenic soil concentrations. Therefore, in the future after remediation, the antimony concentrations at the former Townsite are assumed to be 16 mg/kg and the manganese concentrations 220 mg/kg.

Table F.39 Summary of selected former Townsite soil data

COPC	Concentration (mg/kg dw)	
	YK126	YK302
Arsenic	161	163
Antimony	21	14
Manganese	222	Not available

A recreational scenario was also considered for people going onto the remediated Giant Mine in the future for exercise or other recreational activities. The remedial activities on the site were taken into account in determining the future concentrations of arsenic, antimony, and manganese in the soil. Figure F.24 shows the samples considered in deriving the concentrations at the Giant Mine in the future. For the future scenario, it was assumed that people will not be able to go into the red area, as this area has arsenic concentrations over 3000 mg/kg and will be undergoing active management. The yellow areas on the Giant Mine in Figure F.24 were assumed to be remediated to an arsenic concentration of 340 mg/kg. The tailings were assumed to be covered with rock and to not represent any potential for exposure. No remedial criteria have been developed for antimony and manganese; thus, the future conditions are based on all of the samples shown on Figure F.24. To develop the arsenic concentrations, all the samples shown on Figure F.24 were considered in the data set. In addition, samples in the two yellow areas in East Baker Creek were examined. If the arsenic concentrations exceeded 340 mg/kg, then the concentrations in those samples were adjusted to 340 mg/kg. All other samples with arsenic measured concentrations were left unchanged. The 95% UCLM for arsenic was then derived for the entire dataset, which was considered to represent exposure for someone going on the site to undertake recreational activities. This approach represents an overestimate of the potential exposure, as there are parts of the site that are heavily forested and have wetlands that cannot easily be accessed. For sediments, the GMRP indicates that dredging will occur in the shoreline sediments along the Townsite and near the mouth of Baker Creek. Deeper sediments will be covered. Discussions with the GMRP Team indicated that it is expected that arsenic concentrations in this dredged area would be approximately 30 mg/kg. Table F.38 provides the future EPCs used in the risk assessment.

Figure F.24 Samples considered in deriving future concentrations for HHRA for Giant Mine



F.5.3 Background

Background concentrations for soil, surface water, and sediment were determined as described in Appendix C. Table F.40 provides the EPCs for background used in the assessment.

Table F.40 Summary of EPCs – background

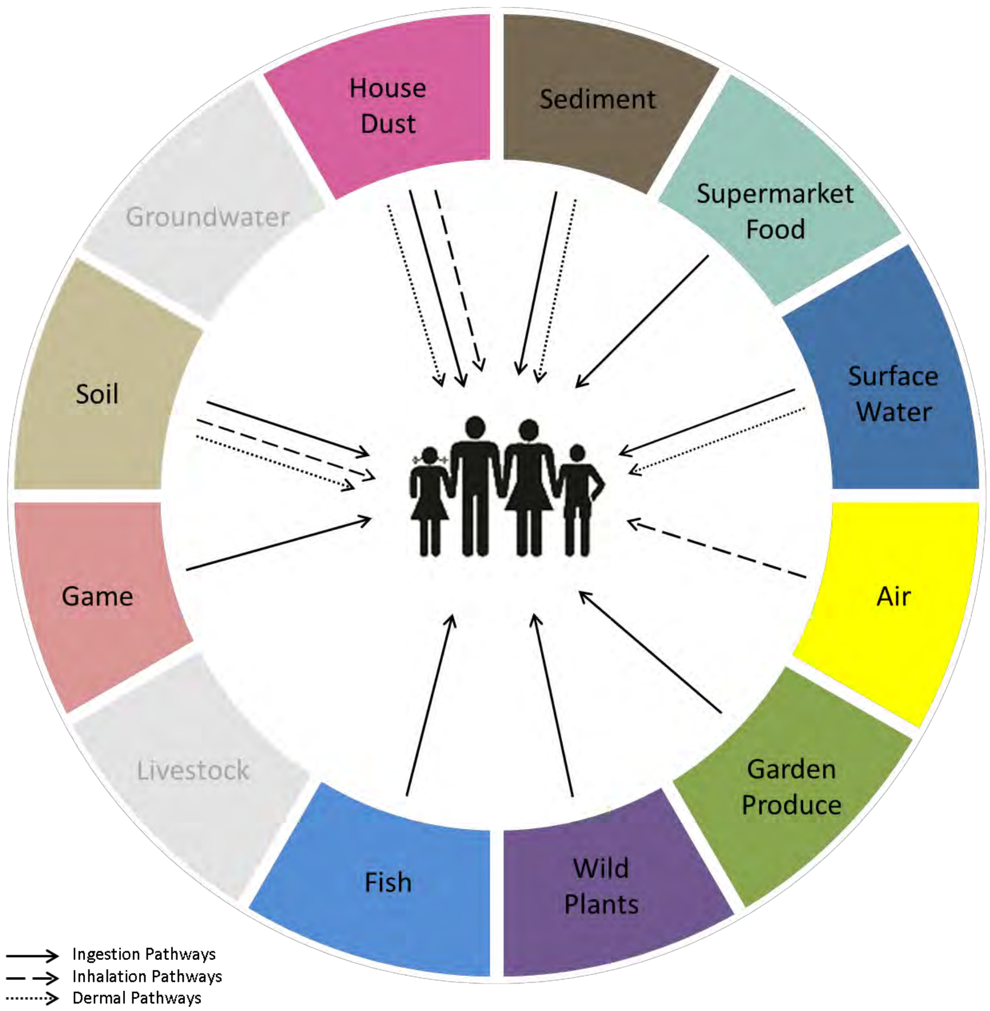
Media	Concentration			Units	Location	Statistic	Remarks
	Arsenic	Antimony	Manganese				
Drinking Water	0.002	0.0002	0.002	mg/L	Municipal	95% UCLM except antimony (Yellowknife River background, 95th percentile)	-
Sediment	23	1.2	434	mg/kg dw	Background	95% UCLM	-
Air	$1x10^{-6}$	0	0	mg/m^3	Background	Mean	Mean background in air in Canada in urban areas
Soil	94	2.2	165	mg/kg dw	Yellowknife Greenstone Belt	95% UCLM except manganese (minimum)	-
	41	0.9	165	mg/kg dw	Regional	95% UCLM except manganese (minimum)	-
Dust	29	2.0	15	mg/kg dw	Regional	-	Factor of 0.7 applied to outdoor soil based on U.S. EPA (1998)
Berries	0.03	0.001	24.4	mg/kg ww	Background	Sample from Tibbit Lake, Ingraham Trail (>50km from site)	-
Mushroom	0.13	0.04	5.9	mg/kg ww	Background	95% UCLM	-
Fish	0.24	0.03	0.26	mg/kg ww	Background	95% UCLM except antimony (Max/95th percentile)	-
Moose	0.01	0.002	0.22	mg/kg ww	Background	Average of two samples > 80 km from site	-
Organ	-	-	-	mg/kg ww	Background	No data	-
Hare	0.02	-	-	mg/kg ww	Background	Lowest measured value except antimony, manganese (no data)	-
Grouse	0.004	0.002	0.38	mg/kg ww	Background	Average of three samples 100 km from site	-
Duck	0.03	0.002	0.40	mg/kg ww	Background	Average for duck and goose	-
Muskrat	1.1	0.53	1.2	mg/kg ww	Background	One sample for beaver from Drybones Bay	-

Note: No data for medicinal tea.

F.6 Equations

The HHRA considered various pathways of exposure, described in Appendix E and illustrated in Figure F.25. The exposure equations used in the assessment are provided in the following section for the human health risk assessment. The exposure assessment considered dermal exposures to dust, soil, sediment, and surface water while swimming and, similarly, ingestion pathways for water, food, soil, incidental sediment, and water ingestion while swimming and wading. The exposure equations used in the assessment were obtained from Health Canada (2010a, 2010b) and are provided below. A sample calculation is provided in Section F.7. The inhalation pathway was assessed via a comparison of air concentrations with reference concentrations for toxicity; therefore, equations for the inhalation pathway are not provided.

Figure F.25 Exposure pathways for HHRA



F.6.1 Dermal Pathways

Dermal exposure for contact with indoor dust, soil, sediment, and water while swimming was calculated using the following equation:

$$I_{dermal}^{media} = \frac{C_{media} \times DLR \times RAF \times ED \times BioA}{BW} \qquad \text{(F-1)}$$

Where:

I_{dermal}^{media}	=	Intake of COPC in media (dust, soil, sediment, surface water) through the dermal pathway (mg/(kg-d))
C_{media}	=	Concentration of COPC in media (dust, soil, sediment) (mg/(kg dw)) or water (mg/L)
DLR	=	dermal loading rate (kg/d or L/hr)
RAF	=	Dermal absorption factor (-)
BW	=	Body weight (kg)
BioA	=	Bioaccessibility assumption (-)
ED	=	Exposure duration, as follows for each media: sediment (7 d/wk per 7 d/wk), dust (7 d/wk per 7 d/wk), soil (7 d/wk per 7 d/wk), recreational soil (2 d/wk per 7 d/wk), swimming (1 hr/d, 3 d/wk per 7 d/wk).

Dermal absorption factors (RAF) are available from literature and are provided in Table F.41 for the COPC considered in the HHRA.

Table F.41 Dermal RAFs

COPC	Dermal RAF	Reference
Arsenic	0.03	Health Canada (2010c)
Antimony	0.1	MOE (2011)
Manganese	0.01	Health Canada (2010c), default

F.6.2 Ingestion Pathways

Water ingestion, as drinking water and incidentally while swimming, was calculated using Equation F-2:

$$I_{wat} = \frac{C_{wat} \times IR_{wat} \times ED}{BW} \qquad \text{(F-2)}$$

Where:

I_{wat}	=	Intake of COPC through the ingestion of water (mg/(kg-d))
C_{wat}	=	Concentration of COPC in water (mg/L)
IR_{wat}	=	Drinking water ingestion rate (L/d) or incidental swimming ingestion (L/hr)
BW	=	Body weight (kg)
ED	=	Exposure duration, as follows for: drinking water (7 d/wk per 7 d/wk), swimming (1 hr/d,, 3 d/wk per 7 d/wk).

Food ingestion was calculated using Equation F-3:

$$I_{foodx} = \frac{C_x \times IR_x \times F_{food} \times BioA}{BW} \qquad \text{(F-3)}$$

Where:

I_{foodx}	=	Intake of COPC through the ingestion of food (mg/(kg-d)), where 'x' is berry, medicinal tea, mushroom, fish, moose, hare, grouse, duck, or muskrat
C_x	=	Concentration of COPC in 'x' (mg/(kg ww))
IR_x	=	Ingestion rate of 'x' ((kg ww)/d)
F_{food}	=	Fraction of time eating food from location (varies)
BW	=	Body weight (kg)
BioA	=	Bioaccessibility assumption (-)

Dust, soil, and sediment ingestion was calculated using Equation F-4:

$$I_x = \frac{C_x \times IR_x \times ED \times BioA}{BW} \qquad \text{(F-4)}$$

Where:

I_x	=	Intake of COPC through the ingestion of x: dust, soil, or sediment (mg/(kg-d))
C_x	=	Concentration of COPC in x: dust, soil, or sediment (mg/(kg dw))
IR_x	=	Ingestion rate of x: dust, soil, or sediment ((kg dw)/d)
BW	=	Body weight (kg)
BioA	=	Bioaccessibility assumption (-)
ED	=	Exposure duration, as follows for each media: sediment (2 hrs/d per 24 hrs/d, 7 d/wk per 7 d/wk), dust (7 d/wk per 7 d/wk), soil (5 d/wk per 7 d/wk), recreational soil (2 d/wk per 7 d/wk).

F.7 Exposure Results

The intakes of arsenic, antimony, and manganese were estimated using the exposure assumptions and equations outlined above. Exposures via the inhalation pathway are not assessed as intakes, but rather in comparison to reference concentrations associated with toxicological effects. Therefore, the inhalation pathway is not included in the following exposure results. The sample calculations provided in Appendix I illustrate that the inhalation pathway is insignificant in the current assessment. Figure F.26 presents a summary of the estimated intakes for arsenic for the typical country food diet receptor from Ndilo. This figure illustrates that the toddler is the most highly exposed life stage. Therefore, for presentation purposes, the estimated intakes for toddlers under the base case scenarios are provided in Figure F.27, Figure F.29, and Figure F.30 for total arsenic, antimony, and manganese, respectively. Estimated intakes for all life stages and scenarios are provided in Table F.42, Table F.43, and Table F.44 for total arsenic, antimony, and manganese, respectively.

Figure F.26 Estimated total arsenic intakes for Ndilo Country Food scenario

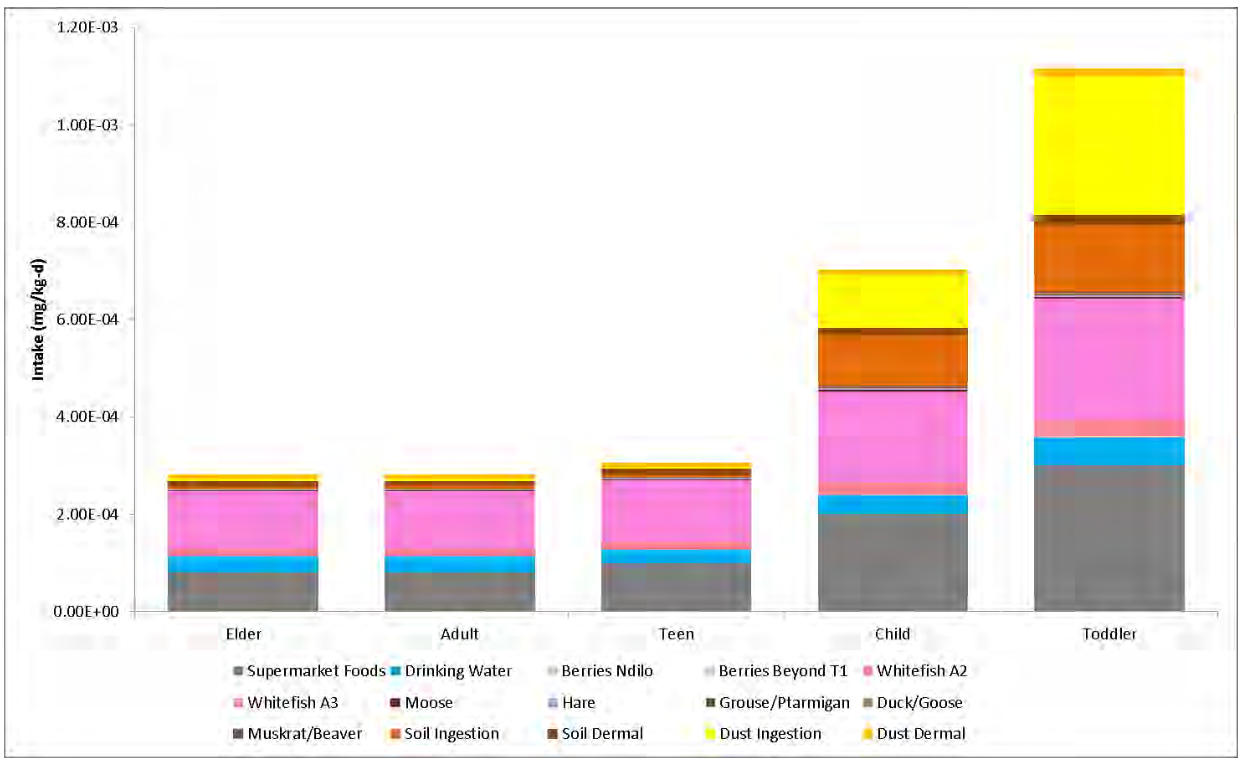
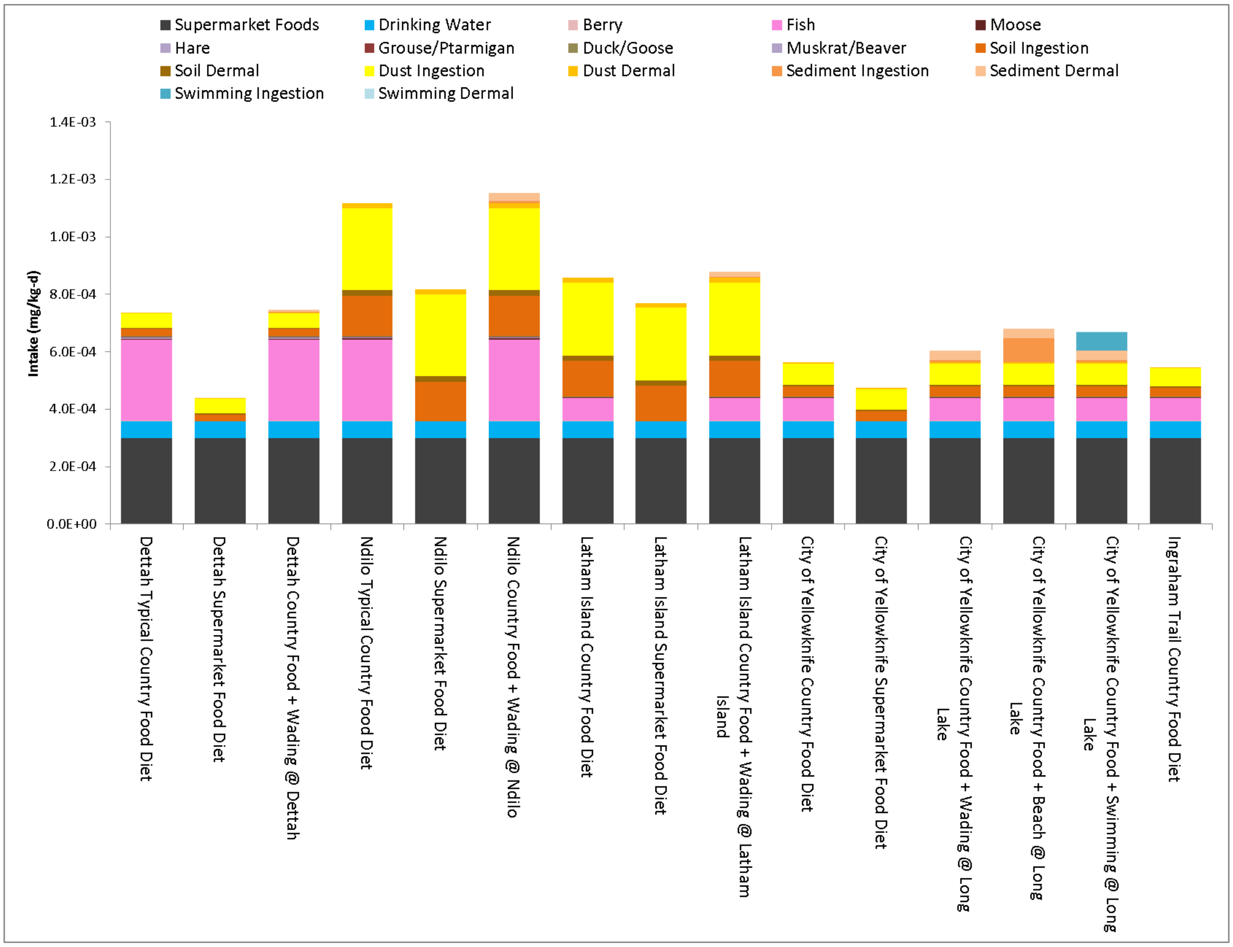


Figure F.27 shows that, after supermarket foods, toddlers are most exposed to arsenic in fish, with soil and indoor dust also contributing to the total intake for arsenic. Intakes to indoor dust and soil vary depending on the receptor location, as arsenic concentrations in soil vary by location. Estimated intakes for all life stages and scenarios are provided in Table F.42.

Figure F.27 Estimated intakes for toddler – total arsenic



Because arsenic is evaluated on an incremental basis, Figure F.28 is provided to illustrate the relevant pathways of exposure for incremental arsenic. The incremental arsenic exposure is obtained by subtracting the background arsenic exposure (Figure F.31) from the estimated total arsenic intakes (Figure F.27). Figure F.28 shows that, since a number of the country foods (such as fish) are at background arsenic concentrations, food pathways contribute marginally to the overall incremental intake of arsenic. Table F.45 provides a breakdown of the incremental intakes by food and other ingestion pathways. Thus, at the residential locations, exposures to indoor household dust and soil, through both ingestion and skin contact, dominate the intakes of incremental arsenic by the toddler receptor. For the wading or beach scenarios, dermal contact with sediment is shown to contribute to the intake of incremental arsenic, as does the ingestion of water at

Long Lake for the swimming scenario. These exposures will not be altered by any of the remedial activities at the Giant Mine.

Figure F.28 Estimated intakes for toddler – incremental arsenic

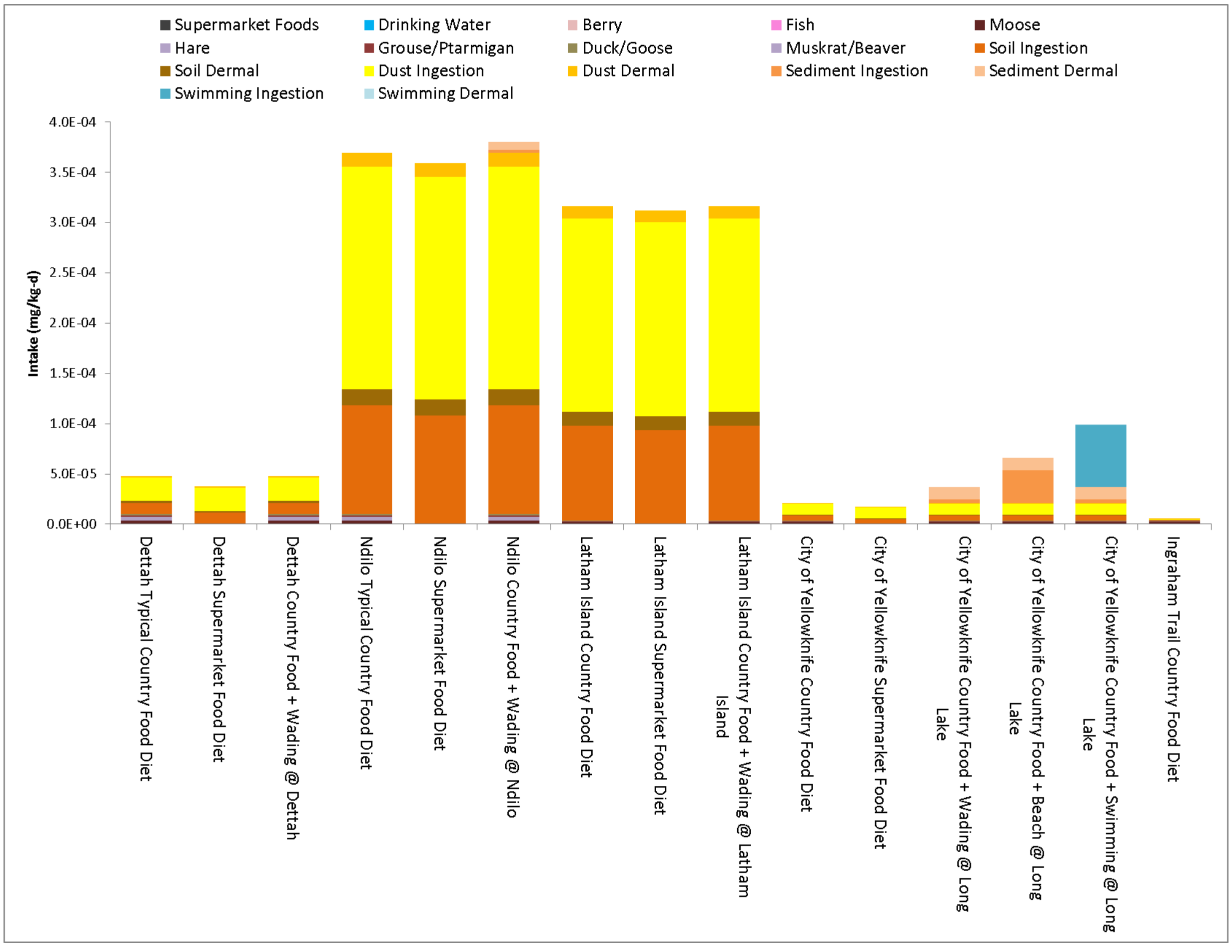


Figure F.29 shows that, after supermarket foods, toddlers are most exposed to antimony in fish. For some locations, antimony in soil and indoor dust contributes to the total exposure via the ingestion and skin contact pathways. Estimated intakes for all life stages and scenarios are provided in Table F.43.

Figure F.29 Estimated intakes for toddler – antimony

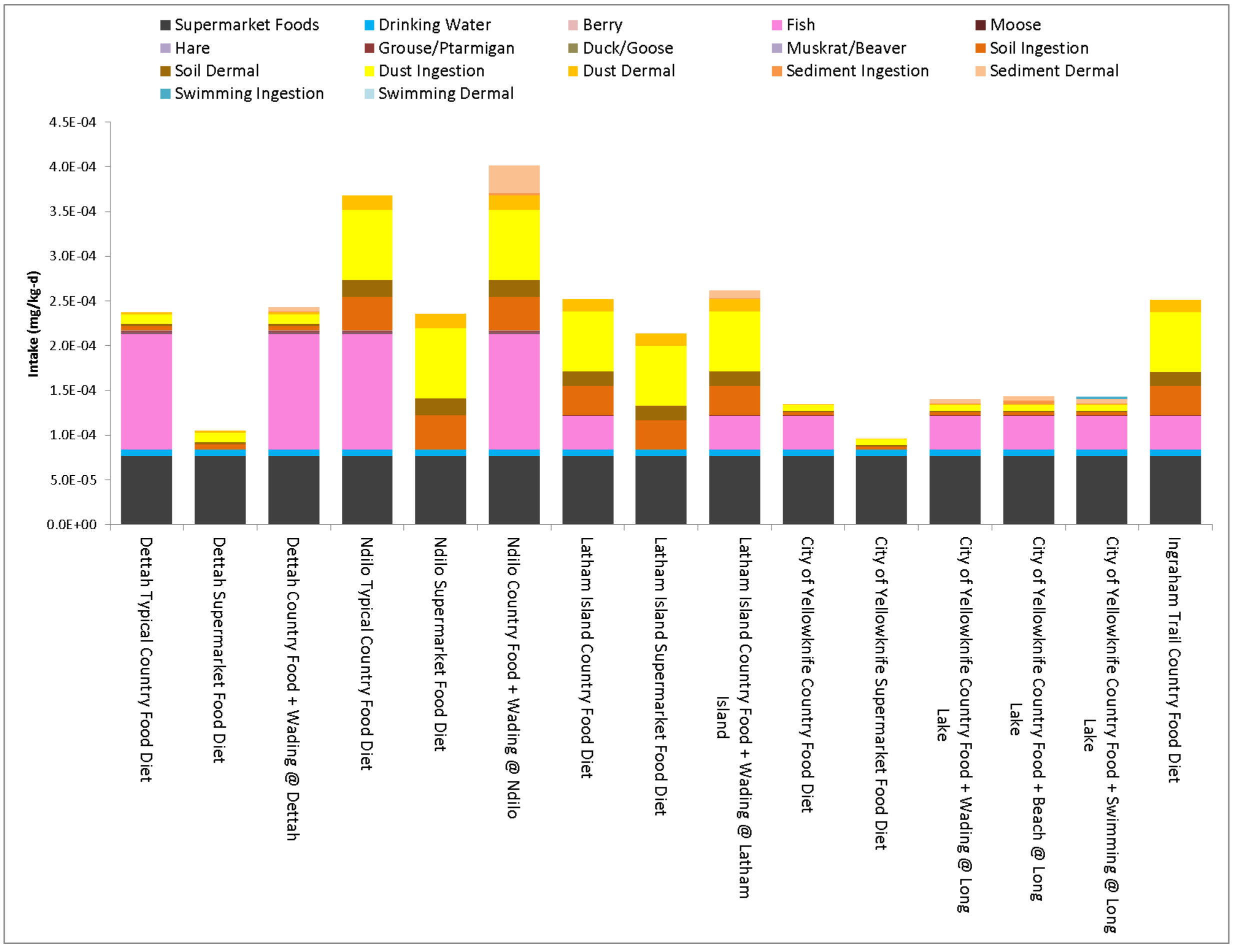


Figure F.30 shows that supermarket foods contribute almost completely to the total intake of manganese for toddlers. Other pathways such as drinking water, air, country foods, soil, and indoor dust are essentially negligible compared with supermarket food intakes. Estimated intakes for all life stages and scenarios are provided in Table F.44.

Figure F.30 Estimated intakes for toddler – manganese

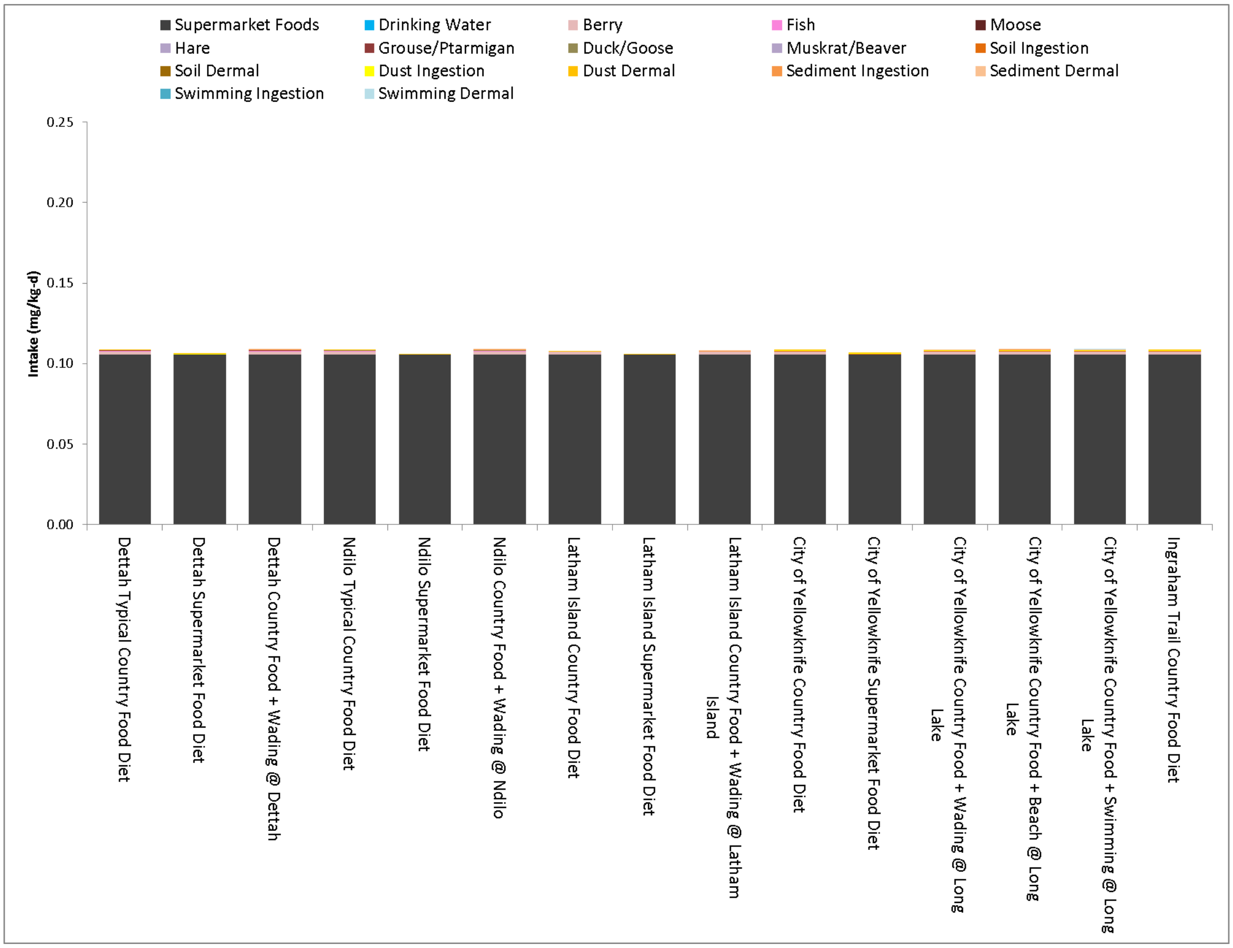
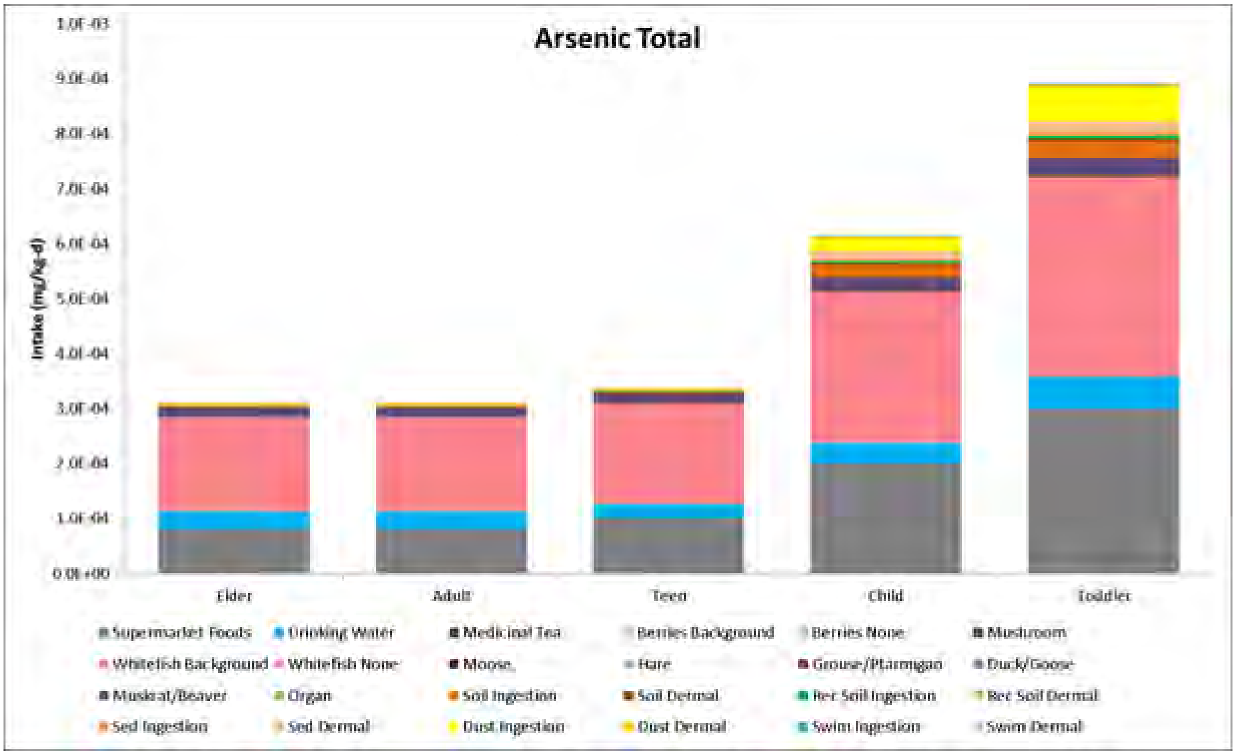
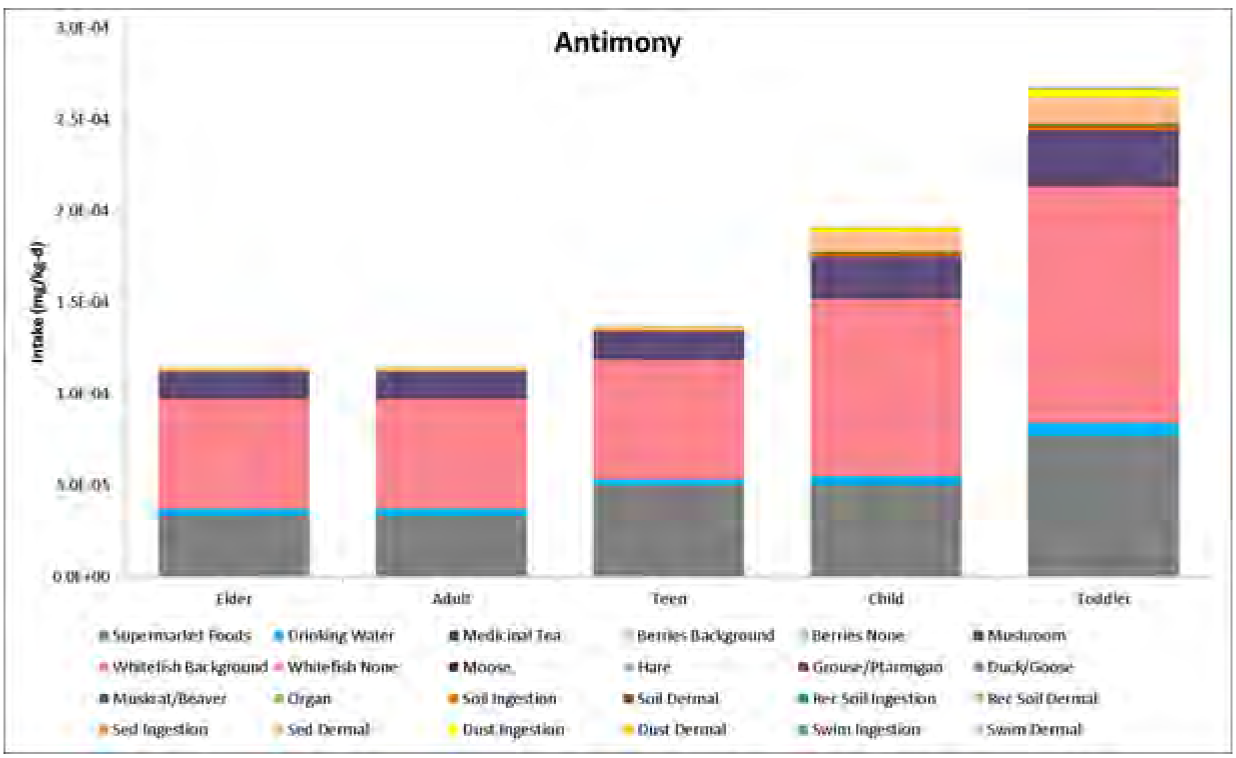
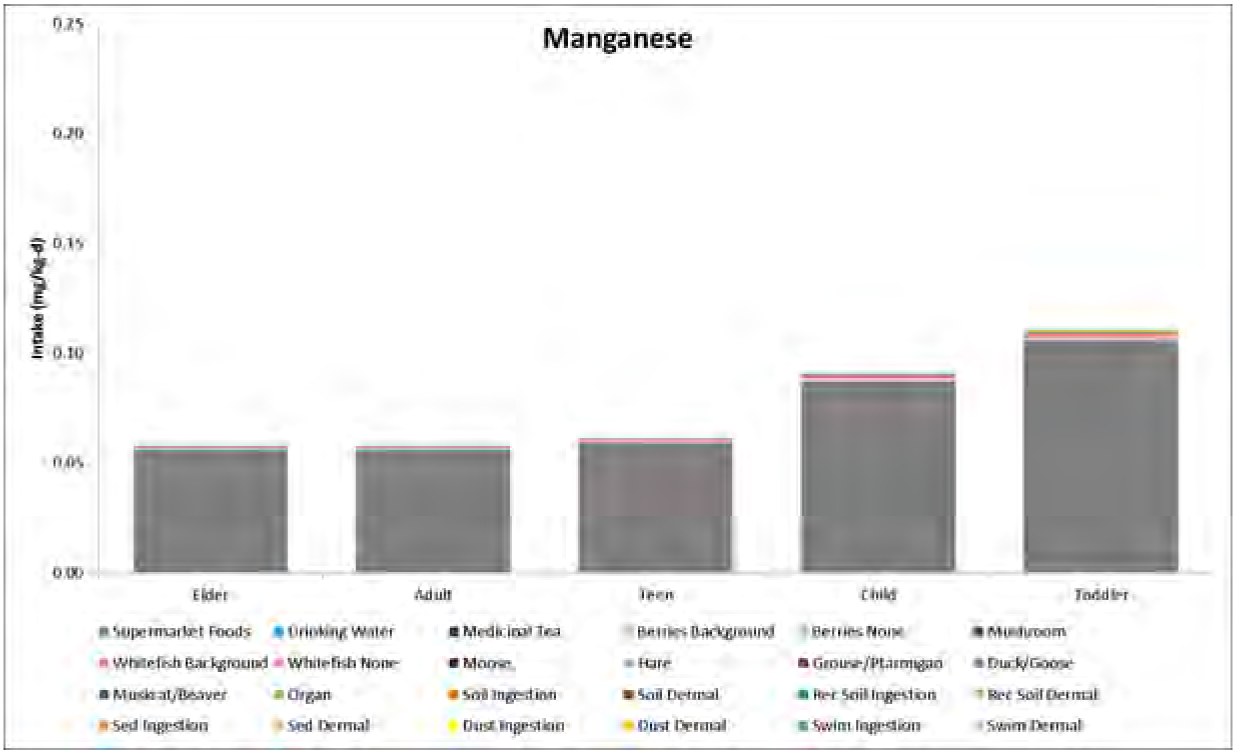


Figure F.31 shows estimated intakes associated with background exposures for the five life stages considered in the HHRA for total arsenic, antimony, and manganese. Intakes for total arsenic from background are dominated by the intake of arsenic in fish and supermarket foods, and, to a lesser extent, drinking water. Background exposures to antimony are similarly dominated by intakes from fish and supermarket foods, and, to a lesser extent, muskrat/beaver. Background exposures to manganese are dominated by the intake of manganese in supermarket foods. Estimated intakes for all life stages and scenarios are provided in Table F.46.

Figure F.31 Estimated intakes for background







Background exposures are, in some cases, underestimated due to a lack of available data. Background air concentrations for antimony and manganese were assumed to be zero in the absence of other information. Similarly, there were no data to determine the background concentrations of antimony and manganese in hare flesh, moose organs, or grouse organs.

As mentioned, estimated intakes for all life stages and scenarios are provided in Table F.42, Table F.43, and Table F.44 for arsenic, antimony, and manganese, respectively. Intakes associated with background exposures are provided in Table F.46. Exposures via the inhalation pathway are not assessed as intakes, but rather in comparison to reference concentrations associated with toxicological effects. Therefore, the inhalation pathway is not included in the tables. The sample calculations provided in Appendix I illustrate that the inhalation pathway is insignificant in the current assessment.

Table F.42 Estimated intakes by pathway – total arsenic

Scenario	Toddler Intake (mg/kg-d)			Child Intake (mg/kg-d)			Teen Intake (mg/kg-d)			Adult Intake (mg/kg-d)			Elder Intake (mg/kg-d)		
	Ingestion	Dermal	Total	Ingestion	Dermal	Total	Ingestion	Dermal	Total	Ingestion	Dermal	Total	Ingestion	Dermal	Total
Base Cases – Typical Diets															
Dettah Typical Country Food Diet	7.3×10^{-4}	6.8×10^{-6}	7.4×10^{-4}	5.0×10^{-4}	4.9×10^{-6}	5.1×10^{-4}	2.8×10^{-4}	3.8×10^{-6}	2.8×10^{-4}	2.5×10^{-4}	3.6×10^{-6}	2.6×10^{-4}	2.5×10^{-4}	3.6×10^{-6}	2.6×10^{-4}
Dettah Supermarket Food Diet	4.3×10^{-4}	6.8×10^{-6}	4.4×10^{-4}	2.8×10^{-4}	4.9×10^{-6}	2.8×10^{-4}	1.3×10^{-4}	3.8×10^{-6}	1.3×10^{-4}	1.1×10^{-4}	3.6×10^{-6}	1.2×10^{-4}	1.1×10^{-4}	3.6×10^{-6}	1.2×10^{-4}
Dettah Country Food + Wading @ Dettah	7.3×10^{-4}	1.3×10^{-5}	7.5×10^{-4}	5.0×10^{-4}	9.7×10^{-6}	5.1×10^{-4}	2.8×10^{-4}	4.4×10^{-6}	2.8×10^{-4}	2.5×10^{-4}	4.2×10^{-6}	2.6×10^{-4}	2.5×10^{-4}	4.2×10^{-6}	2.6×10^{-4}
Ndilo Typical Country Food Diet	1.1×10^{-3}	3.8×10^{-5}	1.1×10^{-3}	6.7×10^{-4}	2.8×10^{-5}	7.0×10^{-4}	2.8×10^{-4}	2.2×10^{-5}	3.1×10^{-4}	2.6×10^{-4}	2.0×10^{-5}	2.8×10^{-4}	2.6×10^{-4}	2.0×10^{-5}	2.8×10^{-4}
Ndilo Supermarket Food Diet	7.8×10^{-4}	3.8×10^{-5}	8.2×10^{-4}	4.5×10^{-4}	2.8×10^{-5}	4.8×10^{-4}	1.3×10^{-4}	2.2×10^{-5}	1.6×10^{-4}	1.2×10^{-4}	2.0×10^{-5}	1.4×10^{-4}	1.2×10^{-4}	2.0×10^{-5}	1.4×10^{-4}
Ndilo Country Food + Wading @ Ndilo	1.1×10^{-3}	6.7×10^{-5}	1.2×10^{-3}	6.8×10^{-4}	5.0×10^{-5}	7.3×10^{-4}	2.9×10^{-4}	2.4×10^{-5}	3.1×10^{-4}	2.6×10^{-4}	2.3×10^{-5}	2.9×10^{-4}	2.6×10^{-4}	2.3×10^{-5}	2.9×10^{-4}
Latham Island Country Food Diet	8.2×10^{-4}	3.4×10^{-5}	8.6×10^{-4}	4.9×10^{-4}	2.5×10^{-5}	5.2×10^{-4}	1.8×10^{-4}	1.9×10^{-5}	2.0×10^{-4}	1.6×10^{-4}	1.8×10^{-5}	1.8×10^{-4}	1.6×10^{-4}	1.8×10^{-5}	1.8×10^{-4}
Latham Island Supermarket Food Diet	7.4×10^{-4}	3.4×10^{-5}	7.7×10^{-4}	4.3×10^{-4}	2.5×10^{-5}	4.5×10^{-4}	1.3×10^{-4}	1.9×10^{-5}	1.5×10^{-4}	1.2×10^{-4}	1.8×10^{-5}	1.4×10^{-4}	1.2×10^{-4}	1.8×10^{-5}	1.4×10^{-4}
Latham Island Country Food + Wading @ Latham Island	8.3×10^{-4}	5.0×10^{-5}	8.8×10^{-4}	5.0×10^{-4}	3.7×10^{-5}	5.3×10^{-4}	1.8×10^{-4}	2.1×10^{-5}	2.0×10^{-4}	1.6×10^{-4}	2.0×10^{-5}	1.8×10^{-4}	1.6×10^{-4}	2.0×10^{-5}	1.8×10^{-4}
City of Yellowknife Country Food Diet	5.5×10^{-4}	9.8×10^{-6}	5.6×10^{-4}	3.6×10^{-4}	7.2×10^{-6}	3.7×10^{-4}	1.7×10^{-4}	5.6×10^{-6}	1.8×10^{-4}	1.6×10^{-4}	5.3×10^{-6}	1.6×10^{-4}	1.6×10^{-4}	5.3×10^{-6}	1.6×10^{-4}
City of Yellowknife Supermarket Food Diet	4.7×10^{-4}	9.8×10^{-6}	4.8×10^{-4}	2.9×10^{-4}	7.2×10^{-6}	3.0×10^{-4}	1.3×10^{-4}	5.6×10^{-6}	1.3×10^{-4}	1.2×10^{-4}	5.3×10^{-6}	1.2×10^{-4}	1.2×10^{-4}	5.3×10^{-6}	1.2×10^{-4}
City of Yellowknife Country Food + Wading @ Long Lake	5.6×10^{-4}	4.3×10^{-5}	6.0×10^{-4}	3.6×10^{-4}	3.2×10^{-5}	4.0×10^{-4}	1.7×10^{-4}	8.6×10^{-6}	1.8×10^{-4}	1.6×10^{-4}	8.1×10^{-6}	1.7×10^{-4}	1.6×10^{-4}	8.1×10^{-6}	1.7×10^{-4}
City of Yellowknife Country Food + Beach @ Long Lake	6.4×10^{-4}	4.3×10^{-5}	6.8×10^{-4}	3.9×10^{-4}	3.2×10^{-5}	4.2×10^{-4}	1.8×10^{-4}	8.6×10^{-6}	1.9×10^{-4}	1.6×10^{-4}	8.1×10^{-6}	1.7×10^{-4}	1.6×10^{-4}	8.1×10^{-6}	1.7×10^{-4}
City of Yellowknife Country Food + Swimming @ Long Lake	6.3×10^{-4}	4.3×10^{-5}	6.7×10^{-4}	3.9×10^{-4}	3.3×10^{-5}	4.3×10^{-4}	1.8×10^{-4}	8.8×10^{-6}	1.9×10^{-4}	1.6×10^{-4}	8.3×10^{-6}	1.7×10^{-4}	1.6×10^{-4}	8.3×10^{-6}	1.7×10^{-4}
Ingraham Trail Country Food Diet	5.4×10^{-4}	8.5×10^{-6}	5.5×10^{-4}	3.5×10^{-4}	6.2×10^{-6}	3.6×10^{-4}	1.7×10^{-4}	4.8×10^{-6}	1.8×10^{-4}	1.6×10^{-4}	4.6×10^{-6}	1.6×10^{-4}	1.6×10^{-4}	4.6×10^{-6}	1.6×10^{-4}
Additional Cases – Dettah															
Dettah Typical Diet + Medicinal Tea	7.3×10^{-4}	6.8×10^{-6}	7.4×10^{-4}	5.0×10^{-4}	4.9×10^{-6}	5.1×10^{-4}	2.8×10^{-4}	3.8×10^{-6}	2.8×10^{-4}	2.5×10^{-4}	3.6×10^{-6}	2.6×10^{-4}	2.5×10^{-4}	3.6×10^{-6}	2.6×10^{-4}
Dettah Typical Diet + Drinking Water	7.0×10^{-4}	6.8×10^{-6}	7.1×10^{-4}	4.8×10^{-4}	4.9×10^{-6}	4.9×10^{-4}	2.7×10^{-4}	3.8×10^{-6}	2.7×10^{-4}	2.4×10^{-4}	3.6×10^{-6}	2.4×10^{-4}	2.4×10^{-4}	3.6×10^{-6}	2.4×10^{-4}
Dettah Typical Diet + Organs	7.3×10^{-4}	6.8×10^{-6}	7.4×10^{-4}	5.0×10^{-4}	4.9×10^{-6}	5.1×10^{-4}	2.8×10^{-4}	3.8×10^{-6}	2.8×10^{-4}	2.6×10^{-4}	3.6×10^{-6}	2.7×10^{-4}	2.6×10^{-4}	3.6×10^{-6}	2.7×10^{-4}
Dettah High Country Food Diet	4.3×10^{-4}	6.8×10^{-6}	4.4×10^{-4}	3.0×10^{-4}	4.9×10^{-6}	3.1×10^{-4}	1.8×10^{-4}	3.8×10^{-6}	1.8×10^{-4}	2.7×10^{-4}	3.6×10^{-6}	2.7×10^{-4}	1.7×10^{-4}	3.6×10^{-6}	1.8×10^{-4}
Dettah High Diet + Medicinal Tea	4.3×10^{-4}	6.8×10^{-6}	4.4×10^{-4}	3.0×10^{-4}	4.9×10^{-6}	3.1×10^{-4}	1.8×10^{-4}	3.8×10^{-6}	1.8×10^{-4}	2.7×10^{-4}	3.6×10^{-6}	2.7×10^{-4}	1.7×10^{-4}	3.6×10^{-6}	1.8×10^{-4}
Dettah High Diet + Organs	4.3×10^{-4}	6.8×10^{-6}	4.4×10^{-4}	3.0×10^{-4}	4.9×10^{-6}	3.1×10^{-4}	1.8×10^{-4}	3.8×10^{-6}	1.8×10^{-4}	2.8×10^{-4}	3.6×10^{-6}	2.9×10^{-4}	1.8×10^{-4}	3.6×10^{-6}	1.9×10^{-4}
Additional Cases – Ndilo															
Ndilo Typical Diet + Medicinal Tea	1.1×10^{-3}	3.8×10^{-5}	1.1×10^{-3}	6.7×10^{-4}	2.8×10^{-5}	7.0×10^{-4}	2.8×10^{-4}	2.2×10^{-5}	3.1×10^{-4}	2.6×10^{-4}	2.0×10^{-5}	2.8×10^{-4}	2.6×10^{-4}	2.0×10^{-5}	2.8×10^{-4}
Ndilo Typical Diet + Drinking Water	1.1×10^{-3}	3.8×10^{-5}	1.1×10^{-3}	6.8×10^{-4}	2.8×10^{-5}	7.1×10^{-4}	2.9×10^{-4}	2.2×10^{-5}	3.1×10^{-4}	2.7×10^{-4}	2.0×10^{-5}	2.9×10^{-4}	2.7×10^{-4}	2.0×10^{-5}	2.9×10^{-4}
Ndilo Typical Diet + Organs	1.1×10^{-3}	3.8×10^{-5}	1.1×10^{-3}	6.7×10^{-4}	2.8×10^{-5}	7.0×10^{-4}	2.8×10^{-4}	2.2×10^{-5}	3.1×10^{-4}	2.7×10^{-4}	2.0×10^{-5}	2.9×10^{-4}	2.7×10^{-4}	2.0×10^{-5}	2.9×10^{-4}
Ndilo High Country Food Diet	7.8×10^{-4}	3.8×10^{-5}	8.2×10^{-4}	4.7×10^{-4}	2.8×10^{-5}	5.0×10^{-4}	1.8×10^{-4}	2.2×10^{-5}	2.1×10^{-4}	2.8×10^{-4}	2.0×10^{-5}	3.0×10^{-4}	1.8×10^{-4}	2.0×10^{-5}	2.0×10^{-4}
Ndilo High Diet + Medicinal Tea	7.8×10^{-4}	3.8×10^{-5}	8.2×10^{-4}	4.7×10^{-4}	2.8×10^{-5}	5.0×10^{-4}	1.8×10^{-4}	2.2×10^{-5}	2.1×10^{-4}	2.8×10^{-4}	2.0×10^{-5}	3.0×10^{-4}	1.8×10^{-4}	2.0×10^{-5}	2.0×10^{-4}
Ndilo High Diet + Organs	7.8×10^{-4}	3.8×10^{-5}	8.2×10^{-4}	4.7×10^{-4}	2.8×10^{-5}	5.0×10^{-4}	1.8×10^{-4}	2.2×10^{-5}	2.1×10^{-4}	2.9×10^{-4}	2.0×10^{-5}	3.1×10^{-4}	1.9×10^{-4}	2.0×10^{-5}	2.1×10^{-4}
Additional Cases – Latham Island															
Latham Island + Medicinal Tea	8.2×10^{-4}	3.4×10^{-5}	8.6×10^{-4}	4.9×10^{-4}	2.5×10^{-5}	5.2×10^{-4}	1.8×10^{-4}	1.9×10^{-5}	2.0×10^{-4}	1.6×10^{-4}	1.8×10^{-5}	1.8×10^{-4}	1.6×10^{-4}	1.8×10^{-5}	1.8×10^{-4}
Latham Island + Drinking Water	8.4×10^{-4}	3.4×10^{-5}	8.7×10^{-4}	5.0×10^{-4}	2.5×10^{-5}	5.3×10^{-4}	1.8×10^{-4}	1.9×10^{-5}	2.0×10^{-4}	1.7×10^{-4}	1.8×10^{-5}	1.9×10^{-4}	1.7×10^{-4}	1.8×10^{-5}	1.9×10^{-4}
Latham Island + Organs	8.2×10^{-4}	3.4×10^{-5}	8.6×10^{-4}	4.9×10^{-4}	2.5×10^{-5}	5.2×10^{-4}	1.8×10^{-4}	1.9×10^{-5}	2.0×10^{-4}	1.6×10^{-4}	1.8×10^{-5}	1.8×10^{-4}	1.6×10^{-4}	1.8×10^{-5}	1.8×10^{-4}
Additional Cases – City of Yellowknife															
City of Yellowknife + Medicinal Tea	5.5×10^{-4}	9.8×10^{-6}	5.6×10^{-4}	3.6×10^{-4}	7.2×10^{-6}	3.7×10^{-4}	1.7×10^{-4}	5.6×10^{-6}	1.8×10^{-4}	1.6×10^{-4}	5.3×10^{-6}	1.6×10^{-4}	1.6×10^{-4}	5.3×10^{-6}	1.6×10^{-4}
City of Yellowknife + Mushrooms < 10km	5.5×10^{-4}	9.8×10^{-6}	5.6×10^{-4}	3.6×10^{-4}	7.2×10^{-6}	3.7×10^{-4}	1.7×10^{-4}	5.6×10^{-6}	1.8×10^{-4}	1.9×10^{-4}	5.3×10^{-6}	2.0×10^{-4}	1.9×10^{-4}	5.3×10^{-6}	2.0×10^{-4}
City of Yellowknife + Mushrooms 10 - 25km	5.5×10^{-4}	9.8×10^{-6}	5.6×10^{-4}	3.6×10^{-4}	7.2×10^{-6}	3.7×10^{-4}	1.7×10^{-4}	5.6×10^{-6}	1.8×10^{-4}	1.7×10^{-4}	5.3×10^{-6}	1.7×10^{-4}	1.7×10^{-4}	5.3×10^{-6}	1.7×10^{-4}
City of Yellowknife + Mushrooms > 25km	5.5×10^{-4}	9.8×10^{-6}	5.6×10^{-4}	3.6×10^{-4}	7.2×10^{-6}	3.7×10^{-4}	1.7×10^{-4}	5.6×10^{-6}	1.8×10^{-4}	1.6×10^{-4}	5.3×10^{-6}	1.7×10^{-4}	1.6×10^{-4}	5.3×10^{-6}	1.7×10^{-4}
City of Yellowknife + Organs	5.5×10^{-4}	9.8×10^{-6}	5.6×10^{-4}	3.6×10^{-4}	7.2×10^{-6}	3.7×10^{-4}	1.7×10^{-4}	5.6×10^{-6}	1.8×10^{-4}	1.6×10^{-4}	5.3×10^{-6}	1.6×10^{-4}	1.6×10^{-4}	5.3×10^{-6}	1.6×10^{-4}
Additional Cases – Ingraham Trail															
Ingraham Trail + Medicinal Tea	5.4×10^{-4}	8.5×10^{-6}	5.5×10^{-4}	3.5×10^{-4}	6.2×10^{-6}	3.6×10^{-4}	1.7×10^{-4}	4.8×10^{-6}	1.8×10^{-4}	1.6×10^{-4}	4.6×10^{-6}	1.6×10^{-4}	1.6×10^{-4}	4.6×10^{-6}	1.6×10^{-4}
Ingraham Trail + Organs	5.4×10^{-4}	8.5×10^{-6}	5.5×10^{-4}	3.5×10^{-4}	6.2×10^{-6}	3.6×10^{-4}	1.7×10^{-4}	4.8×10^{-6}	1.8×10^{-4}	1.6×10^{-4}	4.6×10^{-6}	1.6×10^{-4}	1.6×10^{-4}	4.6×10^{-6}	1.6×10^{-4}

Scenario	Toddler Intake (mg/kg-d)			Child Intake (mg/kg-d)			Teen Intake (mg/kg-d)			Adult Intake (mg/kg-d)			Elder Intake (mg/kg-d)		
	Ingestion	Dermal	Total	Ingestion	Dermal	Total	Ingestion	Dermal	Total	Ingestion	Dermal	Total	Ingestion	Dermal	Total
Townsite															
Current Townsite + Wading @ Townsite	$1.4x10^{-3}$	$9.1x10^{-4}$	$2.3x10^{-3}$	$8.0x10^{-4}$	$6.9x10^{-4}$	$1.5x10^{-3}$	$2.5x10^{-4}$	$1.2x10^{-4}$	$3.6x10^{-4}$	$2.2x10^{-4}$	$1.1x10^{-4}$	$3.3x10^{-4}$	$2.2x10^{-4}$	$1.1x10^{-4}$	$3.3x10^{-4}$
Current Townsite + Recreational Use of Giant Mine	$1.4x10^{-3}$	$1.1x10^{-4}$	$1.5x10^{-3}$	$8.0x10^{-4}$	$7.9x10^{-5}$	$8.8x10^{-4}$	$2.0x10^{-4}$	$6.2x10^{-5}$	$2.6x10^{-4}$	$1.8x10^{-4}$	$5.9x10^{-5}$	$2.4x10^{-4}$	$1.8x10^{-4}$	$5.9x10^{-5}$	$2.4x10^{-4}$
Future Townsite + Wading @ Townsite	$5.8x10^{-4}$	$3.8x10^{-5}$	$6.2x10^{-4}$	$3.7x10^{-4}$	$2.9x10^{-5}$	$4.0x10^{-4}$	$1.8x10^{-4}$	$8.8x10^{-6}$	$1.8x10^{-4}$	$1.6x10^{-4}$	$8.3x10^{-6}$	$1.7x10^{-4}$	$1.6x10^{-4}$	$8.3x10^{-6}$	$1.7x10^{-4}$
Future Townsite + Recreational Use of Giant Mine	$6.1x10^{-4}$	$2.1x10^{-5}$	$6.3x10^{-4}$	$4.0x10^{-4}$	$1.6x10^{-5}$	$4.1x10^{-4}$	$1.8x10^{-4}$	$1.3x10^{-5}$	$1.9x10^{-4}$	$1.6x10^{-4}$	$1.2x10^{-5}$	$1.7x10^{-4}$	$1.6x10^{-4}$	$1.2x10^{-5}$	$1.7x10^{-4}$
Future															
City of Yellowknife Future Recreational Use Giant Mine	$5.6x10^{-4}$	$1.2x10^{-5}$	$5.7x10^{-4}$	$3.7x10^{-4}$	$8.5x10^{-6}$	$3.7x10^{-4}$	$1.7x10^{-4}$	$6.6x10^{-6}$	$1.8x10^{-4}$	$1.6x10^{-4}$	$6.3x10^{-6}$	$1.6x10^{-4}$	$1.6x10^{-4}$	$6.3x10^{-6}$	$1.6x10^{-4}$
Sensitivity Assessments - Ndilo															
Ndilo Typical Diet + Max Measured Country Food	$1.1x10^{-3}$	$3.8x10^{-5}$	$1.2x10^{-3}$	$7.1x10^{-4}$	$2.8x10^{-5}$	$7.4x10^{-4}$	$3.1x10^{-4}$	$2.2x10^{-5}$	$3.3x10^{-4}$	$2.8x10^{-4}$	$2.0x10^{-5}$	$3.0x10^{-4}$	$2.8x10^{-4}$	$2.0x10^{-5}$	$3.0x10^{-4}$
Ndilo Typical Diet + All Ptarmigan	$1.1x10^{-3}$	$3.8x10^{-5}$	$1.1x10^{-3}$	$6.7x10^{-4}$	$2.8x10^{-5}$	$7.0x10^{-4}$	$2.8x10^{-4}$	$2.2x10^{-5}$	$3.1x10^{-4}$	$2.6x10^{-4}$	$2.0x10^{-5}$	$2.8x10^{-4}$	$2.6x10^{-4}$	$2.0x10^{-5}$	$2.8x10^{-4}$
Ndilo Typical Diet + 100% Berry from Ndilo	$1.1x10^{-3}$	$3.8x10^{-5}$	$1.1x10^{-3}$	$6.8x10^{-4}$	$2.8x10^{-5}$	$7.1x10^{-4}$	$2.9x10^{-4}$	$2.2x10^{-5}$	$3.1x10^{-4}$	$2.6x10^{-4}$	$2.0x10^{-5}$	$2.8x10^{-4}$	$2.6x10^{-4}$	$2.0x10^{-5}$	$2.8x10^{-4}$
Ndilo Typical Diet + Max Moose Sample	$1.1x10^{-3}$	$3.8x10^{-5}$	$1.2x10^{-3}$	$7.2x10^{-4}$	$2.8x10^{-5}$	$7.5x10^{-4}$	$3.2x10^{-4}$	$2.2x10^{-5}$	$3.4x10^{-4}$	$2.9x10^{-4}$	$2.0x10^{-5}$	$3.1x10^{-4}$	$2.9x10^{-4}$	$2.0x10^{-5}$	$3.1x10^{-4}$
Ndilo Typical Diet - Hot Spot Soil Removed	$1.0x10^{-3}$	$3.3x10^{-5}$	$1.1x10^{-3}$	$6.5x10^{-4}$	$2.4x10^{-5}$	$6.7x10^{-4}$	$2.8x10^{-4}$	$1.9x10^{-5}$	$3.0x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-5}$	$2.8x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-5}$	$2.8x10^{-4}$
Ndilo Typical Diet + Indoor Dust = Outdoor Soil	$1.2x10^{-3}$	$4.6x10^{-5}$	$1.2x10^{-3}$	$7.2x10^{-4}$	$3.3x10^{-5}$	$7.5x10^{-4}$	$2.9x10^{-4}$	$2.6x10^{-5}$	$3.1x10^{-4}$	$2.6x10^{-4}$	$2.4x10^{-5}$	$2.9x10^{-4}$	$2.6x10^{-4}$	$2.4x10^{-5}$	$2.9x10^{-4}$
Ndilo Typical Diet + 100% Meat Bioaccessibility	$1.1x10^{-3}$	$3.8x10^{-5}$	$1.1x10^{-3}$	$6.9x10^{-4}$	$2.8x10^{-5}$	$7.1x10^{-4}$	$2.9x10^{-4}$	$2.2x10^{-5}$	$3.1x10^{-4}$	$2.7x10^{-4}$	$2.0x10^{-5}$	$2.9x10^{-4}$	$2.7x10^{-4}$	$2.0x10^{-5}$	$2.9x10^{-4}$
Sensitivity Assessments – Mushrooms															
City of Yellowknife + Mushrooms < 10km 100% Bioaccessibility	$5.5x10^{-4}$	$9.8x10^{-6}$	$5.6x10^{-4}$	$3.6x10^{-4}$	$7.2x10^{-6}$	$3.7x10^{-4}$	$1.7x10^{-4}$	$5.6x10^{-6}$	$1.8x10^{-4}$	$2.4x10^{-4}$	$5.3x10^{-6}$	$2.4x10^{-4}$	$2.4x10^{-4}$	$5.3x10^{-6}$	$2.4x10^{-4}$
City of Yellowknife + Mushrooms 10 - 25km 100% Bioaccessibility	$5.5x10^{-4}$	$9.8x10^{-6}$	$5.6x10^{-4}$	$3.6x10^{-4}$	$7.2x10^{-6}$	$3.7x10^{-4}$	$1.7x10^{-4}$	$5.6x10^{-6}$	$1.8x10^{-4}$	$1.8x10^{-4}$	$5.3x10^{-6}$	$1.8x10^{-4}$	$1.8x10^{-4}$	$5.3x10^{-6}$	$1.8x10^{-4}$
City of Yellowknife + Mushrooms > 25km 100% Bioaccessibility	$5.5x10^{-4}$	$9.8x10^{-6}$	$5.6x10^{-4}$	$3.6x10^{-4}$	$7.2x10^{-6}$	$3.7x10^{-4}$	$1.7x10^{-4}$	$5.6x10^{-6}$	$1.8x10^{-4}$	$1.7x10^{-4}$	$5.3x10^{-6}$	$1.7x10^{-4}$	$1.7x10^{-4}$	$5.3x10^{-6}$	$1.7x10^{-4}$
Climate Change															
Ndilo Future Climate Change	$1.2x10^{-3}$	$8.5x10^{-5}$	$1.3x10^{-3}$	$7.8x10^{-4}$	$6.3x10^{-5}$	$8.4x10^{-4}$	$3.6x10^{-4}$	$2.6x10^{-5}$	$3.8x10^{-4}$	$3.3x10^{-4}$	$2.4x10^{-5}$	$3.6x10^{-4}$	$3.3x10^{-4}$	$2.4x10^{-5}$	$3.6x10^{-4}$

Table F.43 Estimated intakes by pathway – antimony

Scenario	Toddler Intake (mg/kg-d)			Child Intake (mg/kg-d)			Teen Intake (mg/kg-d)			Adult Intake (mg/kg-d)			Elder Intake (mg/kg-d)		
	Ingestion	Dermal	Total	Ingestion	Dermal	Total	Ingestion	Dermal	Total	Ingestion	Dermal	Total	Ingestion	Dermal	Total
Base Cases – Typical Diets															
Dettah Typical Country Food Diet	$2.3x10^{-4}$	$4.8x10^{-6}$	$2.4x10^{-4}$	$1.6x10^{-4}$	$3.5x10^{-6}$	$1.7x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-6}$	$1.2x10^{-4}$	$9.9x10^{-5}$	$2.6x10^{-6}$	$1.0x10^{-4}$	$9.9x10^{-5}$	$2.6x10^{-6}$	$1.0x10^{-4}$
Dettah Supermarket Food Diet	$1.0x10^{-4}$	$4.8x10^{-6}$	$1.1x10^{-4}$	$6.3x10^{-5}$	$3.5x10^{-6}$	$6.6x10^{-5}$	$5.4x10^{-5}$	$2.7x10^{-6}$	$5.6x10^{-5}$	$3.8x10^{-5}$	$2.6x10^{-6}$	$4.0x10^{-5}$	$3.8x10^{-5}$	$2.6x10^{-6}$	$4.0x10^{-5}$
Dettah Country Food + Wading @ Dettah	$2.3x10^{-4}$	$1.0x10^{-5}$	$2.4x10^{-4}$	$1.6x10^{-4}$	$7.7x10^{-6}$	$1.7x10^{-4}$	$1.2x10^{-4}$	$3.2x10^{-6}$	$1.2x10^{-4}$	$9.9x10^{-5}$	$3.1x10^{-6}$	$1.0x10^{-4}$	$9.9x10^{-5}$	$3.1x10^{-6}$	$1.0x10^{-4}$
Ndilo Typical Country Food Diet	$3.3x10^{-4}$	$3.5x10^{-5}$	$3.7x10^{-4}$	$2.1x10^{-4}$	$2.6x10^{-5}$	$2.4x10^{-4}$	$1.2x10^{-4}$	$2.0x10^{-5}$	$1.4x10^{-4}$	$1.0x10^{-4}$	$1.9x10^{-5}$	$1.2x10^{-4}$	$1.0x10^{-4}$	$1.9x10^{-5}$	$1.2x10^{-4}$
Ndilo Supermarket Food Diet	$2.0x10^{-4}$	$3.5x10^{-5}$	$2.4x10^{-4}$	$1.1x10^{-4}$	$2.6x10^{-5}$	$1.4x10^{-4}$	$5.6x10^{-5}$	$2.0x10^{-5}$	$7.5x10^{-5}$	$3.9x10^{-5}$	$1.9x10^{-5}$	$5.8x10^{-5}$	$3.9x10^{-5}$	$1.9x10^{-5}$	$5.8x10^{-5}$
Ndilo Country Food + Wading @ Ndilo	$3.4x10^{-4}$	$6.6x10^{-5}$	$4.0x10^{-4}$	$2.1x10^{-4}$	$4.9x10^{-5}$	$2.6x10^{-4}$	$1.2x10^{-4}$	$2.3x10^{-5}$	$1.5x10^{-4}$	$1.0x10^{-4}$	$2.1x10^{-5}$	$1.2x10^{-4}$	$1.0x10^{-4}$	$2.1x10^{-5}$	$1.2x10^{-4}$
Latham Island Country Food Diet	$2.2x10^{-4}$	$3.0x10^{-5}$	$2.5x10^{-4}$	$1.3x10^{-4}$	$2.2x10^{-5}$	$1.6x10^{-4}$	$7.4x10^{-5}$	$1.7x10^{-5}$	$9.2x10^{-5}$	$5.7x10^{-5}$	$1.6x10^{-5}$	$7.3x10^{-5}$	$5.7x10^{-5}$	$1.6x10^{-5}$	$7.3x10^{-5}$
Latham Island Supermarket Food Diet	$1.8x10^{-4}$	$3.0x10^{-5}$	$2.1x10^{-4}$	$1.0x10^{-4}$	$2.2x10^{-5}$	$1.3x10^{-4}$	$5.5x10^{-5}$	$1.7x10^{-5}$	$7.2x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-5}$	$5.5x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-5}$	$5.5x10^{-5}$
Latham Island Country Food + Wading @ Latham Island	$2.2x10^{-4}$	$3.9x10^{-5}$	$2.6x10^{-4}$	$1.3x10^{-4}$	$2.9x10^{-5}$	$1.6x10^{-4}$	$7.5x10^{-5}$	$1.8x10^{-5}$	$9.3x10^{-5}$	$5.7x10^{-5}$	$1.7x10^{-5}$	$7.4x10^{-5}$	$5.7x10^{-5}$	$1.7x10^{-5}$	$7.4x10^{-5}$
City of Yellowknife Country Food Diet	$1.3x10^{-4}$	$2.9x10^{-6}$	$1.3x10^{-4}$	$8.8x10^{-5}$	$2.1x10^{-6}$	$9.0x10^{-5}$	$7.3x10^{-5}$	$1.6x10^{-6}$	$7.4x10^{-5}$	$5.5x10^{-5}$	$1.5x10^{-6}$	$5.7x10^{-5}$	$5.5x10^{-5}$	$1.5x10^{-6}$	$5.7x10^{-5}$
City of Yellowknife Supermarket Food Diet	$9.4x10^{-5}$	$2.9x10^{-6}$	$9.7x10^{-5}$	$6.0x10^{-5}$	$2.1x10^{-6}$	$6.2x10^{-5}$	$5.4x10^{-5}$	$1.6x10^{-6}$	$5.5x10^{-5}$	$3.7x10^{-5}$	$1.5x10^{-6}$	$3.9x10^{-5}$	$3.7x10^{-5}$	$1.5x10^{-6}$	$3.9x10^{-5}$
City of Yellowknife Country Food + Wading @ Long Lake	$1.3x10^{-4}$	$7.8x10^{-6}$	$1.4x10^{-4}$	$8.9x10^{-5}$	$5.9x10^{-6}$	$9.4x10^{-5}$	$7.3x10^{-5}$	$2.1x10^{-6}$	$7.5x10^{-5}$	$5.5x10^{-5}$	$2.0x10^{-6}$	$5.7x10^{-5}$	$5.5x10^{-5}$	$2.0x10^{-6}$	$5.7x10^{-5}$
City of Yellowknife Country Food + Beach @ Long Lake	$1.4x10^{-4}$	$7.8x10^{-6}$	$1.4x10^{-4}$	$9.0x10^{-5}$	$5.9x10^{-6}$	$9.6x10^{-5}$	$7.3x10^{-5}$	$2.1x10^{-6}$	$7.5x10^{-5}$	$5.6x10^{-5}$	$2.0x10^{-6}$	$5.7x10^{-5}$	$5.6x10^{-5}$	$2.0x10^{-6}$	$5.7x10^{-5}$
City of Yellowknife Country Food + Swimming @ Long Lake	$1.4x10^{-4}$	$7.8x10^{-6}$	$1.4x10^{-4}$	$9.0x10^{-5}$	$5.9x10^{-6}$	$9.6x10^{-5}$	$7.3x10^{-5}$	$2.1x10^{-6}$	$7.5x10^{-5}$	$5.6x10^{-5}$	$2.0x10^{-6}$	$5.8x10^{-5}$	$5.6x10^{-5}$	$2.0x10^{-6}$	$5.8x10^{-5}$
Ingraham Trail Country Food Diet	$2.2x10^{-4}$	$3.0x10^{-5}$	$2.5x10^{-4}$	$1.3x10^{-4}$	$2.2x10^{-5}$	$1.5x10^{-4}$	$7.4x10^{-5}$	$1.7x10^{-5}$	$9.1x10^{-5}$	$5.7x10^{-5}$	$1.6x10^{-5}$	$7.3x10^{-5}$	$5.7x10^{-5}$	$1.6x10^{-5}$	$7.3x10^{-5}$
Additional Cases – Dettah															
Dettah Typical Diet + Medicinal Tea	$2.3x10^{-4}$	$4.8x10^{-6}$	$2.4x10^{-4}$	$1.6x10^{-4}$	$3.5x10^{-6}$	$1.7x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-6}$	$1.2x10^{-4}$	$9.9x10^{-5}$	$2.6x10^{-6}$	$1.0x10^{-4}$	$9.9x10^{-5}$	$2.6x10^{-6}$	$1.0x10^{-4}$
Dettah Typical Diet + Drinking Water	$2.3x10^{-4}$	$4.8x10^{-6}$	$2.4x10^{-4}$	$1.6x10^{-4}$	$3.5x10^{-6}$	$1.6x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-6}$	$1.2x10^{-4}$	$9.8x10^{-5}$	$2.6x10^{-6}$	$1.0x10^{-4}$	$9.8x10^{-5}$	$2.6x10^{-6}$	$1.0x10^{-4}$
Dettah Typical Diet + Organs	$2.3x10^{-4}$	$4.8x10^{-6}$	$2.4x10^{-4}$	$1.6x10^{-4}$	$3.5x10^{-6}$	$1.7x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-6}$	$1.2x10^{-4}$	$1.0x10^{-4}$	$2.6x10^{-6}$	$1.0x10^{-4}$	$1.0x10^{-4}$	$2.6x10^{-6}$	$1.0x10^{-4}$
Dettah High Country Food Diet	$1.6x10^{-4}$	$4.8x10^{-6}$	$1.6x10^{-4}$	$1.1x10^{-4}$	$3.5x10^{-6}$	$1.2x10^{-4}$	$7.0x10^{-5}$	$2.7x10^{-6}$	$7.3x10^{-5}$	$1.0x10^{-4}$	$2.6x10^{-6}$	$1.1x10^{-4}$	$6.6x10^{-5}$	$2.6x10^{-6}$	$6.9x10^{-5}$
Dettah High Diet + Medicinal Tea	$1.6x10^{-4}$	$4.8x10^{-6}$	$1.6x10^{-4}$	$1.1x10^{-4}$	$3.5x10^{-6}$	$1.2x10^{-4}$	$7.0x10^{-5}$	$2.7x10^{-6}$	$7.3x10^{-5}$	$1.0x10^{-4}$	$2.6x10^{-6}$	$1.1x10^{-4}$	$6.6x10^{-5}$	$2.6x10^{-6}$	$6.9x10^{-5}$
Dettah High Diet + Organs	$1.6x10^{-4}$	$4.8x10^{-6}$	$1.6x10^{-4}$	$1.1x10^{-4}$	$3.5x10^{-6}$	$1.2x10^{-4}$	$7.0x10^{-5}$	$2.7x10^{-6}$	$7.3x10^{-5}$	$1.1x10^{-4}$	$2.6x10^{-6}$	$1.1x10^{-4}$	$6.7x10^{-5}$	$2.6x10^{-6}$	$7.0x10^{-5}$
Additional Cases – Ndilo															
Ndilo Typical Diet + Medicinal Tea	$3.3x10^{-4}$	$3.5x10^{-5}$	$3.7x10^{-4}$	$2.1x10^{-4}$	$2.6x10^{-5}$	$2.4x10^{-4}$	$1.2x10^{-4}$	$2.0x10^{-5}$	$1.4x10^{-4}$	$1.0x10^{-4}$	$1.9x10^{-5}$	$1.2x10^{-4}$	$1.0x10^{-4}$	$1.9x10^{-5}$	$1.2x10^{-4}$
Ndilo Typical Diet + Drinking Water	$3.4x10^{-4}$	$3.5x10^{-5}$	$3.8x10^{-4}$	$2.2x10^{-4}$	$2.6x10^{-5}$	$2.4x10^{-4}$	$1.3x10^{-4}$	$2.0x10^{-5}$	$1.5x10^{-4}$	$1.1x10^{-4}$	$1.9x10^{-5}$	$1.2x10^{-4}$	$1.1x10^{-4}$	$1.9x10^{-5}$	$1.2x10^{-4}$
Ndilo Typical Diet + Organs	$3.3x10^{-4}$	$3.5x10^{-5}$	$3.7x10^{-4}$	$2.1x10^{-4}$	$2.6x10^{-5}$	$2.4x10^{-4}$	$1.2x10^{-4}$	$2.0x10^{-5}$	$1.4x10^{-4}$	$1.0x10^{-4}$	$1.9x10^{-5}$	$1.2x10^{-4}$	$1.0x10^{-4}$	$1.9x10^{-5}$	$1.2x10^{-4}$
Ndilo High Country Food Diet	$2.6x10^{-4}$	$3.5x10^{-5}$	$2.9x10^{-4}$	$1.6x10^{-4}$	$2.6x10^{-5}$	$1.9x10^{-4}$	$7.2x10^{-5}$	$2.0x10^{-5}$	$9.2x10^{-5}$	$1.1x10^{-4}$	$1.9x10^{-5}$	$1.3x10^{-4}$	$6.8x10^{-5}$	$1.9x10^{-5}$	$8.7x10^{-5}$
Ndilo High Diet + Medicinal Tea	$2.6x10^{-4}$	$3.5x10^{-5}$	$2.9x10^{-4}$	$1.6x10^{-4}$	$2.6x10^{-5}$	$1.9x10^{-4}$	$7.2x10^{-5}$	$2.0x10^{-5}$	$9.2x10^{-5}$	$1.1x10^{-4}$	$1.9x10^{-5}$	$1.3x10^{-4}$	$6.8x10^{-5}$	$1.9x10^{-5}$	$8.7x10^{-5}$
Ndilo High Diet + Organs	$2.6x10^{-4}$	$3.5x10^{-5}$	$2.9x10^{-4}$	$1.6x10^{-4}$	$2.6x10^{-5}$	$1.9x10^{-4}$	$7.2x10^{-5}$	$2.0x10^{-5}$	$9.2x10^{-5}$	$1.1x10^{-4}$	$1.9x10^{-5}$	$1.3x10^{-4}$	$6.9x10^{-5}$	$1.9x10^{-5}$	$8.8x10^{-5}$
Additional Cases – Latham Island															
Latham Island + Medicinal Tea	$2.2x10^{-4}$	$3.0x10^{-5}$	$2.5x10^{-4}$	$1.3x10^{-4}$	$2.2x10^{-5}$	$1.6x10^{-4}$	$7.4x10^{-5}$	$1.7x10^{-5}$	$9.2x10^{-5}$	$5.7x10^{-5}$	$1.6x10^{-5}$	$7.3x10^{-5}$	$5.7x10^{-5}$	$1.6x10^{-5}$	$7.3x10^{-5}$
Latham Island + Drinking Water	$2.3x10^{-4}$	$3.0x10^{-5}$	$2.6x10^{-4}$	$1.4x10^{-4}$	$2.2x10^{-5}$	$1.6x10^{-4}$	$7.6x10^{-5}$	$1.7x10^{-5}$	$9.3x10^{-5}$	$5.9x10^{-5}$	$1.6x10^{-5}$	$7.5x10^{-5}$	$5.9x10^{-5}$	$1.6x10^{-5}$	$7.5x10^{-5}$
Latham Island + Organs	$2.2x10^{-4}$	$3.0x10^{-5}$	$2.5x10^{-4}$	$1.3x10^{-4}$	$2.2x10^{-5}$	$1.6x10^{-4}$	$7.4x10^{-5}$	$1.7x10^{-5}$	$9.2x10^{-5}$	$5.7x10^{-5}$	$1.6x10^{-5}$	$7.3x10^{-5}$	$5.7x10^{-5}$	$1.6x10^{-5}$	$7.3x10^{-5}$
Additional Cases – City of Yellowknife															
City of Yellowknife + Medicinal Tea	$1.3x10^{-4}$	$2.9x10^{-6}$	$1.3x10^{-4}$	$8.8x10^{-5}$	$2.1x10^{-6}$	$9.0x10^{-5}$	$7.3x10^{-5}$	$1.6x10^{-6}$	$7.4x10^{-5}$	$5.5x10^{-5}$	$1.5x10^{-6}$	$5.7x10^{-5}$	$5.5x10^{-5}$	$1.5x10^{-6}$	$5.7x10^{-5}$
City of Yellowknife + Mushrooms < 10km	$1.3x10^{-4}$	$2.9x10^{-6}$	$1.3x10^{-4}$	$8.8x10^{-5}$	$2.1x10^{-6}$	$9.0x10^{-5}$	$7.3x10^{-5}$	$1.6x10^{-6}$	$7.4x10^{-5}$	$6.1x10^{-5}$	$1.5x10^{-6}$	$6.2x10^{-5}$	$6.1x10^{-5}$	$1.5x10^{-6}$	$6.2x10^{-5}$
City of Yellowknife + Mushrooms 10 - 25km	$1.3x10^{-4}$	$2.9x10^{-6}$	$1.3x10^{-4}$	$8.8x10^{-5}$	$2.1x10^{-6}$	$9.0x10^{-5}$	$7.3x10^{-5}$	$1.6x10^{-6}$	$7.4x10^{-5}$	$5.6x10^{-5}$	$1.5x10^{-6}$	$5.8x10^{-5}$	$5.6x10^{-5}$	$1.5x10^{-6}$	$5.8x10^{-5}$
City of Yellowknife + Mushrooms > 25km	$1.3x10^{-4}$	$2.9x10^{-6}$	$1.3x10^{-4}$	$8.8x10^{-5}$	$2.1x10^{-6}$	$9.0x10^{-5}$	$7.3x10^{-5}$	$1.6x10^{-6}$	$7.4x10^{-5}$	$5.8x10^{-5}$	$1.5x10^{-6}$	$6.0x10^{-5}$	$5.8x10^{-5}$	$1.5x10^{-6}$	$6.0x10^{-5}$
City of Yellowknife + Organs	$1.3x10^{-4}$	$2.9x10^{-6}$	$1.3x10^{-4}$	$8.8x10^{-5}$	$2.1x10^{-6}$	$9.0x10^{-5}$	$7.3x10^{-5}$	$1.6x10^{-6}$	$7.4x10^{-5}$	$5.6x10^{-5}$	$1.5x10^{-6}$	$5.7x10^{-5}$	$5.6x10^{-5}$	$1.5x10^{-6}$	$5.7x10^{-5}$
Additional Cases – Ingraham Trail															
Ingraham Trail + Medicinal Tea	$2.2x10^{-4}$	$3.0x10^{-5}$	$2.5x10^{-4}$	$1.3x10^{-4}$	$2.2x10^{-5}$	$1.5x10^{-4}$	$7.4x10^{-5}$	$1.7x10^{-5}$	$9.1x10^{-5}$	$5.7x10^{-5}$	$1.6x10^{-5}$	$7.3x10^{-5}$	$5.7x10^{-5}$	$1.6x10^{-5}$	$7.3x10^{-5}$
Ingraham Trail + Organs	$2.2x10^{-4}$	$3.0x10^{-5}$	$2.5x10^{-4}$	$1.3x10^{-4}$	$2.2x10^{-5}$	$1.5x10^{-4}$	$7.4x10^{-5}$	$1.7x10^{-5}$	$9.1x10^{-5}$	$5.7x10^{-5}$	$1.6x10^{-5}$	$7.3x10^{-5}$	$5.7x10^{-5}$	$1.6x10^{-5}$	$7.3x10^{-5}$

Scenario	Toddler Intake (mg/kg-d)			Child Intake (mg/kg-d)			Teen Intake (mg/kg-d)			Adult Intake (mg/kg-d)			Elder Intake (mg/kg-d)		
	Ingestion	**Dermal**	**Total**	**Ingestion**	**Dermal**	**Total**	**Ingestion**	**Dermal**	**Total**	**Ingestion**	**Dermal**	**Total**	**Ingestion**	**Dermal**	**Total**
Townsite															
Current Townsite + Wading @ Townsite	$3.2x10^{-4}$	$5.9x10^{-5}$	$3.8x10^{-4}$	$1.8x10^{-4}$	$4.3x10^{-5}$	$2.3x10^{-4}$	$7.6x10^{-5}$	$3.4x10^{-5}$	$1.1x10^{-4}$	$5.9x10^{-5}$	$3.2x10^{-5}$	$9.0x10^{-5}$	$5.9x10^{-5}$	$3.2x10^{-5}$	$9.0x10^{-5}$
Current Townsite + Recreational Use of Giant Mine	$3.4x10^{-4}$	$7.9x10^{-5}$	$4.2x10^{-4}$	$2.0x10^{-4}$	$5.8x10^{-5}$	$2.6x10^{-4}$	$7.8x10^{-5}$	$4.5x10^{-5}$	$1.2x10^{-4}$	$6.0x10^{-5}$	$4.3x10^{-5}$	$1.0x10^{-4}$	$6.0x10^{-5}$	$4.3x10^{-5}$	$1.0x10^{-4}$
Future Townsite + Wading @ Townsite	$1.6x10^{-4}$	$1.3x10^{-5}$	$1.8x10^{-4}$	$1.0x10^{-4}$	$9.1x10^{-6}$	$1.1x10^{-4}$	$7.3x10^{-5}$	$7.1x10^{-6}$	$8.0x10^{-5}$	$5.6x10^{-5}$	$6.7x10^{-6}$	$6.3x10^{-5}$	$5.6x10^{-5}$	$6.7x10^{-6}$	$6.3x10^{-5}$
Future Townsite + Recreational Use of Giant Mine	$1.7x10^{-4}$	$1.8x10^{-5}$	$1.9x10^{-4}$	$1.1x10^{-4}$	$1.4x10^{-5}$	$1.2x10^{-4}$	$7.4x10^{-5}$	$1.1x10^{-5}$	$8.5x10^{-5}$	$5.6x10^{-5}$	$1.0x10^{-5}$	$6.7x10^{-5}$	$5.6x10^{-5}$	$1.0x10^{-5}$	$6.7x10^{-5}$
Future															
City of Yellowknife Future Recreational Use Giant Mine	$1.4x10^{-4}$	$4.8x10^{-6}$	$1.4x10^{-4}$	$9.1x10^{-5}$	$3.5x10^{-6}$	$9.4x10^{-5}$	$7.3x10^{-5}$	$2.8x10^{-6}$	$7.6x10^{-5}$	$5.6x10^{-5}$	$2.6x10^{-6}$	$5.8x10^{-5}$	$5.6x10^{-5}$	$2.6x10^{-6}$	$5.8x10^{-5}$
Sensitivity Assessments															
Ndilo Typical Diet + Max Measured Country Food	$3.4x10^{-4}$	$3.5x10^{-5}$	$3.7x10^{-4}$	$2.2x10^{-4}$	$2.6x10^{-5}$	$2.4x10^{-4}$	$1.2x10^{-4}$	$2.0x10^{-5}$	$1.4x10^{-4}$	$1.0x10^{-4}$	$1.9x10^{-5}$	$1.2x10^{-4}$	$1.0x10^{-4}$	$1.9x10^{-5}$	$1.2x10^{-4}$
Ndilo Typical Diet + All Ptarmigan	$3.4x10^{-4}$	$3.5x10^{-5}$	$3.7x10^{-4}$	$2.2x10^{-4}$	$2.6x10^{-5}$	$2.4x10^{-4}$	$1.2x10^{-4}$	$2.0x10^{-5}$	$1.4x10^{-4}$	$1.0x10^{-4}$	$1.9x10^{-5}$	$1.2x10^{-4}$	$1.0x10^{-4}$	$1.9x10^{-5}$	$1.2x10^{-4}$
Ndilo Typical Diet + 100% Berry from Ndilo	$3.3x10^{-4}$	$3.5x10^{-5}$	$3.7x10^{-4}$	$2.1x10^{-4}$	$2.6x10^{-5}$	$2.4x10^{-4}$	$1.2x10^{-4}$	$2.0x10^{-5}$	$1.4x10^{-4}$	$1.0x10^{-4}$	$1.9x10^{-5}$	$1.2x10^{-4}$	$1.0x10^{-4}$	$1.9x10^{-5}$	$1.2x10^{-4}$
Ndilo Typical Diet + Max Moose Sample	$3.3x10^{-4}$	$3.5x10^{-5}$	$3.7x10^{-4}$	$2.1x10^{-4}$	$2.6x10^{-5}$	$2.4x10^{-4}$	$1.2x10^{-4}$	$2.0x10^{-5}$	$1.4x10^{-4}$	$1.0x10^{-4}$	$1.9x10^{-5}$	$1.2x10^{-4}$	$1.0x10^{-4}$	$1.9x10^{-5}$	$1.2x10^{-4}$
Ndilo Typical Diet - Hot Spot Soil Removed	$3.3x10^{-4}$	$3.5x10^{-5}$	$3.7x10^{-4}$	$2.1x10^{-4}$	$2.6x10^{-5}$	$2.4x10^{-4}$	$1.2x10^{-4}$	$2.0x10^{-5}$	$1.4x10^{-4}$	$1.0x10^{-4}$	$1.9x10^{-5}$	$1.2x10^{-4}$	$1.0x10^{-4}$	$1.9x10^{-5}$	$1.2x10^{-4}$
Ndilo Typical Diet + Indoor Dust = Outdoor Soil	$3.7x10^{-4}$	$4.2x10^{-5}$	$4.1x10^{-4}$	$2.3x10^{-4}$	$3.0x10^{-5}$	$2.6x10^{-4}$	$1.2x10^{-4}$	$2.4x10^{-5}$	$1.5x10^{-4}$	$1.0x10^{-4}$	$2.2x10^{-5}$	$1.2x10^{-4}$	$1.0x10^{-4}$	$2.2x10^{-5}$	$1.2x10^{-4}$
Ndilo Typical Diet + 100% Meat Bioaccessibility	$3.3x10^{-4}$	$3.5x10^{-5}$	$3.7x10^{-4}$	$2.1x10^{-4}$	$2.6x10^{-5}$	$2.4x10^{-4}$	$1.2x10^{-4}$	$2.0x10^{-5}$	$1.4x10^{-4}$	$1.0x10^{-4}$	$1.9x10^{-5}$	$1.2x10^{-4}$	$1.0x10^{-4}$	$1.9x10^{-5}$	$1.2x10^{-4}$

Table F.44 Estimated intakes by pathway – manganese

Scenario	Toddler Intake (mg/kg-d)			Child Intake (mg/kg-d)			Teen Intake (mg/kg-d)			Adult Intake (mg/kg-d)			Elder Intake (mg/kg-d)		
	Ingestion	Dermal	Total	Ingestion	Dermal	Total	Ingestion	Dermal	Total	Ingestion	Dermal	Total	Ingestion	Dermal	Total
Base Cases ─ Typical Diets															
Dettah Typical Country Food Diet	0.11	$4.6x10^{-6}$	0.11	0.09	$3.4x10^{-6}$	0.09	0.06	$2.6x10^{-6}$	0.06	0.06	$2.5x10^{-6}$	0.06	0.06	$2.5x10^{-6}$	0.06
Dettah Supermarket Food Diet	0.11	$4.6x10^{-6}$	0.11	0.09	$3.4x10^{-6}$	0.09	0.06	$2.6x10^{-6}$	0.06	0.06	$2.5x10^{-6}$	0.06	0.06	$2.5x10^{-6}$	0.06
Dettah Country Food + Wading @ Dettah	0.11	$4.0x10^{-4}$	0.11	0.09	$3.1x10^{-4}$	0.09	0.06	$3.9x10^{-5}$	0.06	0.06	$3.7x10^{-5}$	0.06	0.06	$3.7x10^{-5}$	0.06
Ndilo Typical Country Food Diet	0.11	$2.0x10^{-6}$	0.11	0.09	$1.4x10^{-6}$	0.09	0.06	$1.1x10^{-6}$	0.06	0.06	$1.0x10^{-6}$	0.06	0.06	$1.0x10^{-6}$	0.06
Ndilo Supermarket Food Diet	0.11	$2.0x10^{-6}$	0.11	0.09	$1.4x10^{-6}$	0.09	0.06	$1.1x10^{-6}$	0.06	0.06	$1.0x10^{-6}$	0.06	0.06	$1.0x10^{-6}$	0.06
Ndilo Country Food + Wading @ Ndilo	0.11	$6.3x10^{-4}$	0.11	0.09	$4.8x10^{-4}$	0.09	0.06	$5.8x10^{-5}$	0.06	0.06	$5.5x10^{-5}$	0.06	0.06	$5.5x10^{-5}$	0.06
Latham Island Country Food Diet	0.11	$2.1x10^{-6}$	0.11	0.09	$1.6x10^{-6}$	0.09	0.06	$1.2x10^{-6}$	0.06	0.06	$1.1x10^{-6}$	0.06	0.06	$1.1x10^{-6}$	0.06
Latham Island Supermarket Food Diet	0.11	$2.1x10^{-6}$	0.11	0.09	$1.6x10^{-6}$	0.09	0.06	$1.2x10^{-6}$	0.06	0.06	$1.1x10^{-6}$	0.06	0.06	$1.1x10^{-6}$	0.06
Latham Island Country Food + Wading @ Latham Island	0.11	$3.0x10^{-4}$	0.11	0.09	$2.3x10^{-4}$	0.09	0.06	$2.8x10^{-5}$	0.06	0.06	$2.7x10^{-5}$	0.06	0.06	$2.7x10^{-5}$	0.06
City of Yellowknife Country Food Diet	0.11	$2.8x10^{-5}$	0.11	0.09	$2.1x10^{-5}$	0.09	0.06	$1.6x10^{-5}$	0.06	0.06	$1.5x10^{-5}$	0.06	0.06	$1.5x10^{-5}$	0.06
City of Yellowknife Supermarket Food Diet	0.11	$2.8x10^{-5}$	0.11	0.09	$2.1x10^{-5}$	0.09	0.06	$1.6x10^{-5}$	0.06	0.06	$1.5x10^{-5}$	0.06	0.06	$1.5x10^{-5}$	0.06
City of Yellowknife Country Food + Wading @ Long Lake	0.11	$9.4x10^{-5}$	0.11	0.09	$7.1x10^{-5}$	0.09	0.06	$2.2x10^{-5}$	0.06	0.06	$2.1x10^{-5}$	0.06	0.06	$2.1x10^{-5}$	0.06
City of Yellowknife Country Food + Beach @ Long Lake	0.11	$9.4x10^{-5}$	0.11	0.09	$7.1x10^{-5}$	0.09	0.06	$2.2x10^{-5}$	0.06	0.06	$2.1x10^{-5}$	0.06	0.06	$2.1x10^{-5}$	0.06
City of Yellowknife Country Food + Swimming @ Long Lake	0.11	$9.4x10^{-5}$	0.11	0.09	$7.1x10^{-5}$	0.09	0.06	$2.2x10^{-5}$	0.06	0.06	$2.1x10^{-5}$	0.06	0.06	$2.1x10^{-5}$	0.06
Ingraham Trail Country Food Diet	0.11	$2.2x10^{-5}$	0.11	0.09	$1.6x10^{-5}$	0.09	0.06	$1.3x10^{-5}$	0.06	0.06	$1.2x10^{-5}$	0.06	0.06	$1.2x10^{-5}$	0.06

Table F.45 Breakdown of toddler ingestion intakes – incremental arsenic

Intake Pathway	Intake (mg/kg-d)														
	Dettah Typical Country Food Diet	Dettah Supermarket Food Diet	Dettah Country Food + Wading @ Dettah	Ndilo Typical Country Food Diet	Ndilo Supermarket Food Diet	Ndilo Country Food + Wading @ Ndilo	Latham Island Country Food Diet	Latham Island Supermarket Food Diet	Latham Island Country Food + Wading @ Latham Island	City of Yellowknife Country Food Diet	City of Yellowknife Supermarket Food Diet	City of Yellowknife Country Food + Wading @ Long Lake	City of Yellowknife Country Food + Beach @ Long Lake	City of Yellowknife Country Food + Swimming @ Long Lake	Ingraham Trail Country Food Diet
Ingestion - Food	$1.0x10^{-5}$	0.0	$1.0x10^{-5}$	$1.0x10^{-5}$	0.0	$1.0x10^{-5}$	$3.8x10^{-6}$	0.0	$3.8x10^{-6}$	$3.6x10^{-6}$	0.0	$3.6x10^{-6}$	$3.6x10^{-6}$	$3.6x10^{-6}$	$3.6x10^{-6}$
Ingestion - Other	$3.4x10^{-5}$	$3.4x10^{-5}$	$3.4x10^{-5}$	$3.3x10^{-4}$	$3.3x10^{-4}$	$3.3x10^{-4}$	$2.9x10^{-4}$	$2.9x10^{-4}$	$2.9x10^{-4}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.9x10^{-5}$	$4.8x10^{-5}$	$8.1x10^{-5}$	$1.6x10^{-6}$
Dermal	$3.1x10^{-6}$	$3.1x10^{-6}$	$3.1x10^{-6}$	$3.0x10^{-5}$	$3.0x10^{-5}$	$3.8x10^{-5}$	$2.6x10^{-5}$	$2.6x10^{-5}$	$2.6x10^{-5}$	$1.5x10^{-6}$	$1.5x10^{-6}$	$1.4x10^{-5}$	$1.4x10^{-5}$	$1.4x10^{-5}$	$1.5x10^{-7}$
Total	$4.8x10^{-5}$	$3.8x10^{-5}$	$4.8x10^{-5}$	$3.7x10^{-4}$	$3.6x10^{-4}$	$3.8x10^{-4}$	$3.2x10^{-4}$	$3.1x10^{-4}$	$3.2x10^{-4}$	$2.1x10^{-5}$	$1.7x10^{-5}$	$3.7x10^{-5}$	$6.6x10^{-5}$	$9.9x10^{-5}$	$5.3x10^{-6}$

Table F.46 Estimated intakes by pathway – background

COPC	Toddler Intake (mg/kg-d)			Child Intake (mg/kg-d)			Teen Intake (mg/kg-d)			Adult Intake (mg/kg-d)			Elder Intake (mg/kg-d)		
	Ingestion	Dermal	Total	Ingestion	Dermal	Total	Ingestion	Dermal	Total	Ingestion	Dermal	Total	Ingestion	Dermal	Total
Background															
Arsenic	$8.6x10^{-4}$	$3.0x10^{-5}$	$8.9x10^{-4}$	$5.9x10^{-4}$	$2.3x10^{-5}$	$6.1x10^{-4}$	$3.3x10^{-4}$	$7.4x10^{-6}$	$3.4x10^{-4}$	$3.0x10^{-4}$	$7.0x10^{-6}$	$3.1x10^{-4}$	$3.0x10^{-4}$	$7.0x10^{-6}$	$3.1x10^{-4}$
Antimony	$2.5x10^{-4}$	$1.6x10^{-5}$	$2.7x10^{-4}$	$1.8x10^{-4}$	$1.2x10^{-5}$	$1.9x10^{-4}$	$1.3x10^{-4}$	$2.4x10^{-6}$	$1.4x10^{-4}$	$1.1x10^{-4}$	$2.3x10^{-6}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.3x10^{-6}$	$1.1x10^{-4}$
Manganese	0.11	$5.1x10^{-4}$	0.11	0.09	$3.9x10^{-4}$	0.09	0.06	$5.4x10^{-5}$	0.06	0.06	$5.1x10^{-5}$	0.06	0.06	$5.1x10^{-5}$	0.06

F.8 Sample Calculation

An example sample calculation for Ndilo Typical Country Food Diet scenario exposure for adult is provided in the following steps. Sample calculations for all lifestages, pathways, COPC, locations, and scenarios are provided in Appendix I. As discussed previously, the same equation (Equation F-3) was used to estimate exposure from ingestion of all foods (i.e., berry, medicinal tea, mushroom, fish, moose, hare, grouse, duck, and muskrat) and therefore sample calculations for each food item are not shown here. Similarly, Equation F-4 was used to estimate exposure from ingestion of dust, soil, and sediment, while Equation F-1 was used to estimate exposure from dermal contact with dust, soil, sediment, and water. Thus, only a few of these pathways are shown below.

Exposure via drinking water (Equation F-2) – antimony:

$$Intake - water = \frac{0.0002\frac{mg}{L} \times 1.5\ \frac{L}{d} \times 7\frac{d}{wk} \times 52\frac{wk}{yr}}{7\frac{d}{wk} \times 52\ \frac{wk}{yr} \times 70.7kg} = 4.2 \times 10^{-6}\frac{mg}{kg\ d}$$

Exposure via fish ingestion (Equation F-3) – antimony:

$$Intake - fish\ (A2) = \frac{0.025\frac{mg}{kg\ ww} \times 0.17\ \frac{kg\ ww}{d} \times 7\frac{d}{wk} \times 52\frac{wk}{yr}}{7\frac{d}{wk} \times 52\ \frac{wk}{yr} \times 70.7kg} \times 10\%$$

$$= 6.0 \times 10^{-6}\frac{mg}{kg\ d}$$

$$Intake - fish\ (A3) = \frac{0.025\frac{mg}{kg\ ww} \times 0.17\ \frac{kg\ ww}{d} \times 7\frac{d}{wk} \times 52\frac{wk}{yr}}{7\frac{d}{wk} \times 52\ \frac{wk}{yr} \times 70.7kg} \times 90\%$$

$$= 5.4 \times 10^{-5}\frac{mg}{kg\ d}$$

$$Intake - fish\ (total) = 6.0 \times 10^{-6}\frac{mg}{kg\ d} + 5.4 \times 10^{-5}\frac{mg}{kg\ d} = 6.0 \times 10^{-5}\frac{mg}{kg\ d}$$

Exposure via moose ingestion (Equation F-3) – antimony:

$$Intake - moose = \frac{0.0018\,\frac{mg}{kg\ ww} \times 0.0069\ \frac{kg\ ww}{d} \times 7\,\frac{d}{wk} \times 52\,\frac{wk}{yr}}{7\,\frac{d}{wk} \times 52\ \frac{wk}{yr} \times 70.7kg}$$
$$= 1.8 \times 10^{-7}\,\frac{mg}{kg\ d}$$

Exposure via soil ingestion (Equation F-4) – antimony:

$$Intake - soil = \frac{45\,\frac{mg}{kg\ dw} \times 1.6 \times 10^{-6}\ \frac{kg\ dw}{d} \times 7\,\frac{d}{wk} \times 16\,\frac{wk}{yr}}{7\,\frac{d}{wk} \times 16\ \frac{wk}{yr} \times 70.7kg} = 1.0 \times 10^{-6}\,\frac{mg}{kg\ d}$$

Total exposure via ingestion – antimony:

$$\begin{aligned} &Total\ Intake - ingestion \\ &= Intake - water\left(4.2 \times 10^{-6}\,\frac{mg}{kg\ d}\right) + Intake \\ &- fish\left(6.0 \times 10^{-5}\,\frac{mg}{kg\ d}\right) + Intake - moose\left(1.8 \times 10^{-7}\,\frac{mg}{kg\ d}\right) \\ &+ Intake - berry\ \left(3.3 \times 10^{-8}\,\frac{mg}{kg\ d}\right) + Intake \\ &- hare\left(5.5 \times 10^{-7}\,\frac{mg}{kg\ d}\right) + Intake - grouse\left(5.9 \times 10^{-7}\,\frac{mg}{kg\ d}\right) \\ &+ Intake - duck\left(1.2 \times 10^{-7}\,\frac{mg}{kg\ d}\right) + Intake \\ &- muskrat\left(2.7 \times 10^{-7}\,\frac{mg}{kg\ d}\right) + Intake - soil\left(1.0 \times 10^{-6}\,\frac{mg}{kg\ d}\right) \\ &+ Intake - dust\left(1.1 \times 10^{-7}\,\frac{mg}{kg\ d}\right) + Intake \\ &- supermarket\left(3.3 \times 10^{-5}\,\frac{mg}{kg\ d}\right) = 1.0 \times 10^{-4}\,\frac{mg}{kg\ d} \end{aligned}$$

Exposure via soil dermal contact (Equation F-1) – antimony:

$$Dermal - soil = \frac{45\frac{mg}{kg\ dw} \times 1.7 \times 10^{-4}\ \frac{kg\ dw}{d} \times 7\frac{d}{wk} \times 16\frac{wk}{yr}}{7\frac{d}{wk} \times 16\ \frac{wk}{yr} \times 70.7kg} \times 0.1$$

$$= 1.1 \times 10^{-5}\frac{mg}{kg\ d}$$

Total exposure via dermal contact – antimony:

$$Total\ Dermal = Dermal - soil\left(1.1 \times 10^{-5}\frac{mg}{kg\ d}\right) + Dermal - dust\left(7.9 \times 10^{-6}\frac{mg}{kg\ d}\right) = 1.9 \times 10^{-5}\frac{mg}{kg\ d}$$

Incremental exposure via drinking water (Equation F-2) – arsenic:

$$Incremental\ Intake - water = \frac{(0.0016 - 0.0016)\frac{mg}{L} \times 1.5\ \frac{L}{d} \times 7\frac{d}{wk} \times 52\frac{wk}{yr}}{7\frac{d}{wk} \times 52\ \frac{wk}{yr} \times 70.7kg}$$

$$= 0\frac{mg}{kg\ d}$$

Incremental exposure via fish (Equation F-3) – arsenic:

$$Incremental\ Intake - fish\ (A2) = \frac{(0.063 - 0.07)\frac{mg}{kg\ ww} \times 0.17\ \frac{kg\ ww}{d} \times 7\frac{d}{wk} \times 52\frac{wk}{yr}}{7\frac{d}{wk} \times 52\ \frac{wk}{yr} \times 70.7kg} \times 10\%$$

$$= 0\frac{mg}{kg\ d}$$

$$Incremental\ Intake - fish\ (A3) = \frac{(0.054 - 0.07)\frac{mg}{kg\ ww} \times 0.17\ \frac{kg\ ww}{d} \times 7\frac{d}{wk} \times 52\frac{wk}{yr}}{7\frac{d}{wk} \times 52\ \frac{wk}{yr} \times 70.7kg} \times 90\%$$

$$= 0\frac{mg}{kg\ d}$$

$$Incremental\ Intake - fish\ (total) = 0\ \frac{mg}{kg\ d} + 0\ \frac{mg}{kg\ d} = 0\ \frac{mg}{kg\ d}$$

Incremental exposure via moose ingestion (Equation F-3) – arsenic:

$$Incremental\ Intake - moose = \frac{(0.020 - 0.006)\frac{mg}{kg\ ww} \times 0.0069\ \frac{kg\ ww}{d} \times 7\frac{d}{wk} \times 52\frac{wk}{yr}}{7\frac{d}{wk} \times 52\ \frac{wk}{yr} \times 70.7kg} = 2.9 \times 10^{-6}\frac{mg}{kg\ d}$$

Incremental exposure via soil ingestion (Equation F-4)– arsenic:

$$Incremental\ Intake - soil = \frac{(163 - 35.7)\frac{mg}{kg\ dw} \times 1.6 \times 10^{-6}\ \frac{kg\ dw}{d} \times 7\frac{d}{wk} \times 16\frac{wk}{yr}}{7\frac{d}{wk} \times 16\ \frac{wk}{yr} \times 70.7kg} = 2.9 \times 10^{-6}\frac{mg}{kg\ d}$$

Total incremental exposure via ingestion – arsenic:

$$Total\ Incremental\ Intake - ingestion = Incremental\ Intake - water\left(0\frac{mg}{kg\ d}\right) + Incremental\ Intake - fish\left(0\frac{mg}{kg\ d}\right) + Incremental\ Intake - moose\left(2.9\times10^{-6}\frac{mg}{kg\ d}\right) + Incremental\ Intake - berry\left(4.5\times10^{-7}\frac{mg}{kg\ d}\right) + Incremental\ Intake - hare\left(1.6\times10^{-6}\frac{mg}{kg\ d}\right) + Incremental\ Intake - grouse\left(7.3\times10^{-7}\frac{mg}{kg\ d}\right) + Incremental\ Intake - duck\left(7.1\times10^{-7}\frac{mg}{kg\ d}\right) + Incremental\ Intake - muskrat\left(0\frac{mg}{kg\ d}\right) + Incremental\ Intake - soil\left(2.9\times10^{-6}\frac{mg}{kg\ d}\right) + Incremental\ Intake - dust\left(3.2\times10^{-6}\frac{mg}{kg\ d}\right) + Incremental\ Intake - supermarket\left(0\frac{mg}{kg\ d}\right) = 1.1\times10^{-5}\frac{mg}{kg\ d}$$

Incremental exposure via soil dermal contact (Equation F-1) – arsenic:

$$Incremental\ Dermal - soil = \frac{(163-35.7)\frac{mg}{kg\ dw}\times1.7\times10^{-4}\ \frac{kg\ dw}{d}\times7\frac{d}{wk}\times16\frac{wk}{yr}}{7\frac{d}{wk}\times16\ \frac{wk}{yr}\times70.7kg}\times0.03 = 9.3\times10^{-6}\frac{mg}{kg\ d}$$

Total incremental exposure via dermal – arsenic:

$$Total\ Incremental\ Dermal = Incremental\ Dermal - soil\left(9.3\times10^{-6}\frac{mg}{kg\ d}\right) + Incremental\ Dermal - dust\left(6.7\times10^{-6}\frac{mg}{kg\ d}\right) = 1.6\times10^{-5}\frac{mg}{kg\ d}$$

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APPENDIX G

HUMAN HEALTH TOXICITY REVIEW

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APPENDIX G: HUMAN HEALTH TOXICITY REVIEW

In terms of human health, toxicity is the potential for a chemical to cause some type of damage, either permanent or temporary, to the structure or functioning of any part of the body. The toxicity depends on the amount of the chemical taken into the body (generally termed the intake or dose) and the length of time a person is exposed. Every chemical has a specific dose and duration of exposure that is required to produce a toxic effect in humans. Toxicity assessments generally involve the evaluation of scientific studies, generally based either on laboratory animal tests or on workplace exposure investigations, by a number of experienced scientists in a wide range of scientific disciplines in order to determine the maximum dose that a human can be exposed to without having an adverse health effect; these values are adopted as the Toxicity Reference Value (TRV). These TRVs consider the most sensitive toxicological endpoints in individuals and adjust for them with uncertainty factors.

The TRVs for humans are intended to protect the most sensitive individuals (i.e., the elderly, pregnant women, and children) as well as people with compromised health such as asthmatics. For constituents of potential concern (COPC) that have non-carcinogenic effects, the TRVs are based on threshold effects concentrations. Typically, exposures below these TRVs would not be associated with adverse health effects and, thus, would not represent a concern. As exposures increase to levels above the TRV, the probability of increased health risk increases. However, exposures above the TRV do not necessarily mean that adverse health risks occur. For COPC that have carcinogenic effects (i.e., those COPC that can cause cancer), the TRVs are based on non-threshold effects.

For dermal exposure, TRVs are not generally available. Therefore, dermal exposures are generally added to the ingestion exposures once adjustments are made to account for differences in absorption (see Appendix F).

The COPC considered for the Human Health Risk Assessment (HHRA) are arsenic, antimony, and manganese.

Antimony and manganese are considered to be non-classifiable with respect to human carcinogenicity (with respect to the oral exposure route), meaning that there are insufficient human or animal data to indicate that they are carcinogens. Arsenic, however, is considered to have both carcinogenic and non-carcinogenic endpoints.

Table G.1 provides a summary of the TRVs selected for use in the HHRA for oral exposure. The TRVs were all obtained from Health Canada (2010) or the United States Environmental Protection Agency (U.S. EPA) Integrated Risk Information System (IRIS) database (U.S. EPA 2017). The TRVs, health effects (toxicological endpoints), and reference sources for each TRV are provided in the table. The following sections provide a brief discussion of the toxicity of the three selected COPC.

Table G.1 Summary of toxicity reference values for humans

COPC	Oral Toxicological Reference Value					Inhalation Toxicological Reference Value				
	Carcinogenic (mg/(kg-d))$^{-1}$		Non-Carcinogenic (mg/(kg-d))		Endpoint	Carcinogenic (mg/m^3)$^{-1}$		Non-Carcinogenic (mg/m^3)		Endpoint
Antimony	N/A		4.0x10^{-4}	U.S. EPA (2017; last updated 1991)	Longevity, blood glucose and cholesterol	N/A		N/A	N/A	–
Arsenic	1.8	Health Canada (2010)	N/A		Internal cancers	6.4	Health Canada (2010)	N/A		Lung cancer
Manganese	N/A		0.136 (toddler) 0.122 (child) 0.142 (teen) 0.156 (adult)	Health Canada (2010)	Neurotoxicity	N/A		5.0x10^{-5}	U.S. EPA (2017; last updated 1996)	Impairment of Neuro-behavioural function

N/A – Not applicable.
For antimony, the only inhalation TRV available is for antimony trioxide which is not considered the appropriate form of antimony in air in Yellowknife.
There are no TRVs for dermal exposures; dermal exposures are added to oral exposures after adjustments are made for absorption.

G.1 Arsenic

In its elemental form, arsenic (As) is a steel gray metal-like substance that is found naturally in the earth's crust. Arsenic has four oxidation states, (-3, arsine), (0, metal), (+3, arsenite), and (+5, arsenate), although it is usually found as inorganic arsenic sulphide or as metal arsenates and arsenides. Organic arsenic compounds can also form, but are typically less toxic than inorganic arsenic compounds.

Exposure pathways for arsenic typically include air, water, food and soil via inhalation and ingestion as well as dermal contact. Each exposure pathway can involve exposure to different forms of arsenicals with different bioavailabilities. For example, inorganic arsenic in drinking water is more bioavailable than organic arsenic in fish.

The absorption of arsenic compounds via oral exposure is largely dependent on its solubility in water, while the absorption of arsenic compounds via inhalation is dependent both on solubility and particle size. Dermal absorption of arsenic compounds is not well characterized, but it is thought to be lot less significant than other exposure routes.

G.1.1 Metabolism

Inorganic arsenic metabolism is quite complex and leads to the formation of various arsenic species that are very different in toxicity, tissue distribution, and rate of elimination. Inorganic arsenic, in both the trivalent and pentavalent oxidation states, can easily be absorbed within the gastrointestinal tract. In low-to-moderate exposure situations, absorbed pentavalent arsenic is largely reduced to trivalent arsenic in the blood (Vahter 2002). Hepatocytes mainly absorb trivalent arsenic (Lerman et al. 1983) and metabolize it to monomethylarsonic acid (MMA) and dimethylarsinic acid (DMA), both of which may exist in the trivalent and pentavalent oxidation states. In order to carry out these transformations, the enzyme arsenic methyl transferase (AS3MT) is needed and S-adenosyl methionine serves as the methyl donor (Lin et al. 2002). Thus, human tissues, blood, and urine contain a mixture of arsenic metabolites that vary in toxicity.

Cell and animal-model systems provide evidence that the trivalent species of inorganic arsenic, MMA, and DMA are far more toxic than the less reactive pentavalent species. For example, MMA(III) has been shown to be particularly cytotoxic in human cell cultures (Styblo et al. 2000). It is unclear as to the extent to which DMA(V) can be reduced to the more toxic DMA(III); however, there is some evidence that DMA(III) is also found in human biologic samples (Valenzuela et al. 2005). Thus, the retention of arsenic in tissues is influenced by a host of factors, particularly methylation capacity. Tissues vary extensively in their arsenic methylation efficiency (Kobayashi et al. 2007), which probably affects their susceptibility to arsenic toxicity.

The ability to metabolize inorganic arsenic varies widely in humans, as shown by the widely varying proportions of inorganic arsenic, MMA, and DMA in urine and blood. It seems that women are more efficient than men in converting inorganic arsenic to DMA, particularly during pregnancy, when arsenic metabolism is enabled (Vahter et al. 2006). Also, children appear to methylate arsenic similar to adults (Wasserman et al. 2004). There is evidence from epidemiologic studies in populations exposed to high arsenic concentrations in drinking water in Taiwan, Argentina, and Bangladesh that shows that individuals who can efficiently convert inorganic arsenic to DMA are at lower risk for arsenic-induced disease than those who cannot convert arsenic as efficiently.

The form of arsenic impacts on the rate at which arsenic is excreted from the body. Some of the inorganic arsenic is mainly excreted via urine as the form of arsenic ingested. After methylation, it is also excreted as MMA and DMA. Between 50 to 90% of blood arsenic is cleared from the body in two to four days (NRC 1977). The remainder is cleared 10 to 100 times more slowly.

G.1.2 Toxic Forms of Arsenic

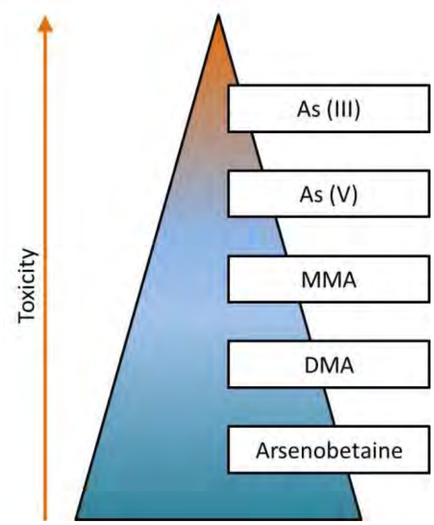
Trivalent arsenic (As^{3+}) is generally more toxic than pentavalent arsenic (As^{5+}) due to its affinity for sulfhydryl groups of biomolecules (e.g., thiol groups in enzymes). Pentavalent arsenic toxicity results from its interference with oxidative phosphorylation in cells by substituting for P (phosphate) in adenosine triphosphate (ATP) synthesis, which results in a deactivation of intracellular energy storage (Jang et al. 2016). The problem with arsenic toxicity is the formation of by-products of oxidation of arsenate, which are arsenite, MMA, and DMA, which does not allow for a clear dose-response curve. While the methylation of arsenate helps in the removal of arsenic from the body, it has been shown to increase the levels of these three toxicants.

Research has shown that all four forms of arsenic (As^{3+}, As^{5+}, DMA, MMA) have adverse effects at the cell metabolism level by damaging cell DNA or by reacting with critical sulfhydryl containing enzymes; however, it is unclear how to correlate data obtained from animal studies to actual human effects (Hughes et al. 2011). Arsenic and its metabolites are believed to have adverse influences at the cell level.

Organic arsenic compounds, such as arsenobetaine, are found in fish and shellfish. This form of arsenic is generally assumed to be the least toxic of the arsenic species (Department for Environment, Food and Rural Affairs & the Environment Agency [DEFRA/EA 2002]).

Figure G.1 shows a schematic of the relative toxicities of the arsenic species. Due to the fact that there are no definitive dose response curves for the various arsenic species As^{3+}, As^{5+}, DMA, MMA, they have all been assumed to have the same toxicity as As^{3+}. Arsenobetaine has been assumed to be non-toxic.

Figure G.1 Schematic of the relative toxicities of arsenic species



G.1.3 Toxicity Endpoints

Inorganic arsenic and its metabolites have many targets of toxicity and carcinogenicity. The International Agency for Research on Cancer (IARC 2012) lists the lung, urinary bladder, and skin as known targets for arsenic toxicity and the prostate, liver, and kidney as three probable targets for carcinogenicity. The Agency for Toxic Substances and Disease Registry (ATSDR 2016) provides a detailed discussion of the various toxicity endpoints for arsenic. The focus of this discussion is on the known targets for arsenic toxicity, as these are the endpoints used in the derivation of the TRVs by both Health Canada and the U.S. EPA.

As discussed above, the literature suggests that there is evidence of sex differences in the metabolism and toxicity of arsenic. However, the current available TRVs have not included these differences. The U.S. EPA is considering sex differences related to bladder and lung cancer in their updated document on arsenic toxicity.

Skin Effects

There is a well-established dose-response relationship with skin lesions and arsenic in drinking water. The ATSDR (2007) based its chronic minimal risk level of 0.0003 mg/kg-d on skin lesions. Skin lesions have been noted to occur at concentrations as low as 10 µg/L in cross-sectional (Ahsan et al. 2006) and prospective cohort (Argos et al. 2011) studies from exposure in Bangladesh.

In a Mexican cross-sectional study of people living near mining operations consuming contaminated groundwater found that residents with skin lesions had urinary MMA concentrations of 7.5 µg/L, whereas residents who did not have skin lesions had 4.8 µg/L MMA in their urine (Valenzuela et al. 2005). Kile et al. (2011) also shown that urinary MMA concentration is associated with an increased risk of skin lesions in a case-control study.

Arsenic is a known skin carcinogen, first classified by the IARC in 1987 on the basis of observations of patients treated with the arsenical Fowler's solution. A causal relationship between arsenic in drinking water and skin cancer was verified by IARC in a 2012 publication based on ecologic studies in Taiwan, primarily in the southwest region, where geologic arsenic is endemic (Wu et al. 1989). Most published studies linking arsenic exposure to skin cancer have found supportive evidence of non-melanoma skin cancers (basal-cell and squamous-cell carcinoma).

Respiratory Effects

Arsenic exposure via drinking water has also been linked to lung cancer in humans. Associations have been observed in highly exposed populations in Taiwan, Japan, Chile, Argentina, and the United States (Guo 2004; IARC 2004, 2012).

Arsenic's non carcinogenic pulmonary effects have been less well studied than its lung-cancer effects, but results of a number of human epidemiologic studies suggest deleterious effects of arsenic on a variety of nonmalignant pulmonary outcomes, including respiratory symptoms, airway epithelial damage, impaired pulmonary function, chronic obstructive pulmonary disease (COPD), and tuberculosis (Mazumder et al. 2000, 2005; Milton and Rahman 2002; Milton et al. 2003; Parvez et al. 2008; Rahman et al. 2011; Smith et al. 2011).

Bladder Effects

Arsenic is also known to cause bladder cancer (IARC 2004, 2012) based on ecologic studies of highly exposed populations in Taiwan, Chile, and Argentina. These studies indicated higher mortality from bladder cancers in exposed populations than in non-exposed populations. A case-control study in Chile (Steinmaus et al. 2013) found evidence of a dose-related increase in bladder-cancer incidence, which establishes a causal relationship between arsenic exposure and bladder cancer.

G.1.4 Toxicity Reference Values – Inorganic Arsenic

The U.S. EPA published a toxicological summary of inorganic arsenic in 1988 and started to update the assessment in 2003. In 2005, IRIS released a draft arsenic assessment related to the carcinogenic effects of oral exposure to inorganic arsenic for public comment and review by the U.S. EPA's Science Advisory Board (SAB). The SAB provided recommendations in 2007, and in 2010 the U.S. EPA released a revised draft inorganic arsenic assessment focusing on carcinogenic effects. In 2011, the SAB provided comments and the U.S. EPA is currently working to develop an updated IRIS assessment focused on both cancer and non-cancer effects. Therefore, the current TRVs available in the IRIS database (U.S. EPA 2017) are still being used in risk assessments. As chronic exposure is being examined, this discussion will focus on the carcinogenic TRVs for arsenic.

The IRIS database (U.S. EPA 2017; last updated 1998) provides an oral slope factor of 1.5 $(mg/kg\text{-}d)^{-1}$ for skin cancer based on a cross-sectional study of Taiwanese people exposed to drinking water (Tseng et al. 1968a; Tseng 1977).

An oral slope factor of 2.8 $(mg/kg\text{-}d)^{-1}$ has previously been derived by Health Canada (2004) based on the incidence of skin cancers in the epidemiological studies by Tseng et al. (Tseng et al. 1968b) and Tseng (Tseng 1977). In 2010, Health Canada considered new data that have become available that suggest that the risk of internal cancers due to ingestion of drinking water is greater than previously believed. The cancer risk models based on the Taiwanese data have been updated (Morales et al. 2000), and an evaluation was completed by Health Canada of the cancer potency indices for liver, lung ,and bladder cancers. An oral slope factor of 1.8 $(mg/kg\text{-}d)^{-1}$ was derived (Health Canada 2010) and is used in this assessment. The risk specific dose associated with a "negligible" risk of 1 x 10^{-5} is 0.0056 µg/kg-d.

Health Canada has previously suggested that the approach of the Joint FAO/WHO Expert Committee on food Additives (JECFA) and the European Food Safety Authority (EFSA) be considered for risk assessments for the Giant Mine. JECFA (2011) derived a low-end Benchmark Dose Level ($BMDL_{0.5}$) for a 0.5% increased incidence of lung cancer using a range of assumptions to estimate exposure from drinking water and food with differing concentrations of arsenic. The $BMDL_{0.5}$ was determined to be 3 µg/kg d (range of 2 to 7 µg/kg-d based on the range of estimated dietary exposure). For a "negligible" risk value of 1 x 10^{-5}, the risk specific dose is determined to be 0.006 µg/kg d based on linear extrapolation. This risk specific dose is similar to the one determined by using the Health Canada (2010) slope factor of 1.8 $(mg/kg\text{-}d)^{-1}$. Therefore the use of the $BMDL_{0.5}$ or the cancer slope factor would give the same overall results with respect to estimates of the incremental cancer risk for the community in and around Yellowknife.

Table G.2 provides a summary of the oral carcinogenic endpoints.

Table G.2 Carcinogenic oral exposure limits for arsenic

TRV $(mg/kg\text{-}d)^{-1}$	Basis	Effects	Source
1.8	-Poisson model fit (Morales et al. 2000). -Based on upper range of mean unit risks. -Exposure from drinking water.	Liver, lung and bladder cancers	Health Canada (2010)
1.5	-Time-and-dose-related formulation of the multistage model. -Exposure from drinking water (Tseng et al. 1968b; Tseng 1977).	Skin cancer in humans	U.S. EPA (2017; last updated 1998)
2.8	-Based on tumourigenic dose, TD_{05} (total intake that corresponds to 5% increase in incidence or mortality due to tumours associated with exposure). -TD_{05} of 0.018 mg/kg-d, derived from TC_{05} of 840 µg/L (Health Canada 1996) using a body weight of 70.7 kg and water ingestion rate of 1.5L/d -$SF_o = 0.05/TD_{05}$.	Skin cancer in humans	Health Canada (2004)

Health Canada (2010) provides an inhalation unit risk of 6.4 $(mg/m^3)^{-1}$. This was derived by Environment Canada/Health Canada (EC/HC 1993) in which three different TD_{05} values were presented (7.83 µg/m^3, 10.2 µg/m^3, and 50.5 µg/m^3) based on three occupational studies of smelter workers at the Tacoma, Anaconda, and Ronnskar smelters. The unit risk was obtained by dividing the most conservative value of 7.83 µg/m^3 into 0.05 (Health Canada 1996).

The IRIS database (U.S. EPA 2017; last updated 1998) provides an inhalation unit risk of 4.3 $(mg/m^3)^{-1}$. This is based on occupational studies of male workers at the Anaconda smelter in Montana and at the Tacoma ASARCO smelter in Washington who showed an increased risk of developing lung cancer following inhalation exposure to arsenic. The extrapolation method used to generate the slope factor was the absolute-risk linear model, and a geometric mean of the different unit risks from each study was used to derive the unit risk.

The California Environmental Protection Agency (CalEPA 2009) derived an inhalation unit risk of 3.3 $(mg/m^3)^{-1}$ for lung tumour incidence using a relative risk model adjusted for interaction with tobacco smoking on data from a human occupational exposure study by Enterline et al. (1987). (CDHS 1990)

The World Health Organization (WHO 2000) provide a unit risk of 1.5 $(mg/m^3)^{-1}$, derived from an estimated cancer risk of 1.5 x 10^{-3} for lifetime exposure to arsenic at a concentration of 1 $\mu g/m^3$ in air. The value was estimated by pooling risk estimates from studies conducted on workers at various smelters (Viren and Silvers 1994).

Table G.3 provides a summary of the carcinogenic inhalation exposure limits for arsenic.

Table G.3 Carcinogenic inhalation exposure limits for arsenic

TRV $(mg/m^3)^{-1}$	Basis	Effects	Source
6.4	-Based on tumourigenic concentration, TC_{05} (concentration that corresponds to 5% increase in incidence or mortality due to tumours associated with exposure). -TC_{05} of 0.0078 mg/m^3 (EC/HC 1993; Health Canada 1996). -$UR_i = 0.05/TC_{05.}$	Lung cancer	Health Canada (2010)
4.3	-occupational inhalation exposure (Brown and Chu 1983a, 1983b, 1982; Lee-Feldstein 1983; Higgins 1982; Enterline and Marsh 1982). -Geometric mean of geometric means from two datasets.	Lung cancer	U.S. EPA (2017; last updated 1998)
3.3	-Human occupational exposure study (Enterline and Marsh 1982); relative risk model, adjusted for interaction with tobacco smoking (CDHS 1990).	Lung tumor incidence	CalEPA (2009)
1.5	-Cancer risk of 1.5 x 10^{-3} for lifetime exposure to concentration of 1 $\mu g/m^3$ (URi=risk/concentration). -Estimated by pooling risk estimates from studies on various smelters (Viren and Silvers 1994).	Lung cancer	WHO (2000)

G.2 Antimony

Antimony toxicity occurs either due to occupational exposure or during therapy. Occupational exposure may cause respiratory irritation, pneumoconiosis, antimony spots on the skin and gastrointestinal symptoms. Antimony has not been designated as a potentially carcinogenic compound. The critical effect endpoint for antimony include effects on longevity, blood glucose, and cholesterol levels. In a chronic study conducted on rats fed potassium antimony tartrate in water, effects, including decreased longevity, decreased blood glucose levels, and altered cholesterol levels, were observed in the test organisms (U.S. EPA 2017).

G.2.1 Pharmacokinetics

There is no available quantitative information on absorption of antimony through the respiratory tract following inhalation exposure in humans or animals. Cooper et al. (1968) and Ludersdorf et al. (1987) showed increased levels of antimony in the urine and blood of workers exposed to antimony via inhalation, although absorption could have taken place through the gastrointestinal (GI) tract due to mucociliary clearance following inhalation.

There is little available information on absorption of antimony through the GI tract following oral exposure, but the few animal studies that were conducted suggest GI tract absorption ranges from 1.6% to 15% and is dependent on the chemical form and solubility of the antimonial (Health Canada 1997). There is no data available on the gut absorption of antimony in humans. The International Commission on Radiation Protection (ICRP 1981) recommends the following GI absorption values for antimony: 10% for antimony tartrate and 1% for all other antimony forms.

There are few data available on the distribution of antimony in humans following absorption. Human data on the absorption of the anti-parasitic agent trivalent antimony show higher accumulation in the liver, the thyroid, and the heart (Abdalla and Saif 1962).

G.2.2 Toxicity Endpoints

Antimonials used as anti-parasitic agents in humans are known to have side effects that include myocarditis, hepatitis, and nephritis (U.S. EPA 1980). Symptoms of acute oral and inhalation exposures to antimony include GI disorders, dehydration, muscular pain, shock, and kidney and urinary disorders. Dermal exposure to antimonials in humans can result in eczema and dermatitis (Stemmer 1976).

Subchronic oral and subcutaneous animal exposures to antimonials have resulted in liver, kidney, and GI disorders (Levina and Chekunova 1965; Fleming 1982). Subchronic inhalation exposures in animals to antimony dusts resulted in heart complications and electrocardiac disorders (Brieger et al. 1954). Subchronic oral animal exposures to antimonials in the diet showed reduced growth, appetite, and body weight gain and alterations in hematologic parameters (Health Canada 1997). Subchronic oral exposures to antimonials in water given to rats resulted in changes to the thymus, liver, kidneys, pituitary glands and spleen (Poon et al. 1998). Chronic rodent exposures to antimonials in drinking water resulted in weight loss, decreased weight gain, shortened life span, and reduced longevity (Schroeder et al. 1968, 1970; Kanisawa and Schroeder 1969).

Chronic occupational exposure to antimonials at low doses has been shown to result in myocardial effects, which can include heart complications, electrocardiac disorders, and sudden death (Brieger et al. 1954). Occupational exposures to antimonials have also been shown to cause reproductive effects in women, including increases in menstrual disorders and spontaneous abortions and development effects in offspring, including low birth weight (Beliaeva 1967). Acute and subchronic rat studies suggest that inhalation and intraperitoneal prenatal exposures to antimonials can decrease reproductive success and that oral exposure via drinking water can result in body weight decreases in pregnant dams and developing pups (Health Canada 1997).

G.2.3 Toxicity Reference Values

Health Canada (2010) has no published TRVs for antimony. Health Canada (1997) provide an oral tolerable daily intake of 0.0002 mg/kg-d derived from a NOAEL of 0.06 mg/kg-d from a 13-week rat study involving oral administration of potassium antimony tartrate at concentrations equivalent to 0 mg/L, 0.5 mg/L, 5.0 mg/L, 50 mg/L, and 500 mg/L via drinking water (Poon et al. 1998). The authors identified a NOAEC of 0.5 mg/L antimony which corresponded to a NOAEL of 0.06 mg/kg-d. An uncertainty factor of 300 was used; 10 to account for inter-species variability, 10 for human variability, and 3 for use of a short-term study to derive a chronic exposure limit.

The IRIS database (U.S. EPA 2017; last updated 1991) oral reference dose (RfD) of 4×10^{-4} mg/kg-d is based on a study in which male and female rats were administered antimony as potassium antimony tartrate in water. Over the period of the study, growth rates were not affected; however, the survival of the treated animals was reduced. Nonfasting blood glucose levels were decreased in treated males, and cholesterol levels were altered in both sexes. A decrease in mean heart weight for the males was noted. No increase in tumours was seen as a result of treatment. Since only one level of antimony was administered, a no observable effects level (NOEL) could not be determined. The lowest observable adverse effects level (LOAEL) is equal to the dose administered (0.35 mg/kg-d). An uncertainty factor of 1,000 was applied to the LOAEL (a factor of 10 each for interspecies conversion, for the protection of sensitive individuals, and because the effect level was a LOAEL not a NOEL). The overall confidence in the RfD is low. The study upon which the RfD was based used only one species and only one dose level. A NOEL was not determined, and gross pathology and histopathology were not well described.

The WHO (1996) provide an RfD of 0.00086 mg/kg-d based on a LOAEL of 0.43 mg/kg-d from a limited lifetime study where rats were exposed to antimony in drinking water at a single dose level. The toxicological endpoints were decreased longevity and altered blood levels of glucose and cholesterol. An uncertainty factor of 500 was used: 10 to account for interspecies conversion, 10 to account for human variability, and 5 because a LOAEL was used to derive the RfD.

The WHO (2003) considered the subchronic drinking water study in rats (Poon et al. 1998); however based on a re-analysis of the study by Lynch et al. (1999). The WHO (2003) used a NOAEL of 6 mg/kg-d, which corresponded to an antimony concentration in drinking water of 50 mg/L. This NOAEL is based on decreased body weight gain and reduced food and water intake. Applying an uncertainty factor of 1000 (a factor of 10 each for intra- and interspecies variation and the use of a subchronic study) resulted in a TRV of 0.006 mg/kg-d. The National Institute for Public Health and the Environment (RIVM; Van Engelen et al. 2006) also adopted this TRV as most appropriate limit value for the ingestion of antimony (Tiesjema and Baars 2009).

The only inhalation toxicity values located for antimony was specific to antimony trioxide, which is not appropriate for application in this assessment.

Table G.4 provides a summary of the TRVs for oral exposure for antimony.

As seen from the table, the U.S.EPA IRIS value of 0.0004 mg/kg-d was selected as the TRV to be used in the risk assessment. Given that the WHO (2003) evaluation of antimony is a more recent evaluation, the uncertainty analysis considers the effect on the results of using a TRV of 0.006 mg/kg-d.

Table G.4 Non-carcinogenic oral exposure limits for antimony

TRV mg/kg-d	Type	POD		Uncertainty Factors								Notes	Effects	Source
		Dose	Basis	A	H	L	S	D	I	X	Total			
0.0004	C	0.35	LOAEL	10	10	10					1000	-50 male and 50 female rats administered 5 ppm potassium antimony tartrate in water (Schroeder et al. 1970). -Male rats survived 106 and females survived 107 fewer days than controls at median lifespans. -No NOEL established since only one dose was used. -No increase in tumours was seen.	Longevity, blood glucose and cholesterol	U.S. EPA (2017; last updated 1991)
0.006	I	6	NOAEL	10	10		10				1000	- 13-week study in which rats were exposed to potassium antimony tartrate in drinking water at concentrations of 0.5, 5, 50 or 500 mg/L (Poon et al. 1998) NOAEL of 50 mg/L --> 6 mg/kg-d -no adjustment for duration from 13 week study	Decreased body weight gain and reduced food and water intake	WHO (2003)
0.00086	C	0.43	LOAEL	10	10	5					500	-Limited lifetime study in which rats were exposed to antimony in drinking water at a single dose level [same study (Schroeder et al. 1970) as cited in IRIS (U.S. EPA 2017)].	Decreased longevity and altered blood levels of glucose and cholesterol	WHO (1996)

TRV mg/kg-d	Type	POD		Uncertainty Factors								Notes	Effects	Source
		Dose	Basis	A	H	L	S	D	I	X	Total			
0.0002	I	0.06	NOAEL	10	10		3				300	-13-week study in which rats were exposed to potassium antimony tartrate in drinking water at concentrations of 0.5, 5, 50 or 500 mg/L (Poon et al. 1998) -NOAEL of 0.5 mg/L --> 0.06 mg/kg-d -no adjustment for duration from 13 week study	Histopathological changes	Health Canada (1997); value presented in technical document for the drinking water guideline

Note: Value shaded in bold used in the assessment.
POD - Point of Departure.
NOEL - No observable effects level.
LOAEL - Lowest observable adverse effects I level.

Type:
A - acute duration (< 15 days).
I - intermediate duration (>15 days to < 1 year).
C - chronic (> 1 year).

Uncertainty Factors:
A - interspecies (animal to human) variability.
H - intraspecies (human) variability.
L - use of a LOAEL to derive a TRV.
S - extrapolation from a sub-chronic to chronic TRV.
D - database deficiencies.
X – other.

G.3 Manganese

Manganese is essential for normal physiologic functioning in all animal species. Several diseases in humans have been associated with deficiencies and excesses of manganese intakes. Thus, any quantitative risk assessment for manganese must take into account aspects of both the essentiality and the toxicity of manganese. In humans, there is a lot of information about the range of essentiality for manganese. Additionally, there are many reports of toxicity, most prominently central nervous system effects similar to those resulting from Parkinson's disease, to humans exposed to manganese by inhalation; however, very little is known about the oral toxicity of manganese. Therefore, the toxicity information on oral exposures is related to safe dietary intakes.

The WHO (1973) reported the average daily consumption of manganese in diets to range from 2.0 to 8.8 mg Mn/d. Higher manganese intakes are associated with diets high in whole-grain cereals, nuts, green leafy vegetables, and tea. From manganese balance studies, the WHO concluded that 2 to 3 mg/d is adequate for adults and 8 to 9 mg/d is "perfectly safe." The Institute of Medicine (IOM 2001) set a tolerable upper intake level (UL) of 11 mg/d for adults based on a NOAEL for Parkinsonian-like neurotoxicity from Western diets. This value was adjusted for other age groups on the basis of relative body weights. A value was not derived for infants 12 months of age and younger. Health Canada refers to an Adequate Intake (AI) ranging from 0.003 mg/d for breast-fed infants; 0.6 mg/day to 2.2 mg/d for children depending on the age and sex; and for adults, 2.3 mg/day for males and 1.8 mg/day for females. The AI is the observed or estimated intake that appears to sustain a defined nutritional status (IOM 2001).

G.3.1 Pharmacokinetics

The main routes of absorption for manganese are the respiratory and gastrointestinal tracts. In the young infant, absorption of manganese is very high, approaching 99% at birth; absorption gradually decreases with age to around 5.5% in the adult (Health Canada 1979). The ATSDR (2012) indicates that the amount of manganese absorbed across the GI tract ranges from 3% to 5%. No studies ae available with respect to the amount of manganese that is absorbed by humans or animals after inhalation exposure to manganese dusts. Generally, the extent of inhalation absorption is a function of particle size (ATSDR 2012).

The major route of manganese excretion is via the bile to the feces although some excretion does occur in urine, milk, and sweat (ATSDR 2012).

Bones contain the highest amount of manganese, about 25% of the body burden; most of this seems to be deposited in the inorganic portion of the bone, which acts as a buffer. On a concentration basis, the testes, liver, pancreas and kidneys are the tissues that accumulate the most manganese (Health Canada 1979).

G.3.2 Toxicity Endpoints

In humans, inhalation of particulate manganese compounds can lead to an inflammatory response in the lung (although this may be caused by the particulate itself). This is characterized by an infiltration of macrophages and leukocytes, which phagocytize the deposited manganese particles. Damage to lung tissue is usually not extensive but may include local areas of edema. Symptoms and signs of lung irritation and injury may include cough, bronchitis, pneumonitis, and minor reductions in lung function; occasionally, pneumonia may result (ATSDR 2012).

There is some evidence of adverse cardiovascular effects after occupational exposure to manganese (ATSDR 2012).

Decreased libido and impotence are frequently observed in male workers exposed to high levels of manganese dusts in the workplace. These effects are at least partly neurological in origin; the recent human and animal studies indicate that manganese is damaging to the testes. Reproductive effects have been shown to be of concern in occupationally-exposed males and do not suggest that ambient exposure levels would be of concern to the general population. Information on reproductive effects of inhaled manganese in females is limited. The effects of excess manganese on human foetal development have not been thoroughly investigated. Studies from humans and animals suggest that high levels of manganese intake might lead to developmental effects (ATSDR 2012).

There is some evidence from a study on occupationally exposed welders that manganese may cause chromosomal aberrations; however due to inconsistencies, no overall conclusion can be made about the possible genotoxic hazard to humans from exposure to manganese compounds (ATSDR 2012).

The most sensitive and most significant effects caused by inhalation exposure to manganese dusts in the air are neurological deficits. There is clear evidence from studies of humans exposed to manganese dusts in mines and factories that inhalation of high levels of manganese can lead to a series of serious and ultimately disabling neurological effects. This disease, termed manganism, typically begins with feelings of weakness and lethargy. As the disease progresses, a number of other neurological signs may become manifest. In most cases, the symptoms were found to be irreversible, persisting for many years after exposure ceases. In addition, a syndrome of psychological disturbances (hallucination, psychosis) frequently emerges. As the disease progresses, patients develop severe hypertonia and muscle rigidity and may be completely and permanently disabled (ATSDR 2012).

Subclinical neurological effects have been observed in several occupational studies. These effects included decreased performance on neurobehavioral tests; significantly poorer eye-hand coordination, hand steadiness, and reaction time; poorer postural stability; and lower levels of cognitive flexibility. A study on environmental manganese sources, including a manganese alloy plant as a potential point source, indicates that both men and women are adversely affected by non-occupational exposure to manganese as evidenced in performance on neurobehavioral tests and increased neuropsychiatric symptoms (ATSDR 2012).

It has been suggested that these adverse health effects, especially neurologic effects, are occurring on a continuum of dysfunction that is dose-related. In other words, mild or unnoticeable effects may be caused by low, but physiologically excessive amounts of manganese, and these effects appear to increase in severity as the exposure level increases (ATSDR 2012).

G.3.3 Toxicity Reference Values

Health Canada (2010) derived oral RfDs for different life stages by dividing the IOM (2001) UL values by the body weights of the applicable life stage. The value for the infant was assumed to be the same as that for the toddler. The TRVs for infants and toddlers, children, teens, and adults are 0.136 mg/kg-d, 0.122 mg/kg-d, 0.142 mg/kg-d, and 0.156 mg/kg-d, respectively.

The IRIS database (U.S. EPA 2017; last updated 1996) provides an oral RfD of 0.14 mg/kg-d. This value is based on potential central nervous system (CNS) effects based on human chronic ingestion data. The assessment focuses on what is known to be a safe oral intake of manganese for the general human population, which was taken as 10 mg/d. As the information used to determine the RfD was taken from many large populations consuming normal diets over an extended period of time with no adverse health effects an uncertainty factor of 1 was used.

The IRIS database (U.S. EPA 2017; last updated 1993) provides an inhalation reference concentration (RfC) of $5x10^{-5}$ mg/m^3. This value is based on a cross-sectional study of male workers exposed to manganese dioxide (MnO_2) dust. Workers exposed to manganese performed worse than controls on several measures of neurobehavioral function such as visual reaction time, eye-hand co-ordination, and hand steadiness. A LOAEL of 0.15 mg/m^3 for workers and a $LOAEL_{HEC}$ (human equivalent concentration) of 0.05 mg/m^3 was developed. The RfC was developed using the LOAEL with the application of an uncertainty factor of 1000 (10 to protect sensitive individuals, 10 for use of a LOAEL, and 10 for database limitations reflecting both the less-than chronic periods of exposure and the lack of developmental data, as well as potential but unquantified differences in the toxicity of different forms of manganese). The overall confidence in the RfC is medium. Table G.5 provides a summary of the oral TRVs for manganese.

The ATSDR (2012) provides a chronic inhalation minimal risk level (MRL) of 0.0003 mg/m^3. The most sensitive and most significant effects caused by inhalation exposure to manganese dusts in the air are neurological deficits with progressive increased injury with prolonged exposures. The MRL is based on the same study as that considered by the U.S. EPA, but the point of departure was a $BMCL_{10}$ of 0.142 mg/m^3. This was adjusted for continuous exposure and divided by an uncertainty factor of 100 for human variability and to account for limitations in the inhalation database (including the lack of data on developmental effects and the potential for reproductive effects in women, and the potential for differences in toxicity from different forms of manganese).

The Office of Environmental Health Hazard Assessment (OEHHA 2016) derived a chronic inhalation reference exposure level (REL) of 9 x 10^{-5} mg/m^3, again derived from the same human occupational exposure study and using a $BMCL_{05}$ of 0.072 mg/m^3 as the point of departure. A total uncertainty factor of 300 was used.

The WHO (2000, 2006) report an annual average concentration guideline in air of 0.00015 mg/m^3, again derived from the human occupational exposure study and using a $BMCL_{05}$ of 0.03 mg/m^3 followed by adjustment to continuous exposure and incorporation of an uncertainty factor of 50.

Because all of the above values were derived from the same study, the most conservative value of 5 x 10^{-5} mg/m^3 from IRIS (U.S. EPA 2017) was selected for use in this assessment. It included an uncertainty factor of 10 to protect sensitive individuals. Table G.6 provides a summary of the inhalation TRVs for manganese.

Table G.5 Non-carcinogenic oral exposure limits for manganese

TRV mg/kg-d	Type	POD		Uncertainty Factors								Notes	Effects	Source
		Dose	Basis	A	H	L	S	D	I	X	Total			
0.136 (toddler) 0.122 (child) 0.142 (teen) 0.156 (adult)	C	11	NOAEL (food)									-Mn not considered to be carcinogenic. -Weight of evidence from human epidemiological studies. -Based on IOM (2001). -TRV based on the UL (IOM) adjusted for life stage and body weight.	Parkinsonian-like neurotoxicity	Health Canada (2010)
0.14	C	0.14	NOAEL							3**	3**	-Mn is essential for normal physiologic functioning. -Various studies report average daily intakes of Mn of 2.0-8.8 mg/day (NRC 1989; Freeland-Graves et al. 1987; WHO 1973). -U.S. EPA determined 10 mg/d (0.14 mg/kg-d) was an appropriate TRV. -2-3 mg/d is adequate for adults while 8-9 mg/d is "perfectly safe. -**recommended that if assessing risk from Mn in drinking water or soil, use a modifying factor of 3	Central nervous system effects	U.S. EPA (2017; last updated 1996)

Note: Value shaded in bold used in the assessment
POD - Point of Departure
NOAEL - No observable adverse effects level
LOAEL - Lowest observable adverse effects level
LOAEC - Lowest observable adverse effects concentration
Type:
A - acute duration (< 15 days)
I - intermediate duration (>15 days to < 1 year)
C - chronic (> 1 year)

Uncertainty Factors:
A - interspecies (animal to human) variability
H - intraspecies (human) variability
L - use of a LOAEL to derive a TRV
S - extrapolation from a sub-chronic to chronic TRV
D - database deficiencies
X - other

Table G.6 Non-carcinogenic inhalation exposure limits for manganese

TRV mg/m^3	Type	POD		Uncertainty Factors								Notes	Effects	Source
		Dose	Basis	A	H	L	S	D	I	X	Total			
0.00005	c	0.15	LOAEL			10		10		10*	1000	human occupational exposure study to manganese dioxide (Roels et al. 1992). -LOAEL is a time-weighted average, and is the geometric mean of individual LOAELs (based on individual work histories in years) divided by average duration of 5.3 years. -Duration adjusted for 10/20 m^3 and 5/7 days. -10* - to protect sensitive individuals	Impairment of neurobehavioural function.	U.S. EPA (2017; last updated 1996)
0.0003	C	0.142	$BMCL_{10}$		10			10			100	occupational exposure study (Roels et al. 1992). -Benchmark dose analysis on incidence data for abnormal eye-hand coordination. -Logistic model was selected as best fitting: 0.142 mg/m^3. -Duration adjusted for 8/24 h and 5/7d	Neurological Effects.	ATSDR (2012)
0.00017	A (8 hr)	0.072	$BMCL_{05}$		10		$10^{1/2}$			10	300	occupational inhalation study (Roels et al. 1992). -Exposed 8 hr/d for 0.2-17.7 (mean 5.3) years. -Duration adjusted for 5/7 days. -Benchmark dose analysis of data for eye-hand coordination and hand steadiness. -$BMCL_{05}$ from probit model for eye-hand coordination selected (indistinguishable from that for hand steadiness).	Impairment of neurobehavioural function (impairment of visual reaction time, eye-hand coordination, hand steadiness).	OEHHA (2016)

TRV mg/m^3	Type	POD		Uncertainty Factors								Notes	Effects	Source
		Dose	Basis	A	H	L	S	D	I	X	Total			
0.00009	C	0.072	$BMCL_{05}$		10		$10^{1/2}$			10	300	-Same study and derivation POD as for 8- hour value, above (Roels et al. 1992). -Duration adjusted for 10/20 m^3/d and 5/7 days.	Impairment of neurobehavioural function (impairment of visual reaction time, eye-hand coordination, hand steadiness).	OEHHA (2016)
0.00015	C	0.03	$BMCL_{05}$		10					5	50	-Same study and derivation POD as for 8- hour value, above (Roels et al. 1992). -Duration adjusted for 8/24 m^3/d and 5/7 days.	Impairment of neurobehavioural function (impairment of visual reaction time, eye-hand coordination, hand steadiness).	WHO (2000, 2006)

Note: Value shaded in bold used in the assessment.
POD - Point of Departure.
NOAEL - No observable adverse effects level.
LOAEL - Lowest observable adverse effects level.
LOAEC - Lowest observable adverse effects concentration.
Type:
A - acute duration (< 15 days).
I - intermediate duration (>15 days to < 1 year).
C - chronic (> 1 year).

Uncertainty Factors:
A - interspecies (animal to human) variability.
H - intraspecies (human) variability.
L - use of a LOAEL to derive a TRV.
S - extrapolation from a sub-chronic to chronic TRV.
D - database deficiencies.
X - other.

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APPENDIX H

HUMAN HEALTH RESULTS

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APPENDIX H: HUMAN HEALTH RESULTS

H.1 Results for Non Cancer Causing COPC

Antimony and manganese are determined to not cause cancer. The risks for these constituents of potential concern (COPCs) are evaluated by comparing the calculated exposure estimates, or intakes, to the permissible dose. When the calculated intake is below the permissible dose, adverse effects are not expected. For the purposes of presentation, a hazard quotient is calculated to compare the estimated intakes with the permissible dose. A hazard quotient is calculated as shown in Equation H-1:

$$Hazard\ Quotient = \frac{Intake}{Permissible\ Dose} \qquad \text{(H-1)}$$

For the inhalation pathway, the air concentration is compared to a permissible air concentration to calculate the hazard quotient.

A calculated hazard quotient that is less than one indicates that the estimated intake is below the permissible dose and therefore represents a negligible risk. A hazard quotient above one indicates that the permissible dose is exceeded and the risk of an adverse health effect cannot be ruled out.

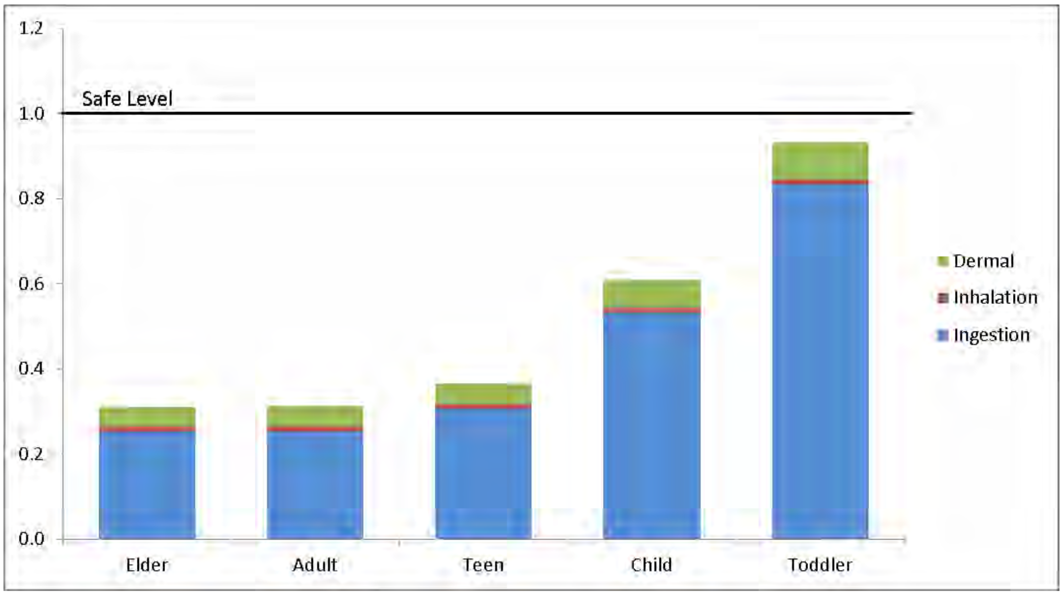
Figure H.1 and Figure H.2 provide selected results for antimony and manganese, respectively. Figure H.1 illustrates that the majority of exposure to antimony for both the Ndilo Typical Country Food Diet receptors and the City of Yellowknife Country Food Diet receptors is through the ingestion pathway; however exposures are below the safe level for all lifestages. Similarly, the intakes for manganese in Figure H.2 illustrate that the dominant pathway of exposure is ingestion. For manganese, intakes are dominated by the contribution from supermarket foods.

Table H.1 summarizes the calculated hazard quotients for antimony for the various scenarios considered in the assessment. Hazard quotients are presented by pathway (i.e., ingestion, dermal, inhalation), as well as a total hazard quotient, for each life stage (i.e., toddler, child, teen, adult, and elder). All calculated hazard quotients for antimony are below one for residential locations and considered to represent a negligible risk. The results demonstrate that after the Giant Mine and former Townsite location are remediated, the risks will also be considered negligible for antimony.

Similarly, Table H.2 summarizes the calculated hazard quotients for manganese for the various scenarios considered in the assessment. All calculated hazard quotients for manganese are below one and considered to represent a negligible risk. Measured concentrations of manganese in air were not available; therefore, this pathway was considered to be zero (0).

Figure H.1 Selected results for antimony

Hazard Quotients for Ndilo Typical Country Food Diet



Hazard Quotients for City of Yellowknife Country Food Diet

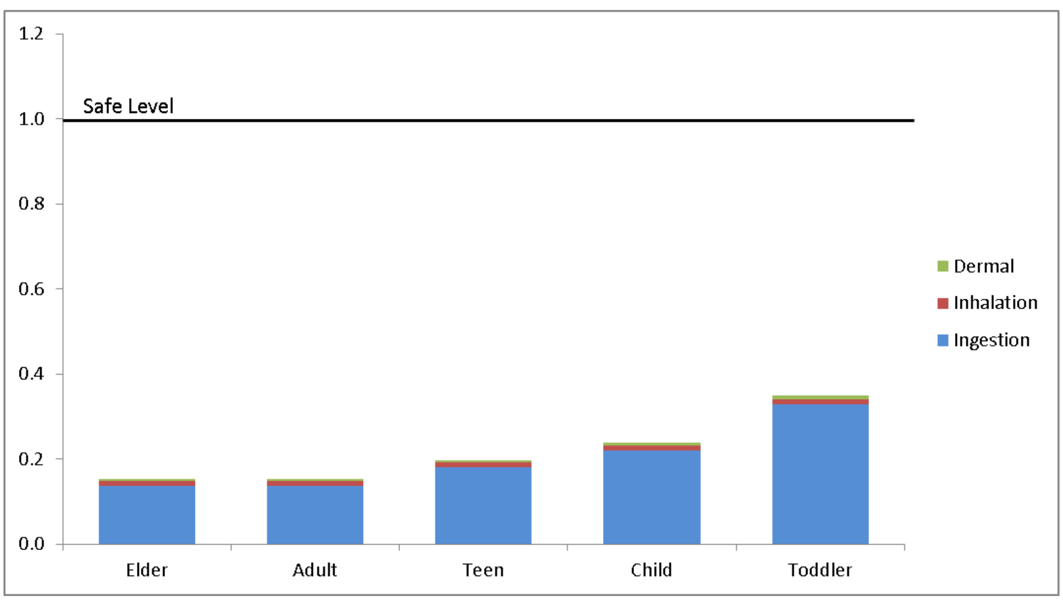
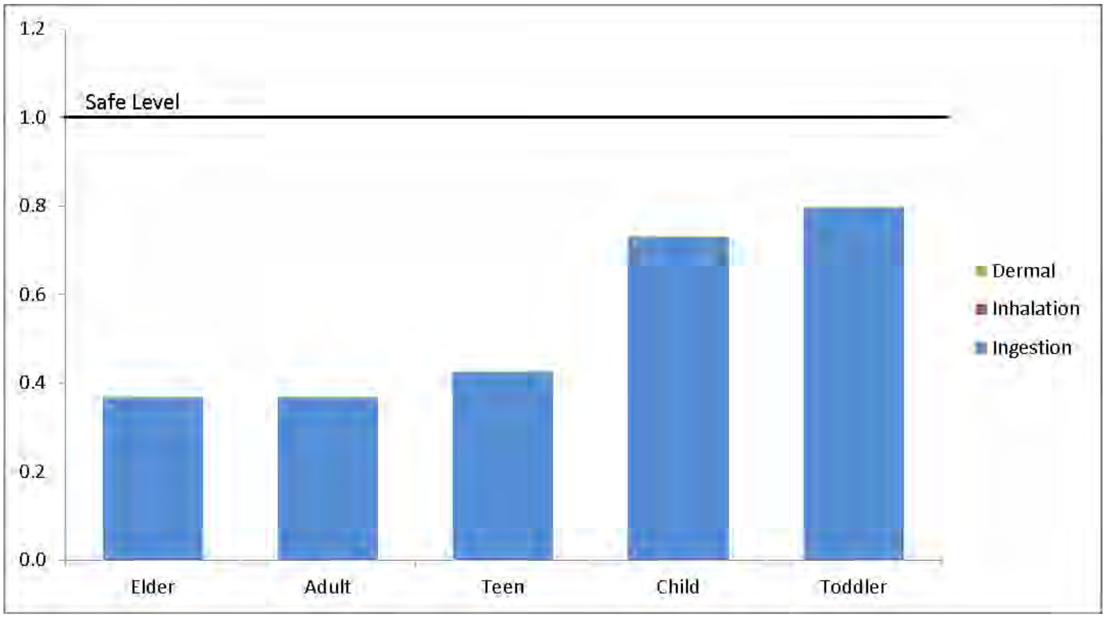


Figure H.2 Selected results for manganese

Hazard Quotients for Ndilo Typical Country Food Diet



Hazard Quotients for City of Yellowknife Country Food Diet

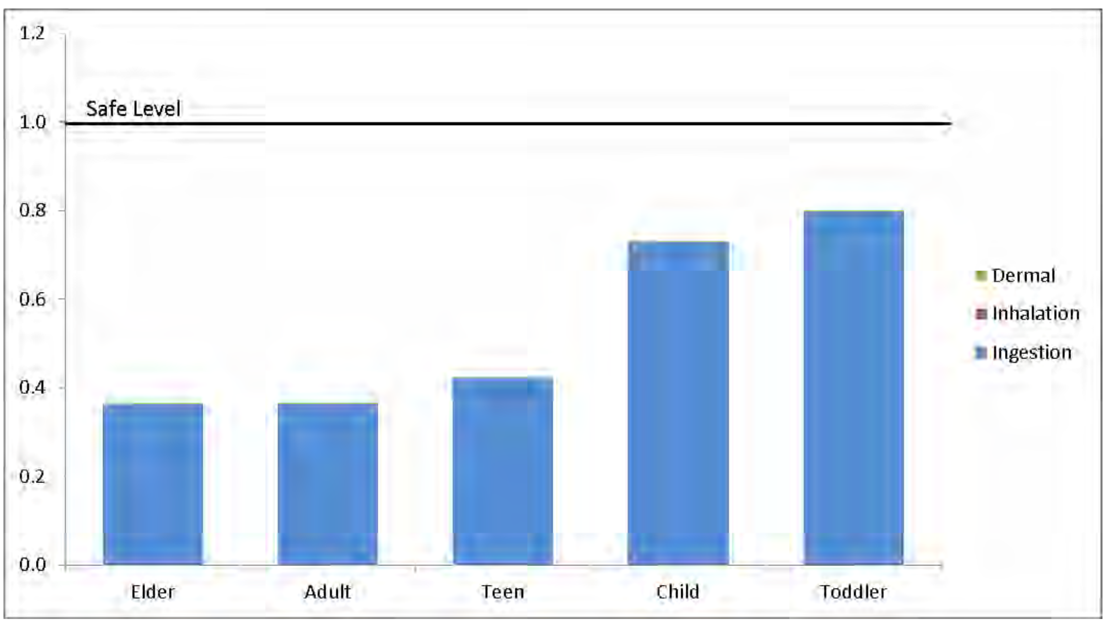


Table H.1 Calculated hazard quotients – antimony

Scenario	Toddler				Child				Teen				Adult				Elder			
	Ingestion	Dermal	Inhalation	Total	Ingestion	Dermal	Inhalation	Total	Ingestion	Dermal	Inhalation	Total	Ingestion	Dermal	Inhalation	Total	Ingestion	Dermal	Inhalation	Total
Base Cases - Typical Diets																				
Dettah Typical Country Food Diet	0.58	0.01	0.01	0.61	0.41	0.01	0.01	0.43	0.30	0.01	0.01	0.32	0.25	0.01	0.01	0.27	0.25	0.01	0.01	0.27
Dettah Supermarket Food Diet	0.25	0.01	0.01	0.27	0.16	0.01	0.01	0.18	0.13	0.01	0.01	0.15	0.09	0.01	0.01	0.11	0.09	0.01	0.01	0.11
Dettah Country Food + Wading @ Dettah	0.58	0.03	0.01	0.62	0.41	0.02	0.01	0.44	0.30	0.01	0.01	0.32	0.25	0.01	0.01	0.27	0.25	0.01	0.01	0.27
Ndilo Typical Country Food Diet	0.83	0.09	0.01	0.93	0.53	0.06	0.01	0.61	0.31	0.05	0.01	0.37	0.25	0.05	0.01	0.31	0.25	0.05	0.01	0.31
Ndilo Supermarket Food Diet	0.50	0.09	0.01	0.60	0.28	0.06	0.01	0.36	0.14	0.05	0.01	0.20	0.10	0.05	0.01	0.16	0.10	0.05	0.01	0.16
Ndilo Country Food + Wading @ Ndilo	0.84	0.17	0.01	1.0	0.54	0.12	0.01	0.67	0.31	0.06	0.01	0.38	0.26	0.05	0.01	0.32	0.25	0.05	0.01	0.32
Latham Island Country Food Diet	0.56	0.08	0.01	0.64	0.33	0.06	0.01	0.40	0.19	0.04	0.01	0.24	0.14	0.04	0.01	0.19	0.14	0.04	0.01	0.19
Latham Island Supermarket Food Diet	0.46	0.08	0.01	0.55	0.26	0.06	0.01	0.33	0.14	0.04	0.01	0.19	0.10	0.04	0.01	0.15	0.10	0.04	0.01	0.15
Latham Island Country Food + Wading @ Latham Island	0.56	0.10	0.01	0.67	0.34	0.07	0.01	0.42	0.19	0.0\5	0.01	0.24	0.14	0.04	0.01	0.20	0.14	0.04	0.01	0.20
City of Yellowknife Country Food Diet	0.33	0.01	0.01	0.35	0.22	0.01	0.01	0.24	0.18	<0.01	0.01	0.20	0.14	<0.01	0.01	0.15	0.14	<0.01	0.01	0.15
City of Yellowknife Supermarket Food Diet	0.23	0.01	0.01	0.25	0.15	0.01	0.01	0.17	0.13	<0.01	0.01	0.15	0.09	<0.01	0.01	0.11	0.09	<0.01	0.01	0.11
City of Yellowknife Country Food + Wading @ Long Lake	0.33	0.02	0.01	0.36	0.22	0.02	0.01	0.25	0.18	0.01	0.01	0.20	0.14	0.01	0.01	0.16	0.14	0.01	0.01	0.16
City of Yellowknife Country Food + Beach @ Long Lake	0.34	0.02	0.01	0.37	0.23	0.02	0.01	0.25	0.18	0.01	0.01	0.20	0.14	0.01	0.01	0.16	0.14	0.01	0.01	0.16
City of Yellowknife Country Food + Swimming @ Long Lake	0.34	0.02	0.01	0.37	0.23	0.02	0.01	0.25	0.18	0.01	0.01	0.20	0.14	0.01	0.01	0.16	0.14	0.01	0.01	0.16
Ingraham Trail Country Food Diet	0.55	0.08	0.01	0.64	0.33	0.05	0.01	0.40	0.19	0.04	0.01	0.24	0.14	0.04	0.01	0.19	0.14	0.04	0.01	0.19
Additional Cases – Dettah																				
Dettah Typical Diet + Medicinal Tea	0.58	0.01	0.01	0.61	0.41	0.01	0.01	0.43	0.30	0.01	0.01	0.32	0.25	0.01	0.01	0.27	0.25	0.01	0.01	0.27
Dettah Typical Diet + Drinking Water	0.58	0.01	0.01	0.60	0.40	0.01	0.01	0.42	0.30	0.01	0.01	0.32	0.25	0.01	0.01	0.26	0.25	0.01	0.01	0.26
Dettah Typical Diet + Organs	0.58	0.01	0.01	0.61	0.41	0.01	0.01	0.43	0.30	0.01	0.01	0.32	0.25	0.01	0.01	0.27	0.25	0.01	0.01	0.27
Dettah High Country Food Diet	0.39	0.01	0.01	0.41	0.28	0.01	0.01	0.30	0.18	0.01	0.01	0.19	0.26	0.01	0.01	0.28	0.17	0.01	0.01	0.18
Dettah High Diet + Medicinal Tea	0.39	0.01	0.01	0.41	0.28	0.01	0.01	0.30	0.18	0.01	0.01	0.19	0.26	0.01	0.01	0.28	0.17	0.01	0.01	0.18
Dettah High Diet + Organs	0.39	0.01	0.01	0.41	0.28	0.01	0.01	0.30	0.18	0.01	0.01	0.19	0.26	0.01	0.01	0.28	0.17	0.01	0.01	0.19
Additional Cases – Ndilo																				
Ndilo Typical Diet + Medicinal Tea	0.83	0.09	0.01	0.93	0.53	0.06	0.01	0.61	0.31	0.05	0.01	0.37	0.25	0.05	0.01	0.31	0.25	0.05	0.01	0.31
Ndilo Typical Diet + Drinking Water	0.85	0.09	0.01	0.95	0.55	0.06	0.01	0.62	0.32	0.05	0.01	0.38	0.27	0.05	0.01	0.32	0.27	0.05	0.01	0.32
Ndilo Typical Diet + Organs	0.83	0.09	0.01	0.93	0.53	0.06	0.01	0.61	0.31	0.05	0.01	0.37	0.26	0.05	0.01	0.31	0.25	0.05	0.01	0.31
Ndilo High Country Food Diet	0.64	0.09	0.01	0.74	0.41	0.06	0.01	0.48	0.18	0.05	0.01	0.24	0.27	0.05	0.01	0.32	0.17	0.05	0.01	0.23
Ndilo High Diet + Medicinal Tea	0.64	0.09	0.01	0.74	0.41	0.06	0.01	0.48	0.18	0.05	0.01	0.24	0.27	0.05	0.01	0.33	0.17	0.05	0.01	0.23

Scenario	Toddler				Child				Teen				Adult				Elder			
	Ingestion	Dermal	Inhalation	Total	Ingestion	Dermal	Inhalation	Total	Ingestion	Dermal	Inhalation	Total	Ingestion	Dermal	Inhalation	Total	Ingestion	Dermal	Inhalation	Total
Ndilo High Diet + Organs	0.64	0.09	0.01	0.74	0.41	0.06	0.01	0.48	0.18	0.05	0.01	0.24	0.27	0.05	0.01	0.33	0.17	0.05	0.01	0.23
Additional Cases - Latham Island																				
Latham Island + Medicinal Tea	0.56	0.08	0.01	0.64	0.33	0.06	0.01	0.40	0.19	0.04	0.01	0.24	0.14	0.04	0.01	0.19	0.14	0.04	0.01	0.19
Latham Island + Drinking Water	0.56	0.08	0.01	0.65	0.34	0.06	0.01	0.41	0.19	0.04	0.01	0.24	0.15	0.04	0.01	0.20	0.15	0.04	0.01	0.20
Latham Island + Organs	0.56	0.08	0.01	0.64	0.33	0.06	0.01	0.40	0.19	0.04	0.01	0.24	0.14	0.04	0.01	0.20	0.14	0.04	0.01	0.20
Additional Cases - City of Yellowknife																				
City of Yellowknife + Medicinal Tea	0.33	0.01	0.01	0.35	0.22	0.01	0.01	0.24	0.18	<0.01	0.01	0.20	0.14	<0.01	0.01	0.15	0.14	<0.01	0.01	0.15
City of Yellowknife + Mushrooms < 10km	0.33	0.01	0.01	0.35	0.22	0.01	0.01	0.24	0.18	0.00	0.01	0.20	0.15	0.00	0.01	0.17	0.15	0.00	0.01	0.17
City of Yellowknife + Mushrooms 10 - 25km	0.33	0.01	0.01	0.35	0.22	0.01	0.01	0.24	0.18	0.00	0.01	0.20	0.14	0.00	0.01	0.16	0.14	0.00	0.01	0.16
City of Yellowknife + Mushrooms > 25km	0.33	0.01	0.01	0.35	0.22	0.01	0.01	0.24	0.18	0.00	0.01	0.20	0.15	0.00	0.01	0.16	0.15	0.00	0.01	0.16
City of Yellowknife + Organs	0.33	0.01	0.01	0.35	0.22	0.01	0.01	0.24	0.18	<0.01	0.01	0.20	0.14	<0.01	0.01	0.15	0.14	<0.01	0.01	0.15
Additional Cases - Ingraham Trail																				
Ingraham Trail + Medicinal Tea	0.55	0.08	0.01	0.64	0.33	0.05	0.01	0.40	0.19	0.04	0.01	0.24	0.14	0.04	0.01	0.19	0.14	0.04	0.01	0.19
Ingraham Trail + Organs	0.55	0.08	0.01	0.64	0.33	0.05	0.01	0.40	0.19	0.04	0.01	0.24	0.14	0.04	0.01	0.19	0.14	0.04	0.01	0.19
Townsite																				
Current Townsite + Wading @ Townsite	0.80	0.15	0.01	0.96	0.46	0.11	0.01	0.58	0.19	0.08	0.01	0.29	0.15	0.08	0.01	0.24	0.15	0.08	0.01	0.24
Current Townsite + Recreational Use of Giant Mine	0.85	0.20	0.01	**1.1**	0.50	0.15	0.01	0.65	0.20	0.11	0.01	0.32	0.15	0.11	0.01	0.27	0.15	0.11	0.01	0.27
Future Townsite + Wading @ Townsite	0.41	0.03	0.01	0.45	0.26	0.02	0.01	0.30	0.18	0.02	0.01	0.21	0.14	0.02	0.01	0.17	0.14	0.02	0.01	0.17
Future Townsite + Recreational Use of Giant Mine	0.43	0.05	0.01	0.49	0.27	0.03	0.01	0.32	0.19	0.03	0.01	0.22	0.14	0.03	0.01	0.18	0.14	0.03	0.01	0.18
Future																				
City of Yellowknife Future Recreational Use Giant Mine	0.34	0.01	0.01	0.36	0.23	0.01	0.01	0.25	0.18	0.01	0.01	0.20	0.14	0.01	0.01	0.16	0.14	0.01	0.01	0.16
Sensitivity Assessments																				
Ndilo Typical Diet + Max Measured Country Food	0.84	0.09	0.01	0.94	0.54	0.06	0.01	0.61	0.31	0.05	0.01	0.37	0.26	0.05	0.01	0.32	0.26	0.05	0.01	0.32
Ndilo Typical Diet + All Ptarmigan	0.85	0.09	0.01	0.95	0.54	0.06	0.01	0.62	0.31	0.05	0.01	0.37	0.26	0.05	0.01	0.32	0.26	0.05	0.01	0.32
Ndilo Typical Diet + 100% Berry from Ndilo	0.83	0.09	0.01	0.93	0.53	0.06	0.01	0.61	0.31	0.05	0.01	0.37	0.25	0.05	0.01	0.31	0.25	0.05	0.01	0.31
Ndilo Typical Diet + Max Moose Sample	0.83	0.09	0.01	0.93	0.53	0.06	0.01	0.61	0.31	0.05	0.01	0.37	0.25	0.05	0.01	0.31	0.25	0.05	0.01	0.31
Ndilo Typical Diet - Hot Spot Soil Removed	0.83	0.09	0.01	0.93	0.53	0.06	0.01	0.61	0.31	0.05	0.01	0.37	0.25	0.05	0.01	0.31	0.25	0.05	0.01	0.31
Ndilo Typical Diet + Indoor Dust = Outdoor Soil	0.92	0.11	0.01	1.0	0.56	0.08	0.01	0.65	0.31	0.06	0.01	0.38	0.25	0.06	0.01	0.32	0.25	0.06	0.01	0.32
Ndilo Typical Diet + 100% Meat Bioaccessibility	0.83	0.09	0.01	0.93	0.53	0.06	0.01	0.61	0.31	0.05	0.01	0.37	0.25	0.05	0.01	0.31	0.25	0.05	0.01	0.31

Note: **Bold** values indicate a hazard of quotient > 1 and that an intake exceeds the permissible level.

Table H.2 Calculated hazard quotients – manganese

Scenario	Toddler				Child				Teen				Adult				Elder			
	Ingestion	Dermal	Inhalation	Total	Ingestion	Dermal	Inhalation	Total	Ingestion	Dermal	Inhalation	Total	Ingestion	Dermal	Inhalation	Total	Ingestion	Dermal	Inhalation	Total
Base Cases - Typical Diets																				
Dettah Typical Country Food Diet	0.80	<0.01	0	0.80	0.73	<0.01	0	0.73	0.43	<0.01	0	0.43	0.37	<0.01	0	0.37	0.37	<0.01	0	0.37
Dettah Supermarket Food Diet	0.78	<0.01	0	0.78	0.71	<0.01	0	0.71	0.42	<0.01	0	0.42	0.36	<0.01	0	0.36	0.36	<0.01	0	0.36
Dettah Country Food + Wading @ Dettah	0.80	0.003	0	0.80	0.73	0.003	0	0.73	0.43	<0.01	0	0.43	0.37	<0.01	0	0.37	0.37	<0.01	0	0.37
Ndilo Typical Country Food Diet	0.80	<0.01	0	0.80	0.73	<0.01	0	0.73	0.43	<0.01	0	0.43	0.37	<0.01	0	0.37	0.37	<0.01	0	0.37
Ndilo Supermarket Food Diet	0.78	<0.01	0	0.78	0.71	<0.01	0	0.71	0.42	<0.01	0	0.42	0.36	<0.01	0	0.36	0.36	<0.01	0	0.36
Ndilo Country Food + Wading @ Ndilo	0.80	0.005	0	0.80	0.73	0.004	0	0.73	0.43	<0.01	0	0.43	0.37	<0.01	0	0.37	0.37	<0.01	0	0.37
Latham Island Country Food Diet	0.79	<0.01	0	0.79	0.73	<0.01	0	0.73	0.42	<0.01	0	0.42	0.36	<0.01	0	0.36	0.36	<0.01	0	0.36
Latham Island Supermarket Food Diet	0.78	<0.01	0	0.78	0.71	<0.01	0	0.71	0.42	<0.01	0	0.42	0.36	<0.01	0	0.36	0.36	<0.01	0	0.36
Latham Island Country Food + Wading @ Latham Island	0.79	0.002	0	0.79	0.73	0.002	0	0.73	0.42	<0.01	0	0.42	0.36	<0.01	0	0.36	0.36	<0.01	0	0.36
City of Yellowknife Country Food Diet	0.80	<0.01	0	0.80	0.73	<0.01	0	0.73	0.42	<0.01	0	0.42	0.36	<0.01	0	0.36	0.36	<0.01	0	0.36
City of Yellowknife Supermarket Food Diet	0.78	<0.01	0	0.78	0.72	<0.01	0	0.72	0.42	<0.01	0	0.42	0.36	<0.01	0	0.36	0.36	<0.01	0	0.36
City of Yellowknife Country Food + Wading @ Long Lake	0.80	0.001	0	0.80	0.73	0.001	0	0.73	0.42	<0.01	0	0.42	0.36	<0.01	0	0.36	0.36	<0.01	0	0.36
City of Yellowknife Country Food + Beach @ Long Lake	0.80	0.001	0	0.80	0.73	0.001	0	0.73	0.42	<0.01	0	0.42	0.36	<0.01	0	0.36	0.36	<0.01	0	0.36
City of Yellowknife Country Food + Swimming @ Long Lake	0.80	0.001	0	0.80	0.73	0.001	0	0.73	0.42	<0.01	0	0.42	0.36	<0.01	0	0.36	0.36	<0.01	0	0.36
Ingraham Trail Country Food Diet	0.80	<0.01	0	0.80	0.73	<0.01	0	0.73	0.42	<0.01	0	0.42	0.36	<0.01	0	0.36	0.36	<0.01	0	0.36

Note: measured air concentrations were not available for manganese.

H.2 Results for Cancer Causing COPC

Arsenic is a known carcinogen and was identified as a COPC for the HHRA. Evaluation for potential risks from exposure to arsenic is completed on an incremental basis (with the consideration of exposures above background level exposures) and on a lifetime basis, which is evaluated through the use of a lifetime receptor.

To determine the incremental risks, the background exposure was subtracted from the total exposure to determine the incremental exposure, which was used to calculate the incremental risk. The incremental risk for each life stage was used to calculate the risk to a lifetime receptor, as shown in Equation H-2:

$$Incremental\ Lifetime\ Risk\ Level = \sum_{life\ stage} Intake_{inc} \times SF \times \frac{Lifestage\ Yrs}{Lifetime\ Yrs} \quad \text{(H-2)}$$

Where:

$Intake_{in}$	=	incremental intake for life stage (mg/kg-d)
SF	=	cancer slope factor (1/(mg/(kg-d)))

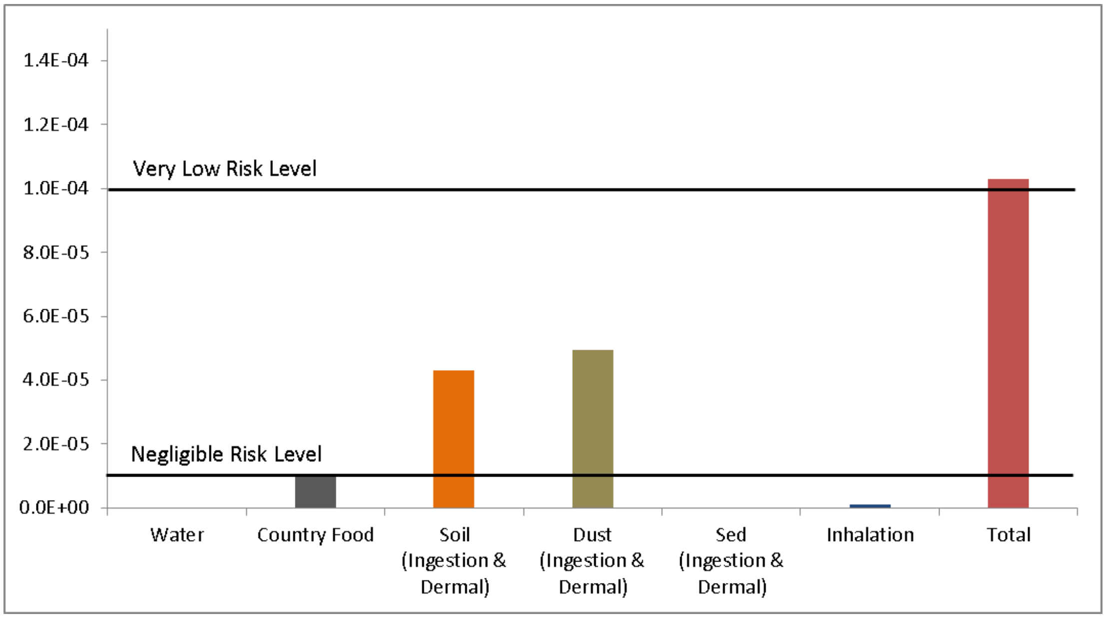
The lifetime receptor was assumed to have a total of 80 years exposure (Lifetime Yrs), with 4 years as a toddler, 6 years as a child, 8 years as a teen, 52 years as an adult, and 10 years as an elder (Lifestage Yrs).

For the inhalation pathway, the incremental air concentration was multiplied by a slope factor for air concentration to calculate the incremental risk level for air exposures.

Figure H.3 provides selected results for arsenic exposure. The lifetime risk level due to arsenic for the Ndilo Typical Country Food Diet receptors is dominated by soil and dust exposures. The consumption of country foods and inhalation of air contribute less materially to the estimated risk level, and the total estimated risk level is at the very low risk level of exposure. For the City of Yellowknife Country Food Diet receptors, the contributions to the lifetime risk level are more evenly shared between country food, soil, dust, and air; the total estimated risk level is at the negligible risk level of exposure.

Figure H.3 Selected results for arsenic

Lifetime Risk Levels for Ndilo Typical Country Food Diet



Lifetime Risk Levels for City of Yellowknife Country Food Diet

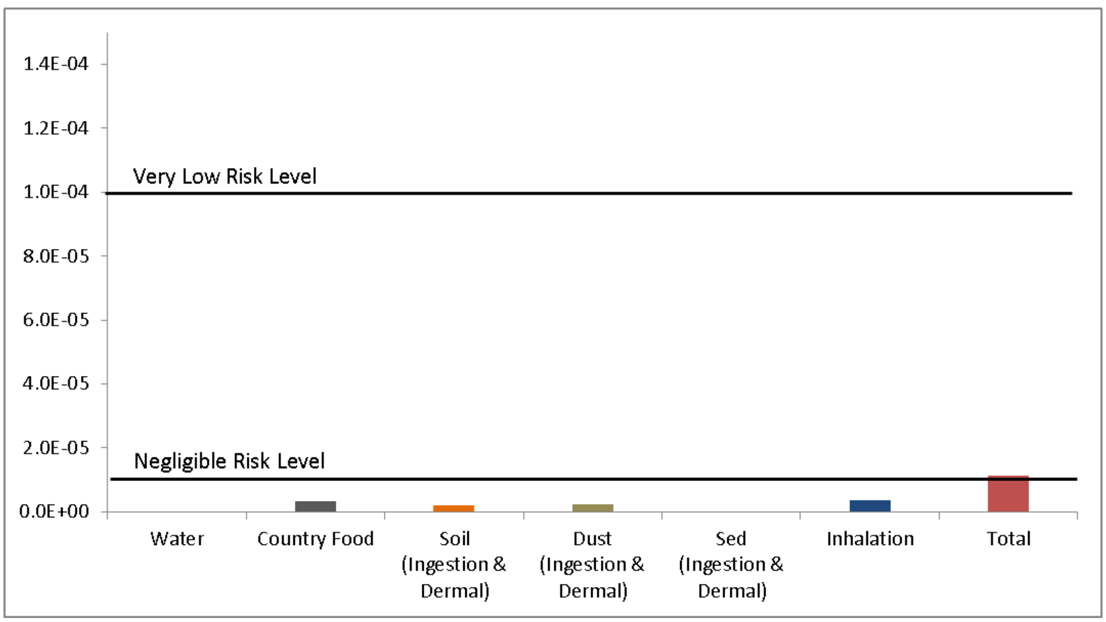


Table H.3 summarizes the calculated incremental cancer risk levels for arsenic for the various scenarios considered in the assessment. Risk levels are presented by media (i.e., water, food, soil, sediment, and air), as well as a total risk level for the lifetime receptor. Values in the table that are greater than the Health Canada's acceptable incremental lifetime cancer risk level of one-in-one hundred thousand people (1 x 10^{-5}) are indicated in **bold**; values below this level are considered negligible.

In order to provide a context for the incremental risks associated with arsenic exposure in this study, a risk framework was adopted as described in Section 3.5.2 of the main document. In this framework, risks below one-in-one hundred thousand people were considered to be negligible and risks between one-in-ten thousand (1 x 10^{-4}) and one-in-one hundred thousand people (1 x 10^{-5}) are considered to be very low. Risks above one-in-ten thousand (1 x 10^{-4}) were considered to be low risks. The results in the table indicate that the risks associated with the Giant Mine are in the negligible to very low range for most scenarios, with a few scenarios within the bottom of the low risk range. The incremental arsenic risks are dominated by soil and indoor dust exposures at Ndilo, Dettah, Latham Island, City of Yellowknife, and Ingraham Trail locations. In the future at the former Townsite location, remedial activities will reduce arsenic concentrations in soil and, under a residential scenario (most restrictive land use), the risks are considered to be in the very low range.

Table H.3 Calculated lifetime incremental risk levels – arsenic

Scenario	Incremental Arsenic Risk - Lifetime Receptor						
	Water	Food	Soil (Ingestion & Dermal)	Dust (Ingestion & Dermal)	Sediment (Ingestion & Dermal)	Air	Total
Base Cases - Typical Diets							
Dettah Typical Country Food Diet	0.0	$9.3x10^{-6}$	$4.5x10^{-6}$	$5.2x10^{-6}$	0.0	$9.6x10^{-7}$	**$2.0x10^{-5}$**
Dettah Supermarket Food Diet	0.0	0.0	$4.5x10^{-6}$	$5.2x10^{-6}$	0.0	$9.6x10^{-7}$	**$1.1x10^{-5}$**
Dettah Country Food + Wading @ Dettah	0.0	$9.3x10^{-6}$	$4.5x10^{-6}$	$5.2x10^{-6}$	0.0	$9.6x10^{-7}$	**$2.0x10^{-5}$**
Ndilo Typical Country Food Diet	0.0	$9.6x10^{-6}$	**$4.3x10^{-5}$**	**$4.9x10^{-5}$**	0.0	$9.6x10^{-7}$	**$1.0x10^{-4}$**
Ndilo Supermarket Food Diet	0.0	0.0	**$4.3x10^{-5}$**	**$4.9x10^{-5}$**	0.0	$9.6x10^{-7}$	**$9.3x10^{-5}$**
Ndilo Country Food + Wading @ Ndilo	0.0	$9.6x10^{-6}$	**$4.3x10^{-5}$**	**$4.9x10^{-5}$**	$3.9x10^{-6}$	$9.6x10^{-7}$	**$1.1x10^{-4}$**
Latham Island Country Food Diet	0.0	$3.6x10^{-6}$	**$3.7x10^{-5}$**	**$4.3x10^{-5}$**	0.0	$9.6x10^{-7}$	**$8.5x10^{-5}$**
Latham Island Supermarket Food Diet	0.0	0.0	**$3.7x10^{-5}$**	**$4.3x10^{-5}$**	0.0	$9.6x10^{-7}$	**$8.1x10^{-5}$**
Latham Island Country Food + Wading @ Latham Island	0.0	$3.6x10^{-6}$	**$3.7x10^{-5}$**	**$4.3x10^{-5}$**	0.0	$9.6x10^{-7}$	**$8.5x10^{-5}$**
City of Yellowknife Country Food Diet	0.0	$3.3x10^{-6}$	$2.1x10^{-6}$	$2.4x10^{-6}$	0.0	$3.5x10^{-6}$	**$1.1x10^{-5}$**
City of Yellowknife Supermarket Food Diet	0.0	0.0	$2.1x10^{-6}$	$2.4x10^{-6}$	0.0	$3.5x10^{-6}$	$8.0x10^{-6}$
City of Yellowknife Country Food + Wading @ Long Lake	0.0	$3.3x10^{-6}$	$2.1x10^{-6}$	$2.4x10^{-6}$	$6.0x10^{-6}$	$3.5x10^{-6}$	**$1.7x10^{-5}$**
City of Yellowknife Country Food + Beach @ Long Lake	0.0	$3.3x10^{-6}$	$2.1x10^{-6}$	$2.4x10^{-6}$	**$1.2x10^{-5}$**	$3.5x10^{-6}$	**$2.4x10^{-5}$**
City of Yellowknife Country Food + Swimming @ Long Lake	0.0	**$2.3x10^{-5}$**	$2.1x10^{-6}$	$2.4x10^{-6}$	$6.3x10^{-6}$	$3.5x10^{-6}$	**$3.7x10^{-5}$**
Ingraham Trail Country Food Diet	0.0	$3.3x10^{-6}$	$2.1x10^{-7}$	$2.4x10^{-7}$	0.0	$3.5x10^{-6}$	$7.3x10^{-6}$
Additional Cases - Dettah							
Dettah Typical Diet + Medicinal Tea	0.0	$9.4x10^{-6}$	$4.5x10^{-6}$	$5.2x10^{-6}$	0.0	$9.6x10^{-7}$	**$2.0x10^{-5}$**
Dettah Typical Diet + Drinking Water	0.0	$9.3x10^{-6}$	$4.5x10^{-6}$	$5.2x10^{-6}$	0.0	$9.6x10^{-7}$	**$2.0x10^{-5}$**
Dettah Typical Diet + Organs	0.0	**$2.0x10^{-5}$**	$4.5x10^{-6}$	$5.2x10^{-6}$	0.0	$9.6x10^{-7}$	**$3.1x10^{-5}$**
Dettah High Country Food Diet	0.0	**$2.9x10^{-5}$**	$4.5x10^{-6}$	$5.2x10^{-6}$	0.0	$9.6x10^{-7}$	**$4.0x10^{-5}$**
Dettah High Diet + Medicinal Tea	0.0	**$3.0x10^{-5}$**	$4.5x10^{-6}$	$5.2x10^{-6}$	0.0	$9.6x10^{-7}$	**$4.1x10^{-5}$**

Scenario	Incremental Arsenic Risk - Lifetime Receptor						
	Water	Food	Soil (Ingestion & Dermal)	Dust (Ingestion & Dermal)	Sediment (Ingestion & Dermal)	Air	Total
Dettah High Diet + Organs	0.0	**$4.5x10^{-5}$**	$4.5x10^{-6}$	$5.2x10^{-6}$	0.0	$9.6x10^{-7}$	**$5.6x10^{-5}$**
Additional Cases - Ndilo							
Ndilo Typical Diet + Medicinal Tea	0.0	$9.7x10^{-6}$	**$4.3x10^{-5}$**	**$4.9x10^{-5}$**	0.0	$9.6x10^{-7}$	**$1.0x10^{-4}$**
Ndilo Typical Diet + Drinking Water	$3.5x10^{-6}$	**$1.9x10^{-5}$**	**$4.3x10^{-5}$**	**$4.9x10^{-5}$**	0.0	$9.6x10^{-7}$	**$1.1x10^{-4}$**
Ndilo Typical Diet + Organs	0.0	**$2.1x10^{-5}$**	**$4.3x10^{-5}$**	**$4.9x10^{-5}$**	0.0	$9.6x10^{-7}$	**$1.1x10^{-4}$**
Ndilo High Country Food Diet	0.0	**$3.0x10^{-5}$**	**$4.3x10^{-5}$**	**$4.9x10^{-5}$**	0.0	$9.6x10^{-7}$	**$1.2x10^{-4}$**
Ndilo High Diet + Medicinal Tea	0.0	**$3.1x10^{-5}$**	**$4.3x10^{-5}$**	**$4.9x10^{-5}$**	0.0	$9.6x10^{-7}$	**$1.2x10^{-4}$**
Ndilo High Diet + Organs	0.0	**$4.6x10^{-5}$**	**$4.3x10^{-5}$**	**$4.9x10^{-5}$**	0.0	$9.6x10^{-7}$	**$1.4x10^{-4}$**
Additional Cases - Latham Island							
Latham Island + Medicinal Tea	0.0	$3.6x10^{-6}$	**$3.7x10^{-5}$**	**$4.3x10^{-5}$**	0.0	$9.6x10^{-7}$	**$8.5x10^{-5}$**
Latham Island + Drinking Water	$3.1x10^{-6}$	**$1.3x10^{-5}$**	**$3.7x10^{-5}$**	**$4.3x10^{-5}$**	0.0	$9.6x10^{-7}$	**$9.5x10^{-5}$**
Latham Island + Organs	0.0	$8.5x10^{-6}$	**$3.7x10^{-5}$**	**$4.3x10^{-5}$**	0.0	$9.6x10^{-7}$	**$9.0x10^{-5}$**
Additional Cases - City of Yellowknife							
City of Yellowknife + Medicinal Tea	0.0	$3.4x10^{-6}$	$2.1x10^{-6}$	$2.4x10^{-6}$	0.0	$3.5x10^{-6}$	**$1.1x10^{-5}$**
City of Yellowknife + Mushrooms < 10km	0.0	**$4.6x10^{-5}$**	$2.1x10^{-6}$	$2.4x10^{-6}$	0.0	$3.5x10^{-6}$	**$5.4x10^{-5}$**
City of Yellowknife + Mushrooms 10 - 25km	0.0	$7.5x10^{-6}$	$2.1x10^{-6}$	$2.4x10^{-6}$	0.0	$3.5x10^{-6}$	**$1.6x10^{-5}$**
City of Yellowknife + Mushrooms > 25km	0.0	$3.3x10^{-6}$	$2.1x10^{-6}$	$2.4x10^{-6}$	0.0	$3.5x10^{-6}$	**$1.1x10^{-5}$**
City of Yellowknife + Organs	0.0	$8.3x10^{-6}$	$2.1x10^{-6}$	$2.4x10^{-6}$	0.0	$3.5x10^{-6}$	**$1.6x10^{-5}$**
Additional Cases - Ingraham Trail							
Ingraham Trail + Medicinal Tea	0.0	$3.4x10^{-6}$	$2.1x10^{-7}$	$2.4x10^{-7}$	0.0	$3.5x10^{-6}$	$7.4x10^{-6}$
Ingraham Trail + Organs	0.0	$8.3x10^{-6}$	$2.1x10^{-7}$	$2.4x10^{-7}$	0.0	$3.5x10^{-6}$	**$1.2x10^{-5}$**
Townsite							
Current Townsite + Wading @ Townsite	0.0	$3.3x10^{-6}$	**$8.8x10^{-5}$**	**$1.0x10^{-4}$**	**$3.9x10^{-4}$**	$3.5x10^{-6}$	**$5.8x10^{-4}$**
Current Townsite + Recreational Use of Giant Mine	0.0	**$2.6x10^{-5}$**	**$1.6x10^{-4}$**	**$1.0x10^{-4}$**	0.0	$3.5x10^{-6}$	**$2.9x10^{-4}$**
Future Townsite + Wading @ Townsite	0.0	$4.9x10^{-6}$	$4.1x10^{-6}$	$4.8x10^{-6}$	$3.1x10^{-6}$	$3.5x10^{-6}$	**$2.0x10^{-5}$**

Scenario	Incremental Arsenic Risk - Lifetime Receptor						
	Water	Food	Soil (Ingestion & Dermal)	Dust (Ingestion & Dermal)	Sediment (Ingestion & Dermal)	Air	Total
Future Townsite + Recreational Use of Giant Mine	0.0	$8.6x10^{-6}$	**$2.1x10^{-5}$**	$4.8x10^{-6}$	0.0	$3.5x10^{-6}$	**$3.8x10^{-5}$**
Future							
City of Yellowknife Future Recreational Use Giant Mine	0.0	$7.0x10^{-6}$	$2.9x10^{-6}$	$2.4x10^{-6}$	0.0	$3.5x10^{-6}$	**$1.6x10^{-5}$**
Sensitivity Assessments - Ndilo							
Ndilo Typical Diet + Max Measured Country Food	0.0	**$5.3x10^{-5}$**	**$4.3x10^{-5}$**	**$4.9x10^{-5}$**	0.0	$9.6x10^{-7}$	**$1.5x10^{-4}$**
Ndilo Typical Diet + All Ptarmigan	0.0	**$1.0x10^{-5}$**	**$4.3x10^{-5}$**	**$4.9x10^{-5}$**	0.0	$9.6x10^{-7}$	**$1.0x10^{-4}$**
Ndilo Typical Diet + 100% Berry from Ndilo	0.0	**$1.5x10^{-5}$**	**$4.3x10^{-5}$**	**$4.9x10^{-5}$**	0.0	$9.6x10^{-7}$	**$1.1x10^{-4}$**
Ndilo Typical Diet + Max Moose Sample	0.0	**$6.9x10^{-5}$**	**$4.3x10^{-5}$**	**$4.9x10^{-5}$**	0.0	$9.6x10^{-7}$	**$1.6x10^{-4}$**
Ndilo Typical Diet - Hot Spot Soil Removed	0.0	$9.6x10^{-6}$	**$3.5x10^{-5}$**	**$4.1x10^{-5}$**	0.0	$9.6x10^{-7}$	**$8.7x10^{-5}$**
Ndilo Typical Diet + Indoor Dust = Outdoor Soil	0.0	$9.7x10^{-6}$	**$4.3x10^{-5}$**	**$7.1x10^{-5}$**	0.0	$9.6x10^{-7}$	**$1.2x10^{-4}$**
Ndilo Typical Diet + 100% Meat Bioaccessibility	0.0	**$2.2x10^{-5}$**	**$4.3x10^{-5}$**	**$4.9x10^{-5}$**	0.0	$9.6x10^{-7}$	**$1.2x10^{-4}$**
Sensitivity Assessments – Mushroom							
City of Yellowknife + Mushrooms < 10km 100% Bioaccessibility	0.0	**$9.6x10^{-5}$**	$2.1x10^{-6}$	$2.4x10^{-6}$	0.0	$3.5x10^{-6}$	**$1.0x10^{-4}$**
City of Yellowknife + Mushrooms 10 - 25km 100% Bioaccessibility	0.0	**$1.2x10^{-5}$**	$2.1x10^{-6}$	$2.4x10^{-6}$	0.0	$3.5x10^{-6}$	**$2.0x10^{-5}$**
City of Yellowknife + Mushrooms > 25km 100% Bioaccessibility	0.0	$3.3x10^{-6}$	$2.1x10^{-6}$	$2.4x10^{-6}$	0.0	$3.5x10^{-6}$	**$1.1x10^{-5}$**
Climate Change							
Ndilo Future Climate Change	**$3.1x10^{-5}$**	**$4.2x10^{-5}$**	**$4.3x10^{-5}$**	**$4.9x10^{-5}$**	**$1.2x10^{-5}$**	$9.6x10^{-7}$	**$1.5x10^{-4}$**

Note: Incremental risks above the Health Canada level of $1x10^{-5}$ are **bold**; this level represents a negligible risk.

H.3 Sample Calculation

A sample risk calculation for Ndilo Typical Country Food Diet scenario is provided in the following steps. Sample calculations for all scenarios are provided in Appendix I.

Hazard quotient via ingestion – antimony (adult):

$$Hazard\ quotient - ingestion = \frac{Total\ Intake - ingestion\left(1.0 \times 10^{-4}\,\frac{mg}{kg\ d}\right)}{TRV - ingestion\left(4.0 \times 10^{-4}\,\frac{mg}{kg\ d}\right)}$$

$$= 0.25$$

Hazard quotient via inhalation – antimony (adult):

$$Hazard\ quotient - inhalation = \frac{Air\ concentration\left(2.3 \times 10^{-6}\,\frac{mg}{m^3}\right)}{TRV - inhalation\left(2.0 \times 10^{-4}\,\frac{mg}{m^3}\right)} = 0.01$$

Hazard quotient via dermal – antimony (adult):

$$Hazard\ quotient - dermal = \frac{Total\ Dermal\left(1.9 \times 10^{-5}\,\frac{mg}{kg\ d}\right)}{TRV - dermal\left(4.0 \times 10^{-4}\,\frac{mg}{kg\ d}\right)} = 0.05$$

Total hazard quotient – antimony (adult):

$$\begin{aligned} &Hazard\ quotient \\ &\quad = Hazard\ quotient - ingestion\ (0.25) + Hazard\ quotient \\ &\quad - inhalation\ (0.01) + Hazard\ quotient - dermal\ (0.05) = 0.31 \end{aligned}$$

Incremental risk level via ingestion – arsenic (lifetime):

$$\begin{aligned} &Incremental\ risk\ level - ingestion \\ &\quad = Total\ Incremental\ Intake - ingestion\left(4.0 \times 10^{-5}\,\frac{mg}{kg\ d}\right) \times SF \\ &\quad - ingestion\left(1.8\,\frac{kg\ d}{mg}\right) = 7.1 \times 10^{-5} \end{aligned}$$

Incremental risk level via inhalation – arsenic (lifetime):

$$Incremental\ risk\ level - inhalation$$
$$= Incremental\ Air\ concentration\left((1.5 \times 10^{-6} - 1.35 \times 10^{-6})\frac{mg}{m^3}\right)$$
$$\times SF - inhalation\left(6.4\frac{m^3}{mg}\right) = 9.6 \times 10^{-7}$$

Incremental risk level via dermal – arsenic (lifetime):

$$Incremental\ risk\ level - dermal$$
$$= Total\ Incremental\ Dermal\left(1.7 \times 10^{-5}\frac{mg}{kg\ d}\right) \times SF$$
$$- dermal\left(1.8\frac{kg\ d}{mg}\right) = 3.1 \times 10^{-5}$$

Total incremental risk level – arsenic (lifetime):

$$Incremental\ risk\ level$$
$$= Incremental\ risk\ level - ingestion\ (7.1 \times 10^{-5})$$
$$+ Incremental\ risk\ level - inhalation\ (9.6 \times 10^{-7})$$
$$+ Incremental\ risk\ level - dermal\ (3.1 \times 10^{-5}) = 1.0 \times 10^{-4}$$

APPENDIX I

HUMAN HEALTH SAMPLE CALCULATIONS

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APPENDIX I: HUMAN HEALTH SAMPLE CALCULATIONS

Sample calculations for the various scenarios considered in the HHRA are provided in the following sections. See the main report for a description of the scenarios and an interpretation of the results.

I.1 Typical Diets

Table I.1 Sample Calculation – Dettah Typical Country Food Diet

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	INGESTION PATHWAYS					
	Drinking Water					
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
10%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Ingestion Rate	kg/d				0.17
Adult	Ingestion Rate	kg/d				0.17
Teen	Ingestion Rate	kg/d				0.1547
Child	Ingestion Rate	kg/d				0.1275
Toddler	Ingestion Rate	kg/d				0.085
Elder	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0069
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345
Elder	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.69E-05	1.13E-05	1.57E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	7.16E-05	9.32E-06	1.29E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.77E-05	6.21E-06	8.63E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.46E-06	1.89E-07	2.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.18E-06	2.83E-07	3.93E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.89E-06	3.76E-07	5.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.01E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	8.32E-05	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.55E-05	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.69E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.53E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.36E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.65E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.83E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.79E-07	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.16E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.55E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0042
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.59E-05	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.78E-05	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.52E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.68E-07	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.15E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.53E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	13.3000	6.2000	59.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	2.00E-05	9.30E-06	8.85E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.13E-05	9.92E-06	9.44E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.86E-05	8.68E-06	8.26E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.79E-04	1.30E-04	1.24E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.86E-04	8.68E-05	8.26E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.82E-07	1.32E-07	1.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.01E-07	1.40E-07	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.12E-07	1.45E-07	1.38E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.49E-06	3.96E-06	3.77E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.13E-05	5.26E-06	5.01E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	9.3100	4.3400	41.3000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.33E-05	1.09E-05	1.03E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.33E-05	1.09E-05	1.03E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.05E-05	9.55E-06	9.09E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.89E-04	1.35E-04	1.28E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.82E-04	1.78E-04	1.69E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.29E-07	1.53E-07	1.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.29E-07	1.53E-07	1.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.43E-07	1.60E-07	1.52E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.77E-06	4.09E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.31E-05	1.08E-05	1.03E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	5.28E-06	9.94E-05	5.71E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	5.30E-06	9.94E-05	5.71E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	5.68E-06	1.20E-04	6.03E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	2.48E-05	1.63E-04	8.90E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	4.44E-05	2.33E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.33E+01	6.20E+00	5.90E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.28E-03	1.06E-03	1.01E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.28E-03	1.06E-03	1.01E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	2.02E-03	9.42E-04	8.97E-03	=Concentration x Dermal Loading Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Intake	mg/d	1.39E-03	6.48E-04	6.17E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	9.15E-04	4.27E-04	4.06E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.66E-07	1.50E-06	1.43E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.66E-07	1.50E-06	1.43E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	1.02E-06	1.58E-06	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.27E-06	1.97E-06	1.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.66E-06	2.59E-06	2.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	9.31E+00	4.34E+00	4.13E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.66E-03	7.73E-04	7.35E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.66E-03	7.73E-04	7.35E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.49E-03	6.94E-04	6.61E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.10E-03	5.12E-04	4.87E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.01E-04	3.73E-04	3.55E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	7.03E-07	1.09E-06	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	7.03E-07	1.09E-06	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.49E-07	1.16E-06	1.11E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	1.00E-06	1.56E-06	1.48E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.46E-06	2.26E-06	2.15E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.28E-06	9.94E-05	5.71E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	5.30E-06	9.94E-05	5.71E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	5.68E-06	1.20E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.48E-05	1.63E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.44E-05	2.33E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.30	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.41	0.73	=Total Intake by Ingestion / TRV - ingestion

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Hazard quotient	-	-	0.58	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.006	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.006	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.007	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.009	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.012	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.28E-06	9.94E-05	5.71E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	5.30E-06	9.94E-05	5.71E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	5.68E-06	1.20E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.48E-05	1.63E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.44E-05	2.33E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	8.75E-06	1.13E-04	6.23E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	1.57E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	calculated above

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Total Intake by Dermal	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.80E-06	2.79E-06	2.66E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.23E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.266	0.366	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.266	0.366	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.319	0.425	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.427	0.730	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.606	0.797	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.99E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.2 Sample Calculation – Dettah Supermarket Food Diet

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	INGESTION PATHWAYS					
	Drinking Water					
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	13.3000	6.2000	59.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	2.00E-05	9.30E-06	8.85E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.13E-05	9.92E-06	9.44E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.86E-05	8.68E-06	8.26E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.79E-04	1.30E-04	1.24E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.86E-04	8.68E-05	8.26E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.82E-07	1.32E-07	1.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.01E-07	1.40E-07	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.12E-07	1.45E-07	1.38E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.49E-06	3.96E-06	3.77E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.13E-05	5.26E-06	5.01E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	9.3100	4.3400	41.3000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.33E-05	1.09E-05	1.03E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.33E-05	1.09E-05	1.03E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.05E-05	9.55E-06	9.09E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.89E-04	1.35E-04	1.28E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.82E-04	1.78E-04	1.69E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.29E-07	1.53E-07	1.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.29E-07	1.53E-07	1.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.43E-07	1.60E-07	1.52E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.77E-06	4.09E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.31E-05	1.08E-05	1.03E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	6.11E-07	3.75E-05	5.59E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	6.30E-07	3.75E-05	5.59E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	6.55E-07	5.37E-05	5.90E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.73E-05	6.29E-05	8.72E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.44E-05	1.00E-04	1.06E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.33E+01	6.20E+00	5.90E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.28E-03	1.06E-03	1.01E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.28E-03	1.06E-03	1.01E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	2.02E-03	9.42E-04	8.97E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.39E-03	6.48E-04	6.17E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	9.15E-04	4.27E-04	4.06E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.66E-07	1.50E-06	1.43E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.66E-07	1.50E-06	1.43E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	1.02E-06	1.58E-06	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.27E-06	1.97E-06	1.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.66E-06	2.59E-06	2.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	9.31E+00	4.34E+00	4.13E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.66E-03	7.73E-04	7.35E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.66E-03	7.73E-04	7.35E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.49E-03	6.94E-04	6.61E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.10E-03	5.12E-04	4.87E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.01E-04	3.73E-04	3.55E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	7.03E-07	1.09E-06	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	7.03E-07	1.09E-06	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.49E-07	1.16E-06	1.11E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	1.00E-06	1.56E-06	1.48E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.46E-06	2.26E-06	2.15E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	6.11E-07	3.75E-05	5.59E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	6.30E-07	3.75E-05	5.59E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	6.55E-07	5.37E-05	5.90E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.73E-05	6.29E-05	8.72E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.44E-05	1.00E-04	1.06E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.09	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.09	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.13	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.16	0.71	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.25	0.78	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	calculated above

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Total Intake by Dermal	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.006	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.006	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.007	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.009	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.012	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	6.11E-07	3.75E-05	5.59E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	6.30E-07	3.75E-05	5.59E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	6.55E-07	5.37E-05	5.90E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.73E-05	6.29E-05	8.72E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.44E-05	1.00E-04	1.06E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	3.57E-06	4.42E-05	6.11E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	6.42E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.80E-06	2.79E-06	2.66E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.23E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.112	0.358	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.112	0.358	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.152	0.416	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.178	0.714	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.274	0.779	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.06E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.3 Sample Calculation – Dettah Country Food + Wading @ Dettah

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	INGESTION PATHWAYS					
	Drinking Water					
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
10%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.17
Adult	Ingestion Rate	kg/d				0.17
Teen	Ingestion Rate	kg/d				0.1547
Child	Ingestion Rate	kg/d				0.1275
Toddler	Ingestion Rate	kg/d				0.085
Elder	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0069
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345
Elder	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.69E-05	1.13E-05	1.57E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	7.16E-05	9.32E-06	1.29E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.77E-05	6.21E-06	8.63E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.46E-06	1.89E-07	2.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.18E-06	2.83E-07	3.93E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.89E-06	3.76E-07	5.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.01E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	8.32E-05	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.55E-05	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.69E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.53E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.36E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.65E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.83E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.79E-07	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.16E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Averaged Intake by body weight	mg/kg-d	1.55E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0042
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.59E-05	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.78E-05	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.52E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.68E-07	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.15E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.53E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	13.3000	6.2000	59.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	2.00E-05	9.30E-06	8.85E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.13E-05	9.92E-06	9.44E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.86E-05	8.68E-06	8.26E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.79E-04	1.30E-04	1.24E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.86E-04	8.68E-05	8.26E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.82E-07	1.32E-07	1.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.01E-07	1.40E-07	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.12E-07	1.45E-07	1.38E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.49E-06	3.96E-06	3.77E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.13E-05	5.26E-06	5.01E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Sediment					
	Concentration	mg/kg	0.0000	0.4800	348.0000	
Elder	Ingestion Rate	kg/hr				0.0000077
Adult	Ingestion Rate	kg/hr				0.0000077
Teen	Ingestion Rate	kg/hr				0.0000077
Child	Ingestion Rate	kg/hr				0.0000077
Toddler	Ingestion Rate	kg/hr				0.0000077

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Intake	mg/hr	0.00E+00	3.70E-06	2.68E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/hr	0.00E+00	3.70E-06	2.68E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	0.00E+00	3.70E-06	2.68E-03	=Concentration x Ingestion Rate
Child	Intake	mg/hr	0.00E+00	3.70E-06	2.68E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/hr	0.00E+00	3.70E-06	2.68E-03	=Concentration x Ingestion Rate
	Exposure Duration - hours per day	hrs/d				2
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.05E-07	7.58E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.05E-07	7.58E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.24E-07	8.98E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.25E-07	1.63E-04	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.48E-07	3.25E-04	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	9.3100	4.3400	41.3000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.33E-05	1.09E-05	1.03E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.33E-05	1.09E-05	1.03E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.05E-05	9.55E-06	9.09E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.89E-04	1.35E-04	1.28E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.82E-04	1.78E-04	1.69E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.29E-07	1.53E-07	1.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.29E-07	1.53E-07	1.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.43E-07	1.60E-07	1.52E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.77E-06	4.09E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.31E-05	1.08E-05	1.03E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	5.28E-06	9.95E-05	5.71E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	5.30E-06	9.95E-05	5.71E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	5.68E-06	1.20E-04	6.04E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	2.48E-05	1.63E-04	8.92E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	4.44E-05	2.33E-04	1.09E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.33E+01	6.20E+00	5.90E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.28E-03	1.06E-03	1.01E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.28E-03	1.06E-03	1.01E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	2.02E-03	9.42E-04	8.97E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.39E-03	6.48E-04	6.17E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	9.15E-04	4.27E-04	4.06E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.66E-07	1.50E-06	1.43E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.66E-07	1.50E-06	1.43E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	1.02E-06	1.58E-06	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.27E-06	1.97E-06	1.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.66E-06	2.59E-06	2.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Sediment	Units				
	Concentration	mg/kg	0.00E+00	4.80E-01	3.48E+02	
Elder	Dermal Loading Rate	kg/d				0.000696
Adult	Dermal Loading Rate	kg/d				0.000696
Teen	Dermal Loading Rate	kg/d				0.0006264
Child	Dermal Loading Rate	kg/d				0.0028804
Toddler	Dermal Loading Rate	kg/d				0.00189
Elder	Intake	mg/d	0.00E+00	3.34E-04	2.42E-01	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	0.00E+00	3.34E-04	2.42E-01	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	0.00E+00	3.01E-04	2.18E-01	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	0.00E+00	1.38E-03	1.00E+00	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	0.00E+00	9.07E-04	6.58E-01	=Concentration x Dermal Loading Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.73E-07	3.43E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.73E-07	3.43E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.04E-07	3.65E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.20E-06	3.05E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.50E-06	3.99E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	Dust	Units				
	Concentration	mg/kg	9.31E+00	4.34E+00	4.13E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.66E-03	7.73E-04	7.35E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.66E-03	7.73E-04	7.35E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.49E-03	6.94E-04	6.61E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.10E-03	5.12E-04	4.87E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.01E-04	3.73E-04	3.55E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	7.03E-07	1.09E-06	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	7.03E-07	1.09E-06	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.49E-07	1.16E-06	1.11E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	1.00E-06	1.56E-06	1.48E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.46E-06	2.26E-06	2.15E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.67E-06	3.07E-06	3.67E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.67E-06	3.07E-06	3.67E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.76E-06	3.25E-06	3.91E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.27E-06	7.73E-06	3.08E-04	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.12E-06	1.03E-05	4.03E-04	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.28E-06	9.95E-05	5.71E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	5.30E-06	9.95E-05	5.71E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	5.68E-06	1.20E-04	6.04E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.48E-05	1.63E-04	8.92E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.44E-05	2.33E-04	1.09E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.30	0.43	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.41	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.58	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.67E-06	3.07E-06	3.67E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.67E-06	3.07E-06	3.67E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.76E-06	3.25E-06	3.91E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.27E-06	7.73E-06	3.08E-04	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	3.12E-06	1.03E-05	4.03E-04	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.008	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.008	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.008	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.019	0.003	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.026	0.003	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.28E-06	9.95E-05	5.71E-02	calculated above

Sample Calculation		**Units**	**Incremental Arsenic**	**Antimony**	**Manganese**	**Notes**
Adult	Total Intake by Ingestion	mg/kg-d	5.30E-06	9.95E-05	5.71E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	5.68E-06	1.20E-04	6.04E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.48E-05	1.63E-04	8.92E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.44E-05	2.33E-04	1.09E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	8.75E-06	1.13E-04	6.24E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	1.57E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.67E-06	3.07E-06	3.67E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.67E-06	3.07E-06	3.67E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.76E-06	3.25E-06	3.91E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.27E-06	7.73E-06	3.08E-04	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	3.12E-06	1.03E-05	4.03E-04	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.80E-06	3.80E-06	7.56E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.23E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.268	0.366	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.268	0.366	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.321	0.426	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.438	0.734	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.620	0.802	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.99E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.4 Sample Calculation – Ndilo Typical Country Food Diet

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
5%	***Berries 1***					
	Concentration	mg/kg	0.0860	0.0073	16.1175	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	9.78E-06	8.34E-07	1.83E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	8.06E-06	6.87E-07	1.51E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	5.37E-06	4.58E-07	1.01E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.64E-07	1.40E-08	3.07E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.45E-07	2.09E-08	4.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.26E-07	2.78E-08	6.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
95%	***Berries 2***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
10%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.17
Adult	Ingestion Rate	kg/d				0.17

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Ingestion Rate	kg/d				0.1547
Child	Ingestion Rate	kg/d				0.1275
Toddler	Ingestion Rate	kg/d				0.085
Elder	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0069
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345
Elder	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.69E-05	1.13E-05	1.57E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	7.16E-05	9.32E-06	1.29E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.77E-05	6.21E-06	8.63E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.46E-06	1.89E-07	2.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.18E-06	2.83E-07	3.93E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.89E-06	3.76E-07	5.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.01E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	8.32E-05	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.55E-05	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.69E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.53E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.36E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0028

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.65E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.83E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.79E-07	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.16E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.55E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0042
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.59E-05	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.78E-05	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.52E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.68E-07	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.15E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.53E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	127.3000	45.0000	25.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.91E-04	6.75E-05	3.75E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.04E-04	7.20E-05	4.00E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.78E-04	6.30E-05	3.50E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.67E-03	9.45E-04	5.25E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-03	6.30E-04	3.50E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.70E-06	9.55E-07	5.30E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.88E-06	1.02E-06	5.66E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.99E-06	1.06E-06	5.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.13E-05	2.87E-05	1.60E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-04	3.82E-05	2.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	89.1100	31.5000	17.5000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.96E-04	6.93E-05	3.85E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.76E-03	9.77E-04	5.43E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.65E-03	1.29E-03	7.18E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.28E-06	1.16E-06	6.45E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.40E-05	2.97E-05	1.65E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.21E-04	7.83E-05	4.35E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	1.07E-05	1.01E-04	5.70E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	1.08E-05	1.01E-04	5.70E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	1.14E-05	1.22E-04	6.03E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.73E-04	2.13E-04	8.90E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.40E-04	3.33E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.27E+02	4.50E+01	2.50E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.93E-02	6.84E-03	3.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.33E-02	4.70E-03	2.61E-03	=Concentration x Dermal Loading Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Intake	mg/d	8.76E-03	3.10E-03	1.72E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	9.72E-06	1.15E-05	6.37E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.43E-05	7.94E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.59E-05	1.88E-05	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	8.91E+01	3.15E+01	1.75E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.43E-02	5.04E-03	2.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.05E-02	3.72E-03	2.07E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.66E-03	2.71E-03	1.51E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.16E-06	8.44E-06	4.69E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	9.59E-06	1.13E-05	6.28E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.39E-05	1.64E-05	9.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.07E-05	1.01E-04	5.70E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.08E-05	1.01E-04	5.70E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.14E-05	1.22E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.73E-04	2.13E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.40E-04	3.33E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.31	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.53	0.73	=Total Intake by Ingestion / TRV - ingestion

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Hazard quotient	-	-	0.83	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.050	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.064	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.088	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.07E-05	1.01E-04	5.70E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.08E-05	1.01E-04	5.70E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.14E-05	1.22E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.73E-04	2.13E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.40E-04	3.33E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	3.95E-05	1.23E-04	6.23E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	7.11E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above

Sample Calculation		**Units**	**Incremental Arsenic**	**Antimony**	**Manganese**	**Notes**
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.72E-05	2.03E-05	1.13E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.09E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.311	0.366	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.312	0.366	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.367	0.425	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.608	0.729	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.933	0.796	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.03E-04	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.5 Sample Calculation – Ndilo Supermarket Food Diet

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	127.3000	45.0000	25.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.91E-04	6.75E-05	3.75E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.04E-04	7.20E-05	4.00E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.78E-04	6.30E-05	3.50E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.67E-03	9.45E-04	5.25E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-03	6.30E-04	3.50E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.70E-06	9.55E-07	5.30E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.88E-06	1.02E-06	5.66E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.99E-06	1.06E-06	5.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.13E-05	2.87E-05	1.60E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-04	3.82E-05	2.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	89.1100	31.5000	17.5000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.96E-04	6.93E-05	3.85E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.76E-03	9.77E-04	5.43E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.65E-03	1.29E-03	7.18E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52

	Sample Calculation	Units	Incremental Arsenic	Antimony	Manganese	Notes
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.28E-06	1.16E-06	6.45E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.40E-05	2.97E-05	1.65E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.21E-04	7.83E-05	4.35E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	5.85E-06	3.93E-05	5.59E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	6.03E-06	3.94E-05	5.59E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	6.27E-06	5.56E-05	5.90E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.65E-04	1.13E-04	8.71E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.29E-04	2.01E-04	1.06E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.27E+02	4.50E+01	2.50E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.93E-02	6.84E-03	3.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.33E-02	4.70E-03	2.61E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.76E-03	3.10E-03	1.72E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	9.72E-06	1.15E-05	6.37E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.43E-05	7.94E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.59E-05	1.88E-05	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	8.91E+01	3.15E+01	1.75E+01	
Elder	Dermal Loading Rate	kg/d				0.000178

Sample Calculation		**Units**	**Incremental Arsenic**	**Antimony**	**Manganese**	**Notes**
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.43E-02	5.04E-03	2.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.05E-02	3.72E-03	2.07E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.66E-03	2.71E-03	1.51E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.16E-06	8.44E-06	4.69E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	9.59E-06	1.13E-05	6.28E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.39E-05	1.64E-05	9.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.85E-06	3.93E-05	5.59E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	6.03E-06	3.94E-05	5.59E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	6.27E-06	5.56E-05	5.90E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.65E-04	1.13E-04	8.71E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.29E-04	2.01E-04	1.06E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.10	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.10	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.14	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.28	0.71	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.50	0.78	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.050	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.064	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.088	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.85E-06	3.93E-05	5.59E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	6.03E-06	3.94E-05	5.59E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	6.27E-06	5.56E-05	5.90E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.65E-04	1.13E-04	8.71E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.29E-04	2.01E-04	1.06E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	3.41E-05	5.46E-05	6.10E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	6.15E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.72E-05	2.03E-05	1.13E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.09E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.157	0.358	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.157	0.358	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.200	0.416	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.359	0.714	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.601	0.778	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	9.34E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.6 Sample Calculation – Ndilo Country Food + Wading @ Ndilo

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
5%	***Berries 1***					
	Concentration	mg/kg	0.0860	0.0073	16.1175	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	9.78E-06	8.34E-07	1.83E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	8.06E-06	6.87E-07	1.51E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	5.37E-06	4.58E-07	1.01E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.64E-07	1.40E-08	3.07E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.45E-07	2.09E-08	4.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.26E-07	2.78E-08	6.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
95%	***Berries 2***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
10%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.17
Adult	Ingestion Rate	kg/d				0.17

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Ingestion Rate	kg/d				0.1547
Child	Ingestion Rate	kg/d				0.1275
Toddler	Ingestion Rate	kg/d				0.085
Elder	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0069
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345
Elder	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.69E-05	1.13E-05	1.57E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	7.16E-05	9.32E-06	1.29E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.77E-05	6.21E-06	8.63E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.46E-06	1.89E-07	2.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.18E-06	2.83E-07	3.93E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.89E-06	3.76E-07	5.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.01E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	8.32E-05	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.55E-05	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.69E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.53E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.36E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0028

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.65E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.83E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.79E-07	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.16E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.55E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0042
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.59E-05	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.78E-05	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.52E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.68E-07	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.15E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.53E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	127.3000	45.0000	25.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.91E-04	6.75E-05	3.75E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.04E-04	7.20E-05	4.00E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.78E-04	6.30E-05	3.50E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.67E-03	9.45E-04	5.25E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-03	6.30E-04	3.50E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.70E-06	9.55E-07	5.30E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.88E-06	1.02E-06	5.66E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.99E-06	1.06E-06	5.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.13E-05	2.87E-05	1.60E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-04	3.82E-05	2.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Sediment					
	Concentration	mg/kg	2.3998	2.6900	544.0000	
Elder	Ingestion Rate	kg/hr				0.0000077
Adult	Ingestion Rate	kg/hr				0.0000077
Teen	Ingestion Rate	kg/hr				0.0000077
Child	Ingestion Rate	kg/hr				0.0000077
Toddler	Ingestion Rate	kg/hr				0.0000077
Elder	Intake	mg/hr	1.85E-05	2.07E-05	4.19E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/hr	1.85E-05	2.07E-05	4.19E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	1.85E-05	2.07E-05	4.19E-03	=Concentration x Ingestion Rate
Child	Intake	mg/hr	1.85E-05	2.07E-05	4.19E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/hr	1.85E-05	2.07E-05	4.19E-03	=Concentration x Ingestion Rate
	Exposure Duration - hours per day	hrs/d				2
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
Elder	Averaged Intake by body weight	mg/kg-d	5.23E-07	5.86E-07	1.18E-04	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.23E-07	5.86E-07	1.18E-04	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	6.19E-07	6.94E-07	1.40E-04	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.12E-06	1.26E-06	2.55E-04	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.24E-06	2.51E-06	5.08E-04	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	89.1100	31.5000	17.5000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.96E-04	6.93E-05	3.85E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.76E-03	9.77E-04	5.43E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.65E-03	1.29E-03	7.18E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.28E-06	1.16E-06	6.45E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.40E-05	2.97E-05	1.65E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.21E-04	7.83E-05	4.35E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	1.12E-05	1.02E-04	5.72E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	1.14E-05	1.02E-04	5.72E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	1.21E-05	1.23E-04	6.04E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.74E-04	2.14E-04	8.92E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.42E-04	3.36E-04	1.09E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.27E+02	4.50E+01	2.50E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.93E-02	6.84E-03	3.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.33E-02	4.70E-03	2.61E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.76E-03	3.10E-03	1.72E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	9.72E-06	1.15E-05	6.37E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.43E-05	7.94E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.59E-05	1.88E-05	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Sediment	Units				
	Concentration	mg/kg	2.40E+00	2.69E+00	5.44E+02	
Elder	Dermal Loading Rate	kg/d				0.000696
Adult	Dermal Loading Rate	kg/d				0.000696
Teen	Dermal Loading Rate	kg/d				0.0006264
Child	Dermal Loading Rate	kg/d				0.0028804
Toddler	Dermal Loading Rate	kg/d				0.00189
Elder	Intake	mg/d	1.67E-03	1.87E-03	3.79E-01	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.67E-03	1.87E-03	3.79E-01	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.50E-03	1.69E-03	3.41E-01	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	6.91E-03	7.75E-03	1.57E+00	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	4.54E-03	5.08E-03	1.03E+00	=Concentration x Dermal Loading Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	7.09E-07	2.65E-06	5.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	7.09E-07	2.65E-06	5.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.55E-07	2.82E-06	5.71E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	6.30E-06	2.36E-05	4.76E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	8.25E-06	3.08E-05	6.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	Dust	Units				
	Concentration	mg/kg	8.91E+01	3.15E+01	1.75E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.43E-02	5.04E-03	2.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.05E-02	3.72E-03	2.07E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.66E-03	2.71E-03	1.51E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.16E-06	8.44E-06	4.69E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	9.59E-06	1.13E-05	6.28E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.39E-05	1.64E-05	9.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.67E-05	2.15E-05	5.46E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.67E-05	2.15E-05	5.46E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.76E-05	2.27E-05	5.82E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.80E-05	4.91E-05	4.78E-04	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.81E-05	6.60E-05	6.25E-04	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.12E-05	1.02E-04	5.72E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.14E-05	1.02E-04	5.72E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.21E-05	1.23E-04	6.04E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.74E-04	2.14E-04	8.92E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.42E-04	3.36E-04	1.09E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.31	0.43	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.54	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.84	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.67E-05	2.15E-05	5.46E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.67E-05	2.15E-05	5.46E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.76E-05	2.27E-05	5.82E-05	calculated above

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Total Intake by Dermal	mg/kg-d	2.80E-05	4.91E-05	4.78E-04	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	3.81E-05	6.60E-05	6.25E-04	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.054	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.054	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.057	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.123	0.004	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.165	0.005	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.12E-05	1.02E-04	5.72E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.14E-05	1.02E-04	5.72E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.21E-05	1.23E-04	6.04E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.74E-04	2.14E-04	8.92E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.42E-04	3.36E-04	1.09E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	4.01E-05	1.24E-04	6.25E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	7.23E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.67E-05	2.15E-05	5.46E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.67E-05	2.15E-05	5.46E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.76E-05	2.27E-05	5.82E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.80E-05	4.91E-05	4.78E-04	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	3.81E-05	6.60E-05	6.25E-04	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.87E-05	2.59E-05	1.15E-04	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.37E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.320	0.367	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.320	0.367	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.376	0.426	=HQ-ing + HQ-inh + HQ-derm

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Total Hazard Quotient	-	-	0.670	0.735	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	1.016	0.804	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.07E-04	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.7 Sample Calculation – Latham Island Country Food Diet

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
5%	***Berries 1***					
	Concentration	mg/kg	0.0777	0.0042	17.5219	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	9.71E-06	5.19E-07	2.19E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	9.71E-06	5.19E-07	2.19E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	8.84E-06	4.72E-07	1.99E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	7.28E-06	3.89E-07	1.64E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	4.86E-06	2.60E-07	1.10E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	1.37E-07	7.34E-09	3.10E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.37E-07	7.34E-09	3.10E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.48E-07	7.91E-09	3.34E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.21E-07	1.18E-08	4.99E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.57E-08	6.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
95%	***Berries 2***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489
Adult	Ingestion Rate	kg/d				0.0489

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	110.6180	38.5300	27.3100	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.66E-04	5.78E-05	4.10E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.77E-04	6.16E-05	4.37E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.55E-04	5.39E-05	3.82E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.32E-03	8.09E-04	5.74E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.55E-03	5.39E-04	3.82E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.35E-06	8.17E-07	5.79E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.50E-06	8.72E-07	6.18E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.59E-06	9.04E-07	6.40E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	7.06E-05	2.46E-05	1.74E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	9.39E-05	3.27E-05	2.32E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	77.4326	26.9710	19.1170	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.94E-04	6.74E-05	4.78E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.94E-04	6.74E-05	4.78E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.70E-04	5.93E-05	4.21E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.40E-03	8.36E-04	5.93E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.17E-03	1.11E-03	7.84E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	2.74E-06	9.54E-07	6.76E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.74E-06	9.54E-07	6.76E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.85E-06	9.94E-07	7.04E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	7.30E-05	2.54E-05	1.80E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.92E-04	6.70E-05	4.75E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	6.88E-06	5.69E-05	5.67E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	7.03E-06	5.69E-05	5.67E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	7.38E-06	7.45E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.46E-04	1.34E-04	8.85E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.90E-04	2.22E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.11E+02	3.85E+01	2.73E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.89E-02	6.60E-03	4.68E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.89E-02	6.60E-03	4.68E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.68E-02	5.86E-03	4.15E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.16E-02	4.03E-03	2.85E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.61E-03	2.65E-03	1.88E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	8.04E-06	9.33E-06	6.61E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	8.04E-06	9.33E-06	6.61E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	8.45E-06	9.81E-06	6.95E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Averaged Intake by body weight	mg/kg-d	1.05E-05	1.22E-05	8.67E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.38E-05	1.61E-05	1.14E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	7.74E+01	2.70E+01	1.91E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.38E-02	4.80E-03	3.40E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.38E-02	4.80E-03	3.40E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.24E-02	4.32E-03	3.06E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	9.14E-03	3.18E-03	2.26E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	6.66E-03	2.32E-03	1.64E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	5.85E-06	6.79E-06	4.81E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	5.85E-06	6.79E-06	4.81E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	6.23E-06	7.23E-06	5.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	8.33E-06	9.67E-06	6.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.41E-05	9.96E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.47E-05	1.70E-05	1.21E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.89E-05	2.19E-05	1.55E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.59E-05	3.01E-05	2.14E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	6.88E-06	5.69E-05	5.67E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	7.03E-06	5.69E-05	5.67E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	7.38E-06	7.45E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.46E-04	1.34E-04	8.85E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	2.90E-04	2.22E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.19	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.33	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.56	0.79	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.47E-05	1.70E-05	1.21E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.89E-05	2.19E-05	1.55E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.59E-05	3.01E-05	2.14E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.040	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.040	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.043	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.055	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.075	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	6.88E-06	5.69E-05	5.67E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	7.03E-06	5.69E-05	5.67E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	7.38E-06	7.45E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.46E-04	1.34E-04	8.85E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	2.90E-04	2.22E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	3.17E-05	7.27E-05	6.20E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	5.70E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.47E-05	1.70E-05	1.21E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.89E-05	2.19E-05	1.55E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.59E-05	3.01E-05	2.14E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.49E-05	1.73E-05	1.23E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler

Sample Calculation		**Units**	**Incremental Arsenic**	**Antimony**	**Manganese**	**Notes**
						yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg -d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	2.69E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.194	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.194	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.240	0.422	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.400	0.725	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.642	0.791	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	8.48E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.8 Sample Calculation – Latham Island Supermarket Food Diet

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	110.6180	38.5300	27.3100	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.66E-04	5.78E-05	4.10E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.77E-04	6.16E-05	4.37E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.55E-04	5.39E-05	3.82E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.32E-03	8.09E-04	5.74E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.55E-03	5.39E-04	3.82E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.35E-06	8.17E-07	5.79E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.50E-06	8.72E-07	6.18E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.59E-06	9.04E-07	6.40E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	7.06E-05	2.46E-05	1.74E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	9.39E-05	3.27E-05	2.32E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	77.4326	26.9710	19.1170	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.94E-04	6.74E-05	4.78E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.94E-04	6.74E-05	4.78E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.70E-04	5.93E-05	4.21E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.40E-03	8.36E-04	5.93E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.17E-03	1.11E-03	7.84E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	2.74E-06	9.54E-07	6.76E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.74E-06	9.54E-07	6.76E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.85E-06	9.94E-07	7.04E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	7.30E-05	2.54E-05	1.80E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.92E-04	6.70E-05	4.75E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	5.08E-06	3.90E-05	5.59E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	5.24E-06	3.91E-05	5.59E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	5.45E-06	5.52E-05	5.90E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.44E-04	1.05E-04	8.71E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.86E-04	1.84E-04	1.06E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.11E+02	3.85E+01	2.73E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.89E-02	6.60E-03	4.68E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.89E-02	6.60E-03	4.68E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.68E-02	5.86E-03	4.15E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.16E-02	4.03E-03	2.85E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.61E-03	2.65E-03	1.88E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	8.04E-06	9.33E-06	6.61E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	8.04E-06	9.33E-06	6.61E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	8.45E-06	9.81E-06	6.95E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.05E-05	1.22E-05	8.67E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.38E-05	1.61E-05	1.14E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	7.74E+01	2.70E+01	1.91E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.38E-02	4.80E-03	3.40E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.38E-02	4.80E-03	3.40E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.24E-02	4.32E-03	3.06E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	9.14E-03	3.18E-03	2.26E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	6.66E-03	2.32E-03	1.64E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	5.85E-06	6.79E-06	4.81E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	5.85E-06	6.79E-06	4.81E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	6.23E-06	7.23E-06	5.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	8.33E-06	9.67E-06	6.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.41E-05	9.96E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.47E-05	1.70E-05	1.21E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.89E-05	2.19E-05	1.55E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.59E-05	3.01E-05	2.14E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.08E-06	3.90E-05	5.59E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	5.24E-06	3.91E-05	5.59E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	5.45E-06	5.52E-05	5.90E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.44E-04	1.05E-04	8.71E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	2.86E-04	1.84E-04	1.06E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.10	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.10	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.14	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.26	0.71	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.46	0.78	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.47E-05	1.70E-05	1.21E-06	calculated above

Sample Calculation	Units		Incremental Arsenic	Antimony	Manganese	Notes
Child	Total Intake by Dermal	mg/kg-d	1.89E-05	2.19E-05	1.55E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.59E-05	3.01E-05	2.14E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.040	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.040	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.043	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.055	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.075	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.08E-06	3.90E-05	5.59E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	5.24E-06	3.91E-05	5.59E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	5.45E-06	5.52E-05	5.90E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.44E-04	1.05E-04	8.71E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	2.86E-04	1.84E-04	1.06E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	2.97E-05	5.29E-05	6.10E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	5.34E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.47E-05	1.70E-05	1.21E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.89E-05	2.19E-05	1.55E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.59E-05	3.01E-05	2.14E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.49E-05	1.73E-05	1.23E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	2.69E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.149	0.358	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.149	0.358	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.192	0.416	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.328	0.714	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.547	0.778	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	8.13E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.9 Sample Calculation – Latham Island Country Food + Wading @ Latham Island

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
5%	***Berries 1***					
	Concentration	mg/kg	0.0777	0.0042	17.5219	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	9.71E-06	5.19E-07	2.19E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	9.71E-06	5.19E-07	2.19E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	8.84E-06	4.72E-07	1.99E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	7.28E-06	3.89E-07	1.64E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	4.86E-06	2.60E-07	1.10E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	1.37E-07	7.34E-09	3.10E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.37E-07	7.34E-09	3.10E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.48E-07	7.91E-09	3.34E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.21E-07	1.18E-08	4.99E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.57E-08	6.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
95%	***Berries 2***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	110.6180	38.5300	27.3100	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.66E-04	5.78E-05	4.10E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.77E-04	6.16E-05	4.37E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.55E-04	5.39E-05	3.82E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.32E-03	8.09E-04	5.74E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.55E-03	5.39E-04	3.82E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.35E-06	8.17E-07	5.79E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.50E-06	8.72E-07	6.18E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.59E-06	9.04E-07	6.40E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	7.06E-05	2.46E-05	1.74E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	9.39E-05	3.27E-05	2.32E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Sediment					
	Concentration	mg/kg	0.0000	0.8000	260.0000	
Elder	Ingestion Rate	kg/hr				0.0000077
Adult	Ingestion Rate	kg/hr				0.0000077
Teen	Ingestion Rate	kg/hr				0.0000077

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Ingestion Rate	kg/hr				0.0000077
Toddler	Ingestion Rate	kg/hr				0.0000077
Elder	Intake	mg/hr	0.00E+00	6.16E-06	2.00E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/hr	0.00E+00	6.16E-06	2.00E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	0.00E+00	6.16E-06	2.00E-03	=Concentration x Ingestion Rate
Child	Intake	mg/hr	0.00E+00	6.16E-06	2.00E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/hr	0.00E+00	6.16E-06	2.00E-03	=Concentration x Ingestion Rate
	Exposure Duration - hours per day	hrs/d				2
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.74E-07	5.66E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.74E-07	5.66E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.06E-07	6.71E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.74E-07	1.22E-04	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.47E-07	2.43E-04	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	77.4326	26.9710	19.1170	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.94E-04	6.74E-05	4.78E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.94E-04	6.74E-05	4.78E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.70E-04	5.93E-05	4.21E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.40E-03	8.36E-04	5.93E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.17E-03	1.11E-03	7.84E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	2.74E-06	9.54E-07	6.76E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.74E-06	9.54E-07	6.76E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.85E-06	9.94E-07	7.04E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	7.30E-05	2.54E-05	1.80E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.92E-04	6.70E-05	4.75E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	6.88E-06	5.70E-05	5.68E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	7.03E-06	5.71E-05	5.68E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	7.38E-06	7.47E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.46E-04	1.34E-04	8.86E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.90E-04	2.23E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Concentration	mg/kg	1.11E+02	3.85E+01	2.73E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.89E-02	6.60E-03	4.68E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.89E-02	6.60E-03	4.68E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.68E-02	5.86E-03	4.15E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.16E-02	4.03E-03	2.85E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.61E-03	2.65E-03	1.88E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	8.04E-06	9.33E-06	6.61E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	8.04E-06	9.33E-06	6.61E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	8.45E-06	9.81E-06	6.95E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.05E-05	1.22E-05	8.67E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.38E-05	1.61E-05	1.14E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Sediment	Units				
	Concentration	mg/kg	0.00E+00	8.00E-01	2.60E+02	
Elder	Dermal Loading Rate	kg/d				0.000696
Adult	Dermal Loading Rate	kg/d				0.000696
Teen	Dermal Loading Rate	kg/d				0.0006264
Child	Dermal Loading Rate	kg/d				0.0028804
Toddler	Dermal Loading Rate	kg/d				0.00189
Elder	Intake	mg/d	0.00E+00	5.57E-04	1.81E-01	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	0.00E+00	5.57E-04	1.81E-01	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	0.00E+00	5.01E-04	1.63E-01	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	0.00E+00	2.30E-03	7.49E-01	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	0.00E+00	1.51E-03	4.91E-01	=Concentration x Dermal Loading Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.88E-07	2.56E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.88E-07	2.56E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.39E-07	2.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.00E-06	2.28E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.16E-06	2.98E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	Dust	Units				
	Concentration	mg/kg	7.74E+01	2.70E+01	1.91E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.38E-02	4.80E-03	3.40E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.38E-02	4.80E-03	3.40E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.24E-02	4.32E-03	3.06E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	9.14E-03	3.18E-03	2.26E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	6.66E-03	2.32E-03	1.64E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	5.85E-06	6.79E-06	4.81E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	5.85E-06	6.79E-06	4.81E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	6.23E-06	7.23E-06	5.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	8.33E-06	9.67E-06	6.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.41E-05	9.96E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.39E-05	1.69E-05	2.67E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.39E-05	1.69E-05	2.67E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.47E-05	1.79E-05	2.85E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.89E-05	2.89E-05	2.29E-04	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.59E-05	3.93E-05	3.00E-04	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	6.88E-06	5.70E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	7.03E-06	5.71E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	7.38E-06	7.47E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.46E-04	1.34E-04	8.86E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	2.90E-04	2.23E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.19	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.34	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.56	0.79	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.39E-05	1.69E-05	2.67E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.39E-05	1.69E-05	2.67E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.47E-05	1.79E-05	2.85E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.89E-05	2.89E-05	2.29E-04	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.59E-05	3.93E-05	3.00E-04	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.042	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.042	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.045	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.072	0.002	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.098	0.002	=Total Intake by Dermal/ TRV - dermal

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	6.88E-06	5.70E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	7.03E-06	5.71E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	7.38E-06	7.47E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.46E-04	1.34E-04	8.86E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	2.90E-04	2.23E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	3.17E-05	7.29E-05	6.21E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	5.70E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.39E-05	1.69E-05	2.67E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.39E-05	1.69E-05	2.67E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.47E-05	1.79E-05	2.85E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.89E-05	2.89E-05	2.29E-04	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.59E-05	3.93E-05	3.00E-04	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.49E-05	1.90E-05	5.58E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	2.69E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.196	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.197	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.243	0.423	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.419	0.728	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.667	0.795	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	8.48E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.10 Sample Calculation – City of Yellowknife Country Food Diet

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
0%	***Berries 2***					
	Concentration	mg/kg	-	-	-	Not an exposure pathway
Elder	Intake	mg/d	-	-	-	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	-	-	-	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	-	-	-	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	-	-	-	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	-	-	-	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	-	-	-	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	-	-	-	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	-	-	-	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	-	-	-	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	-	-	-	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	6.1940	3.6730	364.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	9.29E-06	5.51E-06	5.46E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.91E-06	5.88E-06	5.82E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.67E-06	5.14E-06	5.10E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.30E-04	7.71E-05	7.64E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	8.67E-05	5.14E-05	5.10E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	1.31E-07	7.79E-08	7.72E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.40E-07	8.31E-08	8.24E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.45E-07	8.61E-08	8.54E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	3.95E-06	2.34E-06	2.32E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	5.26E-06	3.12E-06	3.09E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	4.3358	2.5711	254.8000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	9.54E-06	5.66E-06	5.61E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.34E-04	7.97E-05	7.90E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-04	1.05E-04	1.04E-02	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.60E-07	9.47E-08	9.39E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.09E-06	2.42E-06	2.40E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-05	6.39E-06	6.33E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	1.95E-06	5.53E-05	5.68E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	1.96E-06	5.53E-05	5.68E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	6.19E+00	3.67E+00	3.64E+02	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	9.41E-04	5.58E-04	5.53E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	6.47E-04	3.84E-04	3.80E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	4.26E-04	2.53E-04	2.50E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Averaged Intake by body weight	mg/kg-d	4.73E-07	9.35E-07	9.27E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	5.90E-07	1.17E-06	1.16E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	7.75E-07	1.53E-06	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	4.34E+00	2.57E+00	2.55E+02	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	6.94E-04	4.11E-04	4.08E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	5.12E-04	3.03E-04	3.01E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	3.73E-04	2.21E-04	2.19E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	3.49E-07	6.89E-07	6.83E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	4.67E-07	9.22E-07	9.14E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	6.78E-07	1.34E-06	1.33E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.95E-06	5.53E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.96E-06	5.53E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.18	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.22	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.33	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.005	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.007	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.95E-06	5.53E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.96E-06	5.53E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	3.52E-06	6.33E-05	6.21E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	6.33E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	3.52E-06	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4

Sample Calculation		**Units**	**Incremental Arsenic**	**Antimony**	**Manganese**	**Notes**
Lifetime	Intake by Dermal	mg/kg-d	8.37E-07	1.65E-06	1.64E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg -d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	1.51E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.153	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.153	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.197	0.423	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.238	0.729	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.349	0.798	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.14E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.11 Sample Calculation – City of Yellowknife Supermarket Food Diet

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	6.1940	3.6730	364.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	9.29E-06	5.51E-06	5.46E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.91E-06	5.88E-06	5.82E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.67E-06	5.14E-06	5.10E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.30E-04	7.71E-05	7.64E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	8.67E-05	5.14E-05	5.10E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	1.31E-07	7.79E-08	7.72E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.40E-07	8.31E-08	8.24E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.45E-07	8.61E-08	8.54E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	3.95E-06	2.34E-06	2.32E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	5.26E-06	3.12E-06	3.09E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	4.3358	2.5711	254.8000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	9.54E-06	5.66E-06	5.61E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.34E-04	7.97E-05	7.90E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-04	1.05E-04	1.04E-02	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.60E-07	9.47E-08	9.39E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.09E-06	2.42E-06	2.40E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-05	6.39E-06	6.33E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	2.85E-07	3.74E-05	5.59E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	2.93E-07	3.74E-05	5.59E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	3.05E-07	5.35E-05	5.91E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	8.04E-06	5.96E-05	8.76E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.60E-05	9.38E-05	1.07E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	6.19E+00	3.67E+00	3.64E+02	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	9.41E-04	5.58E-04	5.53E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	6.47E-04	3.84E-04	3.80E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	4.26E-04	2.53E-04	2.50E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	4.73E-07	9.35E-07	9.27E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	5.90E-07	1.17E-06	1.16E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	7.75E-07	1.53E-06	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	4.34E+00	2.57E+00	2.55E+02	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	6.94E-04	4.11E-04	4.08E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	5.12E-04	3.03E-04	3.01E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	3.73E-04	2.21E-04	2.19E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	3.49E-07	6.89E-07	6.83E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	4.67E-07	9.22E-07	9.14E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	6.78E-07	1.34E-06	1.33E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	2.85E-07	3.74E-05	5.59E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	2.93E-07	3.74E-05	5.59E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	3.05E-07	5.35E-05	5.91E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	8.04E-06	5.96E-05	8.76E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	1.60E-05	9.38E-05	1.07E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.09	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.09	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.13	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.15	0.72	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.23	0.78	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	calculated above

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Total Intake by Dermal	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.005	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.007	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	2.85E-07	3.74E-05	5.59E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	2.93E-07	3.74E-05	5.59E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	3.05E-07	5.35E-05	5.91E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	8.04E-06	5.96E-05	8.76E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	1.60E-05	9.38E-05	1.07E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	1.66E-06	4.35E-05	6.11E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	2.99E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	3.52E-06	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	8.37E-07	1.65E-06	1.64E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	1.51E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.109	0.359	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.109	0.359	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.149	0.416	=HQ-ing + HQ-inh + HQ-derm

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Total Hazard Quotient	-	-	0.166	0.718	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.253	0.785	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	8.02E-06	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.12 Sample Calculation – City of Yellowknife Country Food + Wading @ Long Lake

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	6.1940	3.6730	364.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	9.29E-06	5.51E-06	5.46E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.91E-06	5.88E-06	5.82E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.67E-06	5.14E-06	5.10E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.30E-04	7.71E-05	7.64E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	8.67E-05	5.14E-05	5.10E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	1.31E-07	7.79E-08	7.72E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.40E-07	8.31E-08	8.24E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.45E-07	8.61E-08	8.54E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	3.95E-06	2.34E-06	2.32E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	5.26E-06	3.12E-06	3.09E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Sediment					
	Concentration	mg/kg	3.7098	0.4300	56.9000	
Elder	Ingestion Rate	kg/hr				0.0000077
Adult	Ingestion Rate	kg/hr				0.0000077
Teen	Ingestion Rate	kg/hr				0.0000077
Child	Ingestion Rate	kg/hr				0.0000077
Toddler	Ingestion Rate	kg/hr				0.0000077
Elder	Intake	mg/hr	2.86E-05	3.31E-06	4.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/hr	2.86E-05	3.31E-06	4.38E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	2.86E-05	3.31E-06	4.38E-04	=Concentration x Ingestion Rate
Child	Intake	mg/hr	2.86E-05	3.31E-06	4.38E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/hr	2.86E-05	3.31E-06	4.38E-04	=Concentration x Ingestion Rate
	Exposure Duration - hours per day	hrs/d				2
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
Elder	Averaged Intake by body weight	mg/kg-d	8.08E-07	9.37E-08	1.24E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	8.08E-07	9.37E-08	1.24E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	9.57E-07	1.11E-07	1.47E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Averaged Intake by body weight	mg/kg-d	1.74E-06	2.01E-07	2.66E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.46E-06	4.01E-07	5.31E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	4.3358	2.5711	254.8000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	9.54E-06	5.66E-06	5.61E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.34E-04	7.97E-05	7.90E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-04	1.05E-04	1.04E-02	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.60E-07	9.47E-08	9.39E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.09E-06	2.42E-06	2.40E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-05	6.39E-06	6.33E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	2.76E-06	5.54E-05	5.68E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	2.77E-06	5.54E-05	5.68E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	3.06E-06	7.29E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.25E-05	8.86E-05	8.90E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.31E-05	1.32E-04	1.09E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	6.19E+00	3.67E+00	3.64E+02	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	9.41E-04	5.58E-04	5.53E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	6.47E-04	3.84E-04	3.80E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	4.26E-04	2.53E-04	2.50E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	4.73E-07	9.35E-07	9.27E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	5.90E-07	1.17E-06	1.16E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	7.75E-07	1.53E-06	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Sediment	Units				
	Concentration	mg/kg	3.71E+00	4.30E-01	5.69E+01	
Elder	Dermal Loading Rate	kg/d				0.000696
Adult	Dermal Loading Rate	kg/d				0.000696
Teen	Dermal Loading Rate	kg/d				0.0006264
Child	Dermal Loading Rate	kg/d				0.0028804
Toddler	Dermal Loading Rate	kg/d				0.00189
Elder	Intake	mg/d	2.58E-03	2.99E-04	3.96E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.58E-03	2.99E-04	3.96E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	2.32E-03	2.69E-04	3.56E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.07E-02	1.24E-03	1.64E-01	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.01E-03	8.13E-04	1.08E-01	=Concentration x Dermal Loading Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	1.10E-06	4.23E-07	5.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	1.10E-06	4.23E-07	5.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	1.17E-06	4.51E-07	5.97E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	9.74E-06	3.76E-06	4.98E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.27E-05	4.93E-06	6.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	Dust	Units				
	Concentration	mg/kg	4.34E+00	2.57E+00	2.55E+02	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	6.94E-04	4.11E-04	4.08E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	5.12E-04	3.03E-04	3.01E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	3.73E-04	2.21E-04	2.19E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	3.49E-07	6.89E-07	6.83E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	4.67E-07	9.22E-07	9.14E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	6.78E-07	1.34E-06	1.33E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.87E-06	1.96E-06	2.08E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.87E-06	1.96E-06	2.08E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.99E-06	2.08E-06	2.21E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Total Intake by body weight	mg/kg-d	1.08E-05	5.85E-06	7.05E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.42E-05	7.80E-06	9.36E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	2.76E-06	5.54E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	2.77E-06	5.54E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	3.06E-06	7.29E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.25E-05	8.86E-05	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	2.31E-05	1.32E-04	1.09E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.18	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.22	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.33	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.87E-06	1.96E-06	2.08E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.87E-06	1.96E-06	2.08E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.99E-06	2.08E-06	2.21E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.08E-05	5.85E-06	7.05E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.42E-05	7.80E-06	9.36E-05	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.005	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.005	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.005	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.015	0.001	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.019	0.001	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	2.76E-06	5.54E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	2.77E-06	5.54E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	3.06E-06	7.29E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.25E-05	8.86E-05	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	2.31E-05	1.32E-04	1.09E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	4.54E-06	6.35E-05	6.21E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
						intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	8.17E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	3.52E-06	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.87E-06	1.96E-06	2.08E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.87E-06	1.96E-06	2.08E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.99E-06	2.08E-06	2.21E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.08E-05	5.85E-06	7.05E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.42E-05	7.80E-06	9.36E-05	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	3.17E-06	2.56E-06	2.83E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	5.71E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.155	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.155	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.199	0.423	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.248	0.730	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.362	0.799	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.74E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.13 Sample Calculation – City of Yellowknife Country Food + Beach @ Long Lake

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	6.1940	3.6730	364.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	9.29E-06	5.51E-06	5.46E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.91E-06	5.88E-06	5.82E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.67E-06	5.14E-06	5.10E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.30E-04	7.71E-05	7.64E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	8.67E-05	5.14E-05	5.10E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	1.31E-07	7.79E-08	7.72E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.40E-07	8.31E-08	8.24E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.45E-07	8.61E-08	8.54E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	3.95E-06	2.34E-06	2.32E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	5.26E-06	3.12E-06	3.09E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Sediment					
	Concentration	mg/kg	3.7098	0.4300	56.9000	
Elder	Ingestion Rate	kg/hr				0.00002
Adult	Ingestion Rate	kg/hr				0.00002
Teen	Ingestion Rate	kg/hr				0.000018
Child	Ingestion Rate	kg/hr				0.000057
Toddler	Ingestion Rate	kg/hr				0.000072
Elder	Intake	mg/hr	7.42E-05	8.60E-06	1.14E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/hr	7.42E-05	8.60E-06	1.14E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	6.68E-05	7.74E-06	1.02E-03	=Concentration x Ingestion Rate
Child	Intake	mg/hr	2.11E-04	2.45E-05	3.24E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/hr	2.67E-04	3.10E-05	4.10E-03	=Concentration x Ingestion Rate
	Exposure Duration - hours per day	hrs/d				2
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
Elder	Averaged Intake by body weight	mg/kg-d	2.10E-06	2.43E-07	3.22E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.10E-06	2.43E-07	3.22E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Averaged Intake by body weight	mg/kg-d	2.24E-06	2.59E-07	3.43E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.29E-05	1.49E-06	1.97E-04	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.24E-05	3.75E-06	4.97E-04	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	4.3358	2.5711	254.8000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	9.54E-06	5.66E-06	5.61E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.34E-04	7.97E-05	7.90E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-04	1.05E-04	1.04E-02	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.60E-07	9.47E-08	9.39E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.09E-06	2.42E-06	2.40E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-05	6.39E-06	6.33E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	4.05E-06	5.55E-05	5.68E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	4.06E-06	5.55E-05	5.68E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	4.34E-06	7.30E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	2.36E-05	8.99E-05	8.91E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	5.20E-05	1.36E-04	1.09E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	6.19E+00	3.67E+00	3.64E+02	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	9.41E-04	5.58E-04	5.53E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	6.47E-04	3.84E-04	3.80E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	4.26E-04	2.53E-04	2.50E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	4.73E-07	9.35E-07	9.27E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	5.90E-07	1.17E-06	1.16E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	7.75E-07	1.53E-06	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Sediment	Units				
	Concentration	mg/kg	3.71E+00	4.30E-01	5.69E+01	
Elder	Dermal Loading Rate	kg/d				0.000696
Adult	Dermal Loading Rate	kg/d				0.000696
Teen	Dermal Loading Rate	kg/d				0.0006264
Child	Dermal Loading Rate	kg/d				0.0028804
Toddler	Dermal Loading Rate	kg/d				0.00189
Elder	Intake	mg/d	2.58E-03	2.99E-04	3.96E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.58E-03	2.99E-04	3.96E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	2.32E-03	2.69E-04	3.56E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.07E-02	1.24E-03	1.64E-01	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.01E-03	8.13E-04	1.08E-01	=Concentration x Dermal Loading Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	1.10E-06	4.23E-07	5.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	1.10E-06	4.23E-07	5.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	1.17E-06	4.51E-07	5.97E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	9.74E-06	3.76E-06	4.98E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.27E-05	4.93E-06	6.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	Dust	Units				
	Concentration	mg/kg	4.34E+00	2.57E+00	2.55E+02	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	6.94E-04	4.11E-04	4.08E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	5.12E-04	3.03E-04	3.01E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	3.73E-04	2.21E-04	2.19E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	3.49E-07	6.89E-07	6.83E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	4.67E-07	9.22E-07	9.14E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	6.78E-07	1.34E-06	1.33E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.87E-06	1.96E-06	2.08E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.87E-06	1.96E-06	2.08E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Total Intake by body weight	mg/kg-d	1.99E-06	2.08E-06	2.21E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.08E-05	5.85E-06	7.05E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.42E-05	7.80E-06	9.36E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	4.05E-06	5.55E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	4.06E-06	5.55E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	4.34E-06	7.30E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.36E-05	8.99E-05	8.91E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	5.20E-05	1.36E-04	1.09E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.18	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.22	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.34	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.87E-06	1.96E-06	2.08E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.87E-06	1.96E-06	2.08E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.99E-06	2.08E-06	2.21E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.08E-05	5.85E-06	7.05E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.42E-05	7.80E-06	9.36E-05	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.005	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.005	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.005	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.015	0.001	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.019	0.001	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	4.05E-06	5.55E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	4.06E-06	5.55E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	4.34E-06	7.30E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.36E-05	8.99E-05	8.91E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	5.20E-05	1.36E-04	1.09E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Lifetime	Intake by Ingestion	mg/kg-d	7.95E-06	6.38E-05	6.22E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	1.43E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	3.52E-06	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.87E-06	1.96E-06	2.08E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.87E-06	1.96E-06	2.08E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.99E-06	2.08E-06	2.21E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.08E-05	5.85E-06	7.05E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.42E-05	7.80E-06	9.36E-05	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	3.17E-06	2.56E-06	2.83E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	5.71E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.155	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.155	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.199	0.423	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.251	0.731	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.370	0.802	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	2.35E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.14 Sample Calculation – City of Yellowknife Country Food + Swimming @ Long Lake

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	6.1940	3.6730	364.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	9.29E-06	5.51E-06	5.46E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.91E-06	5.88E-06	5.82E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.67E-06	5.14E-06	5.10E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.30E-04	7.71E-05	7.64E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	8.67E-05	5.14E-05	5.10E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	1.31E-07	7.79E-08	7.72E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.40E-07	8.31E-08	8.24E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.45E-07	8.61E-08	8.54E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	3.95E-06	2.34E-06	2.32E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	5.26E-06	3.12E-06	3.09E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Sediment					
	Concentration	mg/kg	3.7098	0.4300	56.9000	
Elder	Ingestion Rate	kg/hr				0.0000077
Adult	Ingestion Rate	kg/hr				0.0000077
Teen	Ingestion Rate	kg/hr				0.0000077
Child	Ingestion Rate	kg/hr				0.0000077
Toddler	Ingestion Rate	kg/hr				0.0000077
Elder	Intake	mg/hr	2.86E-05	3.31E-06	4.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/hr	2.86E-05	3.31E-06	4.38E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	2.86E-05	3.31E-06	4.38E-04	=Concentration x Ingestion Rate
Child	Intake	mg/hr	2.86E-05	3.31E-06	4.38E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/hr	2.86E-05	3.31E-06	4.38E-04	=Concentration x Ingestion Rate
	Exposure Duration - hours per day	hrs/d				2
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
Elder	Averaged Intake by body weight	mg/kg-d	8.08E-07	9.37E-08	1.24E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	8.08E-07	9.37E-08	1.24E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Averaged Intake by body weight	mg/kg-d	9.57E-07	1.11E-07	1.47E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.74E-06	2.01E-07	2.66E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.46E-06	4.01E-07	5.31E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	4.3358	2.5711	254.8000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	9.54E-06	5.66E-06	5.61E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.34E-04	7.97E-05	7.90E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-04	1.05E-04	1.04E-02	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.60E-07	9.47E-08	9.39E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.09E-06	2.42E-06	2.40E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-05	6.39E-06	6.33E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Swimming					
	Concentration	mg/L	0.0484	0.0021	0.2020	
Elder	Ingestion Rate	L/hr				0.021
Adult	Ingestion Rate	L/hr				0.021
Teen	Ingestion Rate	L/hr				0.021
Child	Ingestion Rate	L/hr				0.049
Toddler	Ingestion Rate	L/hr				0.049
Elder	Intake	mg/hr	1.02E-03	4.49E-05	4.24E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/hr	1.02E-03	4.49E-05	4.24E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	1.02E-03	4.49E-05	4.24E-03	=Concentration x Ingestion Rate
Child	Intake	mg/hr	2.37E-03	1.05E-04	9.90E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/hr	2.37E-03	1.05E-04	9.90E-03	=Concentration x Ingestion Rate
	Exposure Duration - hours per day	hrs/d				1
	Exposure Duration - days per week	d/wk				3
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
Elder	Averaged Intake by body weight	mg/kg-d	6.17E-06	2.72E-07	2.57E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	6.17E-06	2.72E-07	2.57E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.30E-06	3.23E-07	3.05E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	3.09E-05	1.37E-06	1.29E-04	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.16E-05	2.72E-06	2.57E-04	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	8.93E-06	5.56E-05	5.68E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	8.94E-06	5.56E-05	5.68E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	1.04E-05	7.32E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	4.34E-05	9.00E-05	8.91E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	8.47E-05	1.35E-04	1.09E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	6.19E+00	3.67E+00	3.64E+02	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	9.41E-04	5.58E-04	5.53E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	6.47E-04	3.84E-04	3.80E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	4.26E-04	2.53E-04	2.50E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	4.73E-07	9.35E-07	9.27E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	5.90E-07	1.17E-06	1.16E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	7.75E-07	1.53E-06	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Sediment	Units				
	Concentration	mg/kg	3.71E+00	4.30E-01	5.69E+01	
Elder	Dermal Loading Rate	kg/d				0.000696
Adult	Dermal Loading Rate	kg/d				0.000696
Teen	Dermal Loading Rate	kg/d				0.0006264
Child	Dermal Loading Rate	kg/d				0.0028804
Toddler	Dermal Loading Rate	kg/d				0.00189
Elder	Intake	mg/d	2.58E-03	2.99E-04	3.96E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.58E-03	2.99E-04	3.96E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	2.32E-03	2.69E-04	3.56E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.07E-02	1.24E-03	1.64E-01	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.01E-03	8.13E-04	1.08E-01	=Concentration x Dermal Loading Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	1.10E-06	4.23E-07	5.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	1.10E-06	4.23E-07	5.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	1.17E-06	4.51E-07	5.97E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	9.74E-06	3.76E-06	4.98E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.27E-05	4.93E-06	6.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	Dust	Units				
	Concentration	mg/kg	4.34E+00	2.57E+00	2.55E+02	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	6.94E-04	4.11E-04	4.08E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	5.12E-04	3.03E-04	3.01E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	3.73E-04	2.21E-04	2.19E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	3.49E-07	6.89E-07	6.83E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	4.67E-07	9.22E-07	9.14E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	6.78E-07	1.34E-06	1.33E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	Swimming	Units				
	Concentration	mg/L	4.84E-02	2.14E-03	2.02E-01	
Elder	Dermal Loading Rate	L/hr				0.01764
Adult	Dermal Loading Rate	L/hr				0.01764
Teen	Dermal Loading Rate	L/hr				0.01547
Child	Dermal Loading Rate	L/hr				0.01014
Toddler	Dermal Loading Rate	L/hr				0.00613
Elder	Intake	mg/hr	8.54E-04	3.77E-05	3.56E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/hr	8.54E-04	3.77E-05	3.56E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/hr	7.49E-04	3.31E-05	3.12E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/hr	4.91E-04	2.17E-05	2.05E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/hr	2.97E-04	1.31E-05	1.24E-03	=Concentration x Dermal Loading Rate
	Exposure Duration - hours per day	hrs/d				1
	Exposure Duration - days per week	d/wk				3
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	1.55E-07	2.29E-08	2.16E-07	=Intake / Body weight x Exp_hr/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	1.55E-07	2.29E-08	2.16E-07	=Intake / Body weight x Exp_hr/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	1.61E-07	2.38E-08	2.24E-07	=Intake / Body weight x Exp_hr/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	1.92E-07	2.83E-08	2.67E-07	=Intake / Body weight x Exp_hr/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	2.31E-07	3.41E-08	3.22E-07	=Intake / Body weight x Exp_hr/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	2.03E-06	1.98E-06	2.10E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	2.03E-06	1.98E-06	2.10E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	2.15E-06	2.10E-06	2.23E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.10E-05	5.88E-06	7.08E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.44E-05	7.83E-06	9.40E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	8.93E-06	5.56E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	8.94E-06	5.56E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.04E-05	7.32E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	4.34E-05	9.00E-05	8.91E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	8.47E-05	1.35E-04	1.09E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.18	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.22	0.73	=Total Intake by Ingestion / TRV - ingestion

Sample Calculation		**Units**	**Incremental Arsenic**	**Antimony**	**Manganese**	**Notes**
Toddler	Hazard quotient	-	-	0.34	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	2.03E-06	1.98E-06	2.10E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	2.03E-06	1.98E-06	2.10E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	2.15E-06	2.10E-06	2.23E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.10E-05	5.88E-06	7.08E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.44E-05	7.83E-06	9.40E-05	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.005	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.005	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.005	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.015	0.001	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.020	0.001	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	8.93E-06	5.56E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	8.94E-06	5.56E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.04E-05	7.32E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	4.34E-05	9.00E-05	8.91E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	8.47E-05	1.35E-04	1.09E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	1.54E-05	6.39E-05	6.21E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	2.78E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Lifetime	Incremental risk - inhalation	-	3.52E-06	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	2.03E-06	1.98E-06	2.10E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	2.03E-06	1.98E-06	2.10E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	2.15E-06	2.10E-06	2.23E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.10E-05	5.88E-06	7.08E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.44E-05	7.83E-06	9.40E-05	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	3.33E-06	2.58E-06	2.85E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	6.00E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.156	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.156	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.200	0.423	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.251	0.731	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.369	0.801	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	3.73E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.15 Sample Calculation – Ingraham Trail Country Food Diet

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	0.6270	38.2000	284.9500	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	9.40E-07	5.73E-05	4.27E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.00E-06	6.11E-05	4.56E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.78E-07	5.35E-05	3.99E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.32E-05	8.02E-04	5.98E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	8.78E-06	5.35E-04	3.99E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	1.33E-08	8.10E-07	6.05E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.42E-08	8.64E-07	6.45E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.47E-08	8.96E-07	6.68E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.00E-07	2.44E-05	1.82E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	5.32E-07	3.24E-05	2.42E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	0.4389	26.7400	199.4650	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.10E-06	6.68E-05	4.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.10E-06	6.68E-05	4.99E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	9.66E-07	5.88E-05	4.39E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.36E-05	8.29E-04	6.18E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.80E-05	1.10E-03	8.18E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	1.55E-08	9.46E-07	7.05E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.55E-08	9.46E-07	7.05E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.62E-08	9.85E-07	7.35E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Averaged Intake by body weight	mg/kg-d	4.14E-07	2.52E-05	1.88E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.09E-06	6.64E-05	4.96E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	1.70E-06	5.68E-05	5.68E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	1.70E-06	5.69E-05	5.68E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	1.83E-06	7.45E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	3.50E-06	1.33E-04	8.88E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	5.20E-06	2.21E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	6.27E-01	3.82E+01	2.85E+02	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.07E-04	6.54E-03	4.88E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.07E-04	6.54E-03	4.88E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	9.53E-05	5.81E-03	4.33E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	6.55E-05	3.99E-03	2.98E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	4.31E-05	2.63E-03	1.96E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	4.55E-08	9.25E-06	6.90E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	4.55E-08	9.25E-06	6.90E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	4.79E-08	9.73E-06	7.26E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	5.97E-08	1.21E-05	9.05E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	7.84E-08	1.59E-05	1.19E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	4.39E-01	2.67E+01	1.99E+02	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	7.81E-05	4.76E-03	3.55E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	7.81E-05	4.76E-03	3.55E-02	=Concentration x Dermal Loading Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Intake	mg/d	7.02E-05	4.28E-03	3.19E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	5.18E-05	3.16E-03	2.35E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	3.77E-05	2.30E-03	1.72E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	3.32E-08	6.73E-06	5.02E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	3.32E-08	6.73E-06	5.02E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	3.53E-08	7.17E-06	5.35E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	4.72E-08	9.59E-06	7.15E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	6.86E-08	1.39E-05	1.04E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	7.87E-08	1.60E-05	1.19E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	7.87E-08	1.60E-05	1.19E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	8.32E-08	1.69E-05	1.26E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.07E-07	2.17E-05	1.62E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.47E-07	2.99E-05	2.23E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
NON-CARCINOGENIC RISK CALCULATIONS						
Elder	Total Intake by Ingestion	mg/kg-d	1.70E-06	5.68E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.70E-06	5.69E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.83E-06	7.45E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	3.50E-06	1.33E-04	8.88E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	5.20E-06	2.21E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.19	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.33	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.55	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.87E-08	1.60E-05	1.19E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.87E-08	1.60E-05	1.19E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.32E-08	1.69E-05	1.26E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.07E-07	2.17E-05	1.62E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.47E-07	2.99E-05	2.23E-05	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report

Sample Calculation		**Units**	**Incremental Arsenic**	**Antimony**	**Manganese**	**Notes**
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.040	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.040	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.042	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.054	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.075	0.000	=Total Intake by Dermal/ TRV - dermal
INCREMENTAL RISK LEVEL CALCULATIONS						
Elder	Total Intake by Ingestion	mg/kg-d	1.70E-06	5.68E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.70E-06	5.69E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.83E-06	7.45E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	3.50E-06	1.33E-04	8.88E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	5.20E-06	2.21E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	2.02E-06	7.26E-05	6.21E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	3.64E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	3.52E-06	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.87E-08	1.60E-05	1.19E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.87E-08	1.60E-05	1.19E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.32E-08	1.69E-05	1.26E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.07E-07	2.17E-05	1.62E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.47E-07	2.99E-05	2.23E-05	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	8.47E-08	1.72E-05	1.28E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	1.52E-07	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.194	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.194	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.240	0.422	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.399	0.728	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.640	0.796	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	7.31E-06	-	-	=Risk-ing + Risk-inh + Risk-derm

I.2 Additional Cases - Dettah

Table I.16 Sample Calculation – Dettah Typical Diet + Medicinal Tea

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Medicinal Tea					
	Concentration	mg/kg	0.0715	0.0383	188.0675	
Elder	Ingestion Rate	kg/d				0.00005
Adult	Ingestion Rate	kg/d				0.00005
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	3.57E-06	1.92E-06	9.40E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.57E-06	1.92E-06	9.40E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.06E-08	2.71E-08	1.33E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.06E-08	2.71E-08	1.33E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
10%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.17
Adult	Ingestion Rate	kg/d				0.17
Teen	Ingestion Rate	kg/d				0.1547
Child	Ingestion Rate	kg/d				0.1275
Toddler	Ingestion Rate	kg/d				0.085
Elder	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0069
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345
Elder	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.69E-05	1.13E-05	1.57E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	7.16E-05	9.32E-06	1.29E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.77E-05	6.21E-06	8.63E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.46E-06	1.89E-07	2.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.18E-06	2.83E-07	3.93E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.89E-06	3.76E-07	5.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.01E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Intake	mg/d	8.32E-05	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.55E-05	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.69E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.53E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.36E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.65E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.83E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.79E-07	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.16E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.55E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0042
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.59E-05	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.78E-05	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.52E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.68E-07	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.15E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.53E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	13.3000	6.2000	59.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	2.00E-05	9.30E-06	8.85E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.13E-05	9.92E-06	9.44E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.86E-05	8.68E-06	8.26E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.79E-04	1.30E-04	1.24E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.86E-04	8.68E-05	8.26E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.82E-07	1.32E-07	1.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.01E-07	1.40E-07	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.12E-07	1.45E-07	1.38E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.49E-06	3.96E-06	3.77E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.13E-05	5.26E-06	5.01E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	9.3100	4.3400	41.3000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.33E-05	1.09E-05	1.03E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.33E-05	1.09E-05	1.03E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.05E-05	9.55E-06	9.09E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.89E-04	1.35E-04	1.28E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.82E-04	1.78E-04	1.69E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.29E-07	1.53E-07	1.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.29E-07	1.53E-07	1.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.43E-07	1.60E-07	1.52E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.77E-06	4.09E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.31E-05	1.08E-05	1.03E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	5.33E-06	9.94E-05	5.72E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	5.35E-06	9.94E-05	5.72E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	5.68E-06	1.20E-04	6.03E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	2.48E-05	1.63E-04	8.90E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	4.44E-05	2.33E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Concentration	mg/kg	1.33E+01	6.20E+00	5.90E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.28E-03	1.06E-03	1.01E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.28E-03	1.06E-03	1.01E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	2.02E-03	9.42E-04	8.97E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.39E-03	6.48E-04	6.17E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	9.15E-04	4.27E-04	4.06E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.66E-07	1.50E-06	1.43E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.66E-07	1.50E-06	1.43E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	1.02E-06	1.58E-06	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.27E-06	1.97E-06	1.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.66E-06	2.59E-06	2.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	9.31E+00	4.34E+00	4.13E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.66E-03	7.73E-04	7.35E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.66E-03	7.73E-04	7.35E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.49E-03	6.94E-04	6.61E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.10E-03	5.12E-04	4.87E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.01E-04	3.73E-04	3.55E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	7.03E-07	1.09E-06	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	7.03E-07	1.09E-06	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.49E-07	1.16E-06	1.11E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	1.00E-06	1.56E-06	1.48E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.46E-06	2.26E-06	2.15E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.33E-06	9.94E-05	5.72E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	5.35E-06	9.94E-05	5.72E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	5.68E-06	1.20E-04	6.03E-02	calculated above

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Total Intake by Ingestion	mg/kg-d	2.48E-05	1.63E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.44E-05	2.33E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.30	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.41	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.58	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.006	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.006	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.007	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.009	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.012	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.33E-06	9.94E-05	5.72E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	5.35E-06	9.94E-05	5.72E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	5.68E-06	1.20E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.48E-05	1.63E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.44E-05	2.33E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	8.79E-06	1.13E-04	6.24E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	1.58E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.80E-06	2.79E-06	2.66E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.23E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.266	0.367	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.266	0.367	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.319	0.425	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.427	0.730	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.606	0.797	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	2.00E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.17 Sample Calculation – Dettah Typical Diet + Drinking Water

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0001	0.0014	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	2.13E-04	2.04E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	2.13E-04	2.04E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.42E-04	1.36E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.13E-04	1.09E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	8.50E-05	8.16E-04	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.01E-06	2.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.01E-06	2.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.37E-06	2.28E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.45E-06	3.31E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.15E-06	4.95E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
10%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.17
Adult	Ingestion Rate	kg/d				0.17
Teen	Ingestion Rate	kg/d				0.1547
Child	Ingestion Rate	kg/d				0.1275
Toddler	Ingestion Rate	kg/d				0.085
Elder	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0069
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345
Elder	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.69E-05	1.13E-05	1.57E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	7.16E-05	9.32E-06	1.29E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.77E-05	6.21E-06	8.63E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.46E-06	1.89E-07	2.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.18E-06	2.83E-07	3.93E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.89E-06	3.76E-07	5.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.01E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	8.32E-05	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.55E-05	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.69E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.53E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.36E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.65E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.83E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.79E-07	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Averaged Intake by body weight	mg/kg-d	1.16E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.55E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0042
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.59E-05	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.78E-05	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.52E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.68E-07	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.15E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.53E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	13.3000	6.2000	59.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	2.00E-05	9.30E-06	8.85E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.13E-05	9.92E-06	9.44E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.86E-05	8.68E-06	8.26E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.79E-04	1.30E-04	1.24E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.86E-04	8.68E-05	8.26E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.82E-07	1.32E-07	1.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.01E-07	1.40E-07	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.12E-07	1.45E-07	1.38E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.49E-06	3.96E-06	3.77E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.13E-05	5.26E-06	5.01E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	9.3100	4.3400	41.3000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.33E-05	1.09E-05	1.03E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.33E-05	1.09E-05	1.03E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.05E-05	9.55E-06	9.09E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.89E-04	1.35E-04	1.28E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.82E-04	1.78E-04	1.69E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.29E-07	1.53E-07	1.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.29E-07	1.53E-07	1.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.43E-07	1.60E-07	1.52E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.77E-06	4.09E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.31E-05	1.08E-05	1.03E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	5.28E-06	9.81E-05	5.70E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	5.30E-06	9.81E-05	5.70E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	5.68E-06	1.19E-04	6.03E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	2.48E-05	1.61E-04	8.90E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	4.44E-05	2.31E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.33E+01	6.20E+00	5.90E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.28E-03	1.06E-03	1.01E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.28E-03	1.06E-03	1.01E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	2.02E-03	9.42E-04	8.97E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.39E-03	6.48E-04	6.17E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	9.15E-04	4.27E-04	4.06E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.66E-07	1.50E-06	1.43E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.66E-07	1.50E-06	1.43E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	1.02E-06	1.58E-06	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Averaged Intake by body weight	mg/kg-d	1.27E-06	1.97E-06	1.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.66E-06	2.59E-06	2.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	9.31E+00	4.34E+00	4.13E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.66E-03	7.73E-04	7.35E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.66E-03	7.73E-04	7.35E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.49E-03	6.94E-04	6.61E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.10E-03	5.12E-04	4.87E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.01E-04	3.73E-04	3.55E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	7.03E-07	1.09E-06	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	7.03E-07	1.09E-06	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.49E-07	1.16E-06	1.11E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	1.00E-06	1.56E-06	1.48E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.46E-06	2.26E-06	2.15E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.28E-06	9.81E-05	5.70E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	5.30E-06	9.81E-05	5.70E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	5.68E-06	1.19E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.48E-05	1.61E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.44E-05	2.31E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.30	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.40	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.58	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation

Sample Calculation		**Units**	**Incremental Arsenic**	**Antimony**	**Manganese**	**Notes**
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.006	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.006	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.007	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.009	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.012	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.28E-06	9.81E-05	5.70E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	5.30E-06	9.81E-05	5.70E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	5.68E-06	1.19E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.48E-05	1.61E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.44E-05	2.31E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	8.75E-06	1.12E-04	6.23E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	1.57E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.80E-06	2.79E-06	2.66E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
						intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.23E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.263	0.366	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.263	0.366	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.317	0.425	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.423	0.730	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.600	0.797	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.99E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.18 Sample Calculation – Dettah Typical Diet + Organs

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
10%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.17
Adult	Ingestion Rate	kg/d				0.17
Teen	Ingestion Rate	kg/d				0.1547
Child	Ingestion Rate	kg/d				0.1275
Toddler	Ingestion Rate	kg/d				0.085
Elder	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0069
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345
Elder	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.69E-05	1.13E-05	1.57E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	7.16E-05	9.32E-06	1.29E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.77E-05	6.21E-06	8.63E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.46E-06	1.89E-07	2.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.18E-06	2.83E-07	3.93E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.89E-06	3.76E-07	5.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.01E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	8.32E-05	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.55E-05	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.69E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.53E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.36E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.65E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.83E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.79E-07	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Averaged Intake by body weight	mg/kg-d	1.16E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.55E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0042
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.59E-05	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.78E-05	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.52E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.68E-07	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.15E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.53E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Organ					
	Concentration	mg/kg	0.2359	0.0186	1.7507	
Elder	Ingestion Rate	kg/d				0.002366
Adult	Ingestion Rate	kg/d				0.002366
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	5.58E-04	4.41E-05	4.14E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.58E-04	4.41E-05	4.14E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.90E-06	6.24E-07	5.86E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.90E-06	6.24E-07	5.86E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	13.3000	6.2000	59.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	2.00E-05	9.30E-06	8.85E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.13E-05	9.92E-06	9.44E-05	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Intake	mg/d	1.86E-05	8.68E-06	8.26E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.79E-04	1.30E-04	1.24E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.86E-04	8.68E-05	8.26E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.82E-07	1.32E-07	1.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.01E-07	1.40E-07	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.12E-07	1.45E-07	1.38E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.49E-06	3.96E-06	3.77E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.13E-05	5.26E-06	5.01E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	9.3100	4.3400	41.3000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.33E-05	1.09E-05	1.03E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.33E-05	1.09E-05	1.03E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.05E-05	9.55E-06	9.09E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.89E-04	1.35E-04	1.28E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.82E-04	1.78E-04	1.69E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.29E-07	1.53E-07	1.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.29E-07	1.53E-07	1.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.43E-07	1.60E-07	1.52E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.77E-06	4.09E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.31E-05	1.08E-05	1.03E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	1.32E-05	1.00E-04	5.71E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	1.32E-05	1.00E-04	5.71E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	5.68E-06	1.20E-04	6.03E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	2.48E-05	1.63E-04	8.90E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	4.44E-05	2.33E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.33E+01	6.20E+00	5.90E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.28E-03	1.06E-03	1.01E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.28E-03	1.06E-03	1.01E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	2.02E-03	9.42E-04	8.97E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.39E-03	6.48E-04	6.17E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	9.15E-04	4.27E-04	4.06E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.66E-07	1.50E-06	1.43E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.66E-07	1.50E-06	1.43E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	1.02E-06	1.58E-06	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.27E-06	1.97E-06	1.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.66E-06	2.59E-06	2.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	9.31E+00	4.34E+00	4.13E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.66E-03	7.73E-04	7.35E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.66E-03	7.73E-04	7.35E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.49E-03	6.94E-04	6.61E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.10E-03	5.12E-04	4.87E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.01E-04	3.73E-04	3.55E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	7.03E-07	1.09E-06	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	7.03E-07	1.09E-06	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.49E-07	1.16E-06	1.11E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	1.00E-06	1.56E-06	1.48E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.46E-06	2.26E-06	2.15E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.32E-05	1.00E-04	5.71E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.32E-05	1.00E-04	5.71E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	5.68E-06	1.20E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.48E-05	1.63E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.44E-05	2.33E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.30	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.41	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.58	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.006	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.006	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.007	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.009	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.012	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.32E-05	1.00E-04	5.71E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.32E-05	1.00E-04	5.71E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	5.68E-06	1.20E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.48E-05	1.63E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.44E-05	2.33E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	1.49E-05	1.13E-04	6.24E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	2.68E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.80E-06	2.79E-06	2.66E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.23E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.268	0.366	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.268	0.366	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.319	0.425	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.427	0.730	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.606	0.797	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	3.10E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.19 Sample Calculation – Dettah High Country Food Diet

Sample Calculation			Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS							
Drinking Water							
		Concentration	mg/L	0.0000	0.0002	0.0021	
Elder		Ingestion Rate	L/d				1.5
Adult		Ingestion Rate	L/d				1.5
Teen		Ingestion Rate	L/d				1
Child		Ingestion Rate	L/d				0.8
Toddler		Ingestion Rate	L/d				0.6
Elder		Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult		Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen		Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child		Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler		Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder		Body weight	kg				70.7
Adult		Body weight	kg				70.7
Teen		Body weight	kg				59.7
Child		Body weight	kg				32.9
Toddler		Body weight	kg				16.5
		Exposure Duration - days per week	d/wk				7
		Exposure Duration - weeks per year	wk/yr				52
		Averaging Period - weeks per year	wk/yr				52
Elder		Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult		Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen		Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child		Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler		Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	100%	***Berries 1***					
		Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder		Ingestion Rate	kg/d				0.0025
Adult		Ingestion Rate	kg/d				0.0049
Teen		Ingestion Rate	kg/d				0.002275
Child		Ingestion Rate	kg/d				0.001875
Toddler		Ingestion Rate	kg/d				0.00125
Elder		Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult		Intake	mg/d	4.30E-05	2.86E-06	9.90E-02	=Concentration x Ingestion Rate x % from source
Teen		Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child		Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler		Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder		Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult		Averaged Intake by body weight	mg/kg-d	6.08E-07	4.04E-08	1.40E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen		Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child		Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler		Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	10%	***Fish 1***					
		Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder		Ingestion Rate	kg/d				0.17
Adult		Ingestion Rate	kg/d				0.255
Teen		Ingestion Rate	kg/d				0.1547
Child		Ingestion Rate	kg/d				0.1275
Toddler		Ingestion Rate	kg/d				0.085
Elder		Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult		Intake	mg/d	0.00E+00	6.38E-04	3.83E-03	=Concentration x Ingestion Rate x % from source
Teen		Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child		Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler		Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder		Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult		Averaged Intake by body weight	mg/kg-d	0.00E+00	9.02E-06	5.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen		Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child		Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	5.74E-03	3.44E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.12E-05	4.87E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0209
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345
Elder	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.89E-04	3.76E-05	5.23E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.69E-05	1.13E-05	1.57E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	7.16E-05	9.32E-06	1.29E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.77E-05	6.21E-06	8.63E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	4.09E-06	5.32E-07	7.39E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.46E-06	1.89E-07	2.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.18E-06	2.83E-07	3.93E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.89E-06	3.76E-07	5.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0182
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	7.21E-04	2.50E-04	3.49E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.01E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	8.32E-05	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.55E-05	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.02E-05	3.54E-06	4.94E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.69E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.53E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.36E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0093
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.70E-04	1.40E-04	3.58E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.65E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.83E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.40E-06	1.97E-06	5.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.79E-07	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Averaged Intake by body weight	mg/kg-d	1.16E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.55E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0265
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.18E-04	5.30E-05	1.39E-02	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.59E-05	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.78E-05	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.52E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	4.50E-06	7.50E-07	1.97E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.68E-07	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.15E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.53E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.020493
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	2.05E-04	4.30E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-06	6.09E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	13.3000	6.2000	59.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	2.00E-05	9.30E-06	8.85E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.13E-05	9.92E-06	9.44E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.86E-05	8.68E-06	8.26E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.79E-04	1.30E-04	1.24E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.86E-04	8.68E-05	8.26E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.82E-07	1.32E-07	1.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.01E-07	1.40E-07	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.12E-07	1.45E-07	1.38E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.49E-06	3.96E-06	3.77E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.13E-05	5.26E-06	5.01E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	9.3100	4.3400	41.3000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.33E-05	1.09E-05	1.03E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.33E-05	1.09E-05	1.03E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.05E-05	9.55E-06	9.09E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.89E-04	1.35E-04	1.28E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.82E-04	1.78E-04	1.69E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.29E-07	1.53E-07	1.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.29E-07	1.53E-07	1.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.43E-07	1.60E-07	1.52E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.77E-06	4.09E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.31E-05	1.08E-05	1.03E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	-	-	
Adult	Intake by body weight	mg/kg-d	-	-	-	
Teen	Intake by body weight	mg/kg-d	-	-	-	
Child	Intake by body weight	mg/kg-d	-	-	-	
Toddler	Intake by body weight	mg/kg-d	-	-	-	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	5.28E-06	6.64E-05	1.21E-03	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	2.24E-05	1.04E-04	2.42E-03	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	5.68E-06	7.03E-05	1.29E-03	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	2.48E-05	1.13E-04	2.00E-03	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	4.44E-05	1.56E-04	2.71E-03	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.33E+01	6.20E+00	5.90E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.28E-03	1.06E-03	1.01E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.28E-03	1.06E-03	1.01E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	2.02E-03	9.42E-04	8.97E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.39E-03	6.48E-04	6.17E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	9.15E-04	4.27E-04	4.06E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.66E-07	1.50E-06	1.43E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.66E-07	1.50E-06	1.43E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	1.02E-06	1.58E-06	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Averaged Intake by body weight	mg/kg-d	1.27E-06	1.97E-06	1.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.66E-06	2.59E-06	2.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	9.31E+00	4.34E+00	4.13E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.66E-03	7.73E-04	7.35E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.66E-03	7.73E-04	7.35E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.49E-03	6.94E-04	6.61E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.10E-03	5.12E-04	4.87E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.01E-04	3.73E-04	3.55E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	7.03E-07	1.09E-06	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	7.03E-07	1.09E-06	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.49E-07	1.16E-06	1.11E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	1.00E-06	1.56E-06	1.48E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.46E-06	2.26E-06	2.15E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.28E-06	6.64E-05	1.21E-03	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	2.24E-05	1.04E-04	2.42E-03	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	5.68E-06	7.03E-05	1.29E-03	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.48E-05	1.13E-04	2.00E-03	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.44E-05	1.56E-04	2.71E-03	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.17	0.01	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.26	0.02	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.18	0.01	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.28	0.02	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.39	0.02	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.006	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.006	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.007	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.009	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.012	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.28E-06	6.64E-05	1.21E-03	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	2.24E-05	1.04E-04	2.42E-03	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	5.68E-06	7.03E-05	1.29E-03	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.48E-05	1.13E-04	2.00E-03	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.44E-05	1.56E-04	2.71E-03	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	1.99E-05	9.94E-05	2.14E-03	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	3.58E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.80E-06	2.79E-06	2.66E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
						toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.23E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.184	0.008	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.279	0.016	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.194	0.009	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.302	0.016	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.413	0.020	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	4.00E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.20 Sample Calculation – Dettah High Diet + Medicinal Tea

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Medicinal Tea					
	Concentration	mg/kg	0.0715	0.0383	188.0675	
Elder	Ingestion Rate	kg/d				0.00005
Adult	Ingestion Rate	kg/d				0.000533333
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	3.57E-06	1.92E-06	9.40E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.81E-05	2.04E-05	1.00E-01	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.06E-08	2.71E-08	1.33E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.39E-07	2.89E-07	1.42E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0049
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	4.30E-05	2.86E-06	9.90E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	6.08E-07	4.04E-08	1.40E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
10%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.17
Adult	Ingestion Rate	kg/d				0.255
Teen	Ingestion Rate	kg/d				0.1547
Child	Ingestion Rate	kg/d				0.1275
Toddler	Ingestion Rate	kg/d				0.085
Elder	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	6.38E-04	3.83E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.02E-06	5.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	5.74E-03	3.44E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.12E-05	4.87E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0209
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345
Elder	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.89E-04	3.76E-05	5.23E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.69E-05	1.13E-05	1.57E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	7.16E-05	9.32E-06	1.29E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.77E-05	6.21E-06	8.63E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	4.09E-06	5.32E-07	7.39E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.46E-06	1.89E-07	2.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.18E-06	2.83E-07	3.93E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.89E-06	3.76E-07	5.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0182
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	7.21E-04	2.50E-04	3.49E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.01E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	8.32E-05	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.55E-05	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.02E-05	3.54E-06	4.94E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.69E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Averaged Intake by body weight	mg/kg-d	2.53E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.36E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0093
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.70E-04	1.40E-04	3.58E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.65E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.83E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.40E-06	1.97E-06	5.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.79E-07	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.16E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.55E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0265
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.18E-04	5.30E-05	1.39E-02	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.59E-05	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.78E-05	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.52E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	4.50E-06	7.50E-07	1.97E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.68E-07	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.15E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.53E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.020493
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	2.05E-04	4.30E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-06	6.09E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	13.3000	6.2000	59.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	2.00E-05	9.30E-06	8.85E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.13E-05	9.92E-06	9.44E-05	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Intake	mg/d	1.86E-05	8.68E-06	8.26E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.79E-04	1.30E-04	1.24E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.86E-04	8.68E-05	8.26E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.82E-07	1.32E-07	1.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.01E-07	1.40E-07	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.12E-07	1.45E-07	1.38E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.49E-06	3.96E-06	3.77E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.13E-05	5.26E-06	5.01E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	9.3100	4.3400	41.3000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.33E-05	1.09E-05	1.03E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.33E-05	1.09E-05	1.03E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.05E-05	9.55E-06	9.09E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.89E-04	1.35E-04	1.28E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.82E-04	1.78E-04	1.69E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.29E-07	1.53E-07	1.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.29E-07	1.53E-07	1.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.43E-07	1.60E-07	1.52E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.77E-06	4.09E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.31E-05	1.08E-05	1.03E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	-	-	
Adult	Intake by body weight	mg/kg-d	-	-	-	
Teen	Intake by body weight	mg/kg-d	-	-	-	
Child	Intake by body weight	mg/kg-d	-	-	-	
Toddler	Intake by body weight	mg/kg-d	-	-	-	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	5.33E-06	6.64E-05	1.34E-03	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	2.30E-05	1.05E-04	3.84E-03	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	5.68E-06	7.03E-05	1.29E-03	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	2.48E-05	1.13E-04	2.00E-03	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	4.44E-05	1.56E-04	2.71E-03	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.33E+01	6.20E+00	5.90E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.28E-03	1.06E-03	1.01E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.28E-03	1.06E-03	1.01E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	2.02E-03	9.42E-04	8.97E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.39E-03	6.48E-04	6.17E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	9.15E-04	4.27E-04	4.06E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.66E-07	1.50E-06	1.43E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.66E-07	1.50E-06	1.43E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	1.02E-06	1.58E-06	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.27E-06	1.97E-06	1.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.66E-06	2.59E-06	2.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	9.31E+00	4.34E+00	4.13E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.66E-03	7.73E-04	7.35E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.66E-03	7.73E-04	7.35E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.49E-03	6.94E-04	6.61E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.10E-03	5.12E-04	4.87E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.01E-04	3.73E-04	3.55E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	7.03E-07	1.09E-06	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	7.03E-07	1.09E-06	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.49E-07	1.16E-06	1.11E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	1.00E-06	1.56E-06	1.48E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.46E-06	2.26E-06	2.15E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.33E-06	6.64E-05	1.34E-03	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	2.30E-05	1.05E-04	3.84E-03	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	5.68E-06	7.03E-05	1.29E-03	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.48E-05	1.13E-04	2.00E-03	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.44E-05	1.56E-04	2.71E-03	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.17	0.01	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.26	0.02	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.18	0.01	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.28	0.02	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.39	0.02	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.006	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.006	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.007	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.009	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.012	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.33E-06	6.64E-05	1.34E-03	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	2.30E-05	1.05E-04	3.84E-03	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	5.68E-06	7.03E-05	1.29E-03	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.48E-05	1.13E-04	2.00E-03	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.44E-05	1.56E-04	2.71E-03	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	2.02E-05	9.96E-05	3.08E-03	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	3.64E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.80E-06	2.79E-06	2.66E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.23E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.184	0.009	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.280	0.025	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.194	0.009	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.302	0.016	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.413	0.020	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	4.06E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.21 Sample Calculation – Dettah High Diet + Organs

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
10%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.17
Adult	Ingestion Rate	kg/d				0.17
Teen	Ingestion Rate	kg/d				0.1547
Child	Ingestion Rate	kg/d				0.1275
Toddler	Ingestion Rate	kg/d				0.085
Elder	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0069
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345
Elder	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.69E-05	1.13E-05	1.57E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	7.16E-05	9.32E-06	1.29E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.77E-05	6.21E-06	8.63E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.46E-06	1.89E-07	2.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.18E-06	2.83E-07	3.93E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.89E-06	3.76E-07	5.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.01E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	8.32E-05	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.55E-05	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.69E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.53E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.36E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.65E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.83E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Averaged Intake by body weight	mg/kg-d	7.79E-07	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.16E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.55E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0042
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.59E-05	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.78E-05	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.52E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.68E-07	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.15E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.53E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Organ					
	Concentration	mg/kg	0.2359	0.0186	1.7507	
Elder	Ingestion Rate	kg/d				0.002366
Adult	Ingestion Rate	kg/d				0.002366
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	5.58E-04	4.41E-05	4.14E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.58E-04	4.41E-05	4.14E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.90E-06	6.24E-07	5.86E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.90E-06	6.24E-07	5.86E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	13.3000	6.2000	59.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	2.00E-05	9.30E-06	8.85E-05	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Intake	mg/d	2.13E-05	9.92E-06	9.44E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.86E-05	8.68E-06	8.26E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.79E-04	1.30E-04	1.24E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.86E-04	8.68E-05	8.26E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.82E-07	1.32E-07	1.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.01E-07	1.40E-07	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.12E-07	1.45E-07	1.38E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.49E-06	3.96E-06	3.77E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.13E-05	5.26E-06	5.01E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	9.3100	4.3400	41.3000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.33E-05	1.09E-05	1.03E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.33E-05	1.09E-05	1.03E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.05E-05	9.55E-06	9.09E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.89E-04	1.35E-04	1.28E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.82E-04	1.78E-04	1.69E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.29E-07	1.53E-07	1.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.29E-07	1.53E-07	1.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.43E-07	1.60E-07	1.52E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.77E-06	4.09E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.31E-05	1.08E-05	1.03E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	1.32E-05	1.00E-04	5.71E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	1.32E-05	1.00E-04	5.71E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	5.68E-06	1.20E-04	6.03E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	2.48E-05	1.63E-04	8.90E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	4.44E-05	2.33E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.33E+01	6.20E+00	5.90E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.28E-03	1.06E-03	1.01E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.28E-03	1.06E-03	1.01E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	2.02E-03	9.42E-04	8.97E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.39E-03	6.48E-04	6.17E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	9.15E-04	4.27E-04	4.06E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.66E-07	1.50E-06	1.43E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.66E-07	1.50E-06	1.43E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	1.02E-06	1.58E-06	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.27E-06	1.97E-06	1.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.66E-06	2.59E-06	2.46E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	9.31E+00	4.34E+00	4.13E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.66E-03	7.73E-04	7.35E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.66E-03	7.73E-04	7.35E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.49E-03	6.94E-04	6.61E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.10E-03	5.12E-04	4.87E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.01E-04	3.73E-04	3.55E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	7.03E-07	1.09E-06	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	7.03E-07	1.09E-06	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.49E-07	1.16E-06	1.11E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	1.00E-06	1.56E-06	1.48E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.46E-06	2.26E-06	2.15E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.32E-05	1.00E-04	5.71E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.32E-05	1.00E-04	5.71E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	5.68E-06	1.20E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.48E-05	1.63E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.44E-05	2.33E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.30	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.41	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.58	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.006	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.006	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.007	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.009	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.012	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.32E-05	1.00E-04	5.71E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.32E-05	1.00E-04	5.71E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	5.68E-06	1.20E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.48E-05	1.63E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.44E-05	2.33E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	1.49E-05	1.13E-04	6.24E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	2.68E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.67E-06	2.59E-06	2.47E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.76E-06	2.74E-06	2.61E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.27E-06	3.53E-06	3.36E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	3.12E-06	4.85E-06	4.61E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.80E-06	2.79E-06	2.66E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.23E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.268	0.366	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.268	0.366	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.319	0.425	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.427	0.730	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.606	0.797	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	3.10E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

I.3 Additional Cases - Ndilo

Table I.22 Sample Calculation – Ndilo Typical Diet + Medicinal Tea

Sample Calculation	Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION					

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Medicinal Tea					
	Concentration	mg/kg	0.0917	0.0571	251.8600	
Elder	Ingestion Rate	kg/d				0.00005
Adult	Ingestion Rate	kg/d				0.00005
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	4.59E-06	2.86E-06	1.26E-02	=Concentration x Ingestion Rate
Adult	Intake	mg/d	4.59E-06	2.86E-06	1.26E-02	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	6.49E-08	4.04E-08	1.78E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	6.49E-08	4.04E-08	1.78E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
5%	***Berries 1***					
	Concentration	mg/kg	0.0860	0.0073	16.1175	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	9.78E-06	8.34E-07	1.83E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	8.06E-06	6.87E-07	1.51E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	5.37E-06	4.58E-07	1.01E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.64E-07	1.40E-08	3.07E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.45E-07	2.09E-08	4.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.26E-07	2.78E-08	6.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
95%	***Berries 2***					

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
10%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.17
Adult	Ingestion Rate	kg/d				0.17
Teen	Ingestion Rate	kg/d				0.1547
Child	Ingestion Rate	kg/d				0.1275
Toddler	Ingestion Rate	kg/d				0.085
Elder	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0069
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345
Elder	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.69E-05	1.13E-05	1.57E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	7.16E-05	9.32E-06	1.29E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.77E-05	6.21E-06	8.63E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.46E-06	1.89E-07	2.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.18E-06	2.83E-07	3.93E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.89E-06	3.76E-07	5.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.01E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	8.32E-05	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.55E-05	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.69E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.53E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.36E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.65E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.83E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.79E-07	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.16E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.55E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0042
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.59E-05	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.78E-05	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.52E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.68E-07	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.15E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.53E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	127.3000	45.0000	25.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.91E-04	6.75E-05	3.75E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.04E-04	7.20E-05	4.00E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.78E-04	6.30E-05	3.50E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.67E-03	9.45E-04	5.25E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-03	6.30E-04	3.50E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.70E-06	9.55E-07	5.30E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.88E-06	1.02E-06	5.66E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.99E-06	1.06E-06	5.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.13E-05	2.87E-05	1.60E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-04	3.82E-05	2.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	89.1100	31.5000	17.5000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.96E-04	6.93E-05	3.85E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.76E-03	9.77E-04	5.43E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.65E-03	1.29E-03	7.18E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.28E-06	1.16E-06	6.45E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.40E-05	2.97E-05	1.65E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.21E-04	7.83E-05	4.35E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Swimming					
	Concentration	mg/L	-	-	-	Not an exposure pathway
Elder	Ingestion Rate	L/hr				0.021
Adult	Ingestion Rate	L/hr				0.021
Teen	Ingestion Rate	L/hr				0.021
Child	Ingestion Rate	L/hr				0.049
Toddler	Ingestion Rate	L/hr				0.049
Elder	Intake	mg/hr	-	-	-	=Concentration x Ingestion Rate
Adult	Intake	mg/hr	-	-	-	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	-	-	-	=Concentration x Ingestion Rate
Child	Intake	mg/hr	-	-	-	=Concentration x Ingestion Rate
Toddler	Intake	mg/hr	-	-	-	=Concentration x Ingestion Rate
	Exposure Duration - hours per day	hrs/d				1
	Exposure Duration - days per week	d/wk				3
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
Elder	Averaged Intake by body weight	mg/kg-d	-	-	-	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	-	-	-	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	-	-	-	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	-	-	-	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	-	-	-	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	1.07E-05	1.01E-04	5.72E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	1.09E-05	1.01E-04	5.72E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	1.14E-05	1.22E-04	6.03E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.73E-04	2.13E-04	8.90E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.40E-04	3.33E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.27E+02	4.50E+01	2.50E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.93E-02	6.84E-03	3.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.33E-02	4.70E-03	2.61E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.76E-03	3.10E-03	1.72E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	9.72E-06	1.15E-05	6.37E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.43E-05	7.94E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.59E-05	1.88E-05	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	8.91E+01	3.15E+01	1.75E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.43E-02	5.04E-03	2.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.05E-02	3.72E-03	2.07E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.66E-03	2.71E-03	1.51E-03	=Concentration x Dermal Loading Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.16E-06	8.44E-06	4.69E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	9.59E-06	1.13E-05	6.28E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.39E-05	1.64E-05	9.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.07E-05	1.01E-04	5.72E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.09E-05	1.01E-04	5.72E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.14E-05	1.22E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.73E-04	2.13E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.40E-04	3.33E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.31	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.53	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.83	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.050	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.064	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.088	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.07E-05	1.01E-04	5.72E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.09E-05	1.01E-04	5.72E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.14E-05	1.22E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.73E-04	2.13E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.40E-04	3.33E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	3.95E-05	1.23E-04	6.25E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	7.11E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.72E-05	2.03E-05	1.13E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.09E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.312	0.367	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.312	0.367	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.367	0.425	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.608	0.729	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.933	0.796	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.03E-04	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.23 Sample Calculation – Ndilo Typical Diet + Drinking Water

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0003	0.0004	0.0025	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	4.95E-04	6.34E-04	3.81E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	4.95E-04	6.34E-04	3.81E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.30E-04	4.22E-04	2.54E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.64E-04	3.38E-04	2.03E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.98E-04	2.53E-04	1.52E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	7.00E-06	8.96E-06	5.39E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.00E-06	8.96E-06	5.39E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.53E-06	7.08E-06	4.25E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.02E-06	1.03E-05	6.18E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.20E-05	1.54E-05	9.24E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
5%	***Berries 1***					
	Concentration	mg/kg	0.0860	0.0073	16.1175	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	9.78E-06	8.34E-07	1.83E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	8.06E-06	6.87E-07	1.51E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	5.37E-06	4.58E-07	1.01E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.64E-07	1.40E-08	3.07E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.45E-07	2.09E-08	4.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.26E-07	2.78E-08	6.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
95%	***Berries 2***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
10%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.17

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Ingestion Rate	kg/d				0.17
Teen	Ingestion Rate	kg/d				0.1547
Child	Ingestion Rate	kg/d				0.1275
Toddler	Ingestion Rate	kg/d				0.085
Elder	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0069
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345
Elder	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.69E-05	1.13E-05	1.57E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	7.16E-05	9.32E-06	1.29E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.77E-05	6.21E-06	8.63E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.46E-06	1.89E-07	2.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.18E-06	2.83E-07	3.93E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.89E-06	3.76E-07	5.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.01E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	8.32E-05	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.55E-05	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.69E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.53E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.36E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.65E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.83E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.79E-07	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.16E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.55E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0042
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.59E-05	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.78E-05	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.52E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.68E-07	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.15E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.53E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	127.3000	45.0000	25.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.91E-04	6.75E-05	3.75E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.04E-04	7.20E-05	4.00E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.78E-04	6.30E-05	3.50E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.67E-03	9.45E-04	5.25E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-03	6.30E-04	3.50E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.70E-06	9.55E-07	5.30E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.88E-06	1.02E-06	5.66E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.99E-06	1.06E-06	5.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.13E-05	2.87E-05	1.60E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-04	3.82E-05	2.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	89.1100	31.5000	17.5000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.96E-04	6.93E-05	3.85E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.76E-03	9.77E-04	5.43E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.65E-03	1.29E-03	7.18E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.28E-06	1.16E-06	6.45E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.40E-05	2.97E-05	1.65E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.21E-04	7.83E-05	4.35E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	1.77E-05	1.06E-04	5.71E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	1.78E-05	1.06E-04	5.71E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	1.70E-05	1.26E-04	6.03E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.81E-04	2.18E-04	8.90E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.52E-04	3.41E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.27E+02	4.50E+01	2.50E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.93E-02	6.84E-03	3.80E-03	=Concentration x Dermal Loading Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Intake	mg/d	1.33E-02	4.70E-03	2.61E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.76E-03	3.10E-03	1.72E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	9.72E-06	1.15E-05	6.37E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.43E-05	7.94E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.59E-05	1.88E-05	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	8.91E+01	3.15E+01	1.75E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.43E-02	5.04E-03	2.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.05E-02	3.72E-03	2.07E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.66E-03	2.71E-03	1.51E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.16E-06	8.44E-06	4.69E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	9.59E-06	1.13E-05	6.28E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.39E-05	1.64E-05	9.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.77E-05	1.06E-04	5.71E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.78E-05	1.06E-04	5.71E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.70E-05	1.26E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.81E-04	2.18E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.52E-04	3.41E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.26	0.37	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.26	0.37	=Total Intake by Ingestion / TRV - ingestion

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Hazard quotient	-	-	0.31	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.55	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.85	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.050	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.064	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.088	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.77E-05	1.06E-04	5.71E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.78E-05	1.06E-04	5.71E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.70E-05	1.26E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.81E-04	2.18E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.52E-04	3.41E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	4.67E-05	1.28E-04	6.23E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	8.40E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs

Sample Calculation		**Units**	**Incremental Arsenic**	**Antimony**	**Manganese**	**Notes**
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.72E-05	2.03E-05	1.13E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.09E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.323	0.366	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.323	0.366	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.376	0.425	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.621	0.729	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.953	0.796	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.16E-04	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.24 Sample Calculation – Ndilo Typical Diet + Organs

Sample Calculation			Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS							
Drinking Water							
		Concentration	mg/L	0.0000	0.0002	0.0021	
Elder		Ingestion Rate	L/d				1.5
Adult		Ingestion Rate	L/d				1.5
Teen		Ingestion Rate	L/d				1
Child		Ingestion Rate	L/d				0.8
Toddler		Ingestion Rate	L/d				0.6
Elder		Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult		Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen		Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child		Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler		Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder		Body weight	kg				70.7
Adult		Body weight	kg				70.7
Teen		Body weight	kg				59.7
Child		Body weight	kg				32.9
Toddler		Body weight	kg				16.5
		Exposure Duration - days per week	d/wk				7
		Exposure Duration - weeks per year	wk/yr				52
		Averaging Period - weeks per year	wk/yr				52
Elder		Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult		Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen		Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child		Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler		Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	5%	***Berries 1***					
		Concentration	mg/kg	0.0860	0.0073	16.1175	
Elder		Ingestion Rate	kg/d				0.0025
Adult		Ingestion Rate	kg/d				0.0025
Teen		Ingestion Rate	kg/d				0.002275
Child		Ingestion Rate	kg/d				0.001875
Toddler		Ingestion Rate	kg/d				0.00125
Elder		Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Adult		Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Teen		Intake	mg/d	9.78E-06	8.34E-07	1.83E-03	=Concentration x Ingestion Rate x % from source
Child		Intake	mg/d	8.06E-06	6.87E-07	1.51E-03	=Concentration x Ingestion Rate x % from source
Toddler		Intake	mg/d	5.37E-06	4.58E-07	1.01E-03	=Concentration x Ingestion Rate x % from source
Elder		Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult		Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen		Averaged Intake by body weight	mg/kg-d	1.64E-07	1.40E-08	3.07E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child		Averaged Intake by body weight	mg/kg-d	2.45E-07	2.09E-08	4.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler		Averaged Intake by body weight	mg/kg-d	3.26E-07	2.78E-08	6.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	95%	***Berries 2***					
		Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder		Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult		Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Teen		Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child		Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler		Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder		Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult		Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen		Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child		Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler		Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	10%	***Fish 1***					
		Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder		Ingestion Rate	kg/d				0.17

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Ingestion Rate	kg/d				0.17
Teen	Ingestion Rate	kg/d				0.1547
Child	Ingestion Rate	kg/d				0.1275
Toddler	Ingestion Rate	kg/d				0.085
Elder	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0069
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345
Elder	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.69E-05	1.13E-05	1.57E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	7.16E-05	9.32E-06	1.29E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.77E-05	6.21E-06	8.63E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.46E-06	1.89E-07	2.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.18E-06	2.83E-07	3.93E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.89E-06	3.76E-07	5.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.01E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	8.32E-05	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.55E-05	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.69E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.53E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.36E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.65E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.83E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.79E-07	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.16E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.55E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0042
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.59E-05	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.78E-05	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.52E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.68E-07	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.15E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.53E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Organ					
	Concentration	mg/kg	0.2359	0.0186	1.7507	
Elder	Ingestion Rate	kg/d				0.002366
Adult	Ingestion Rate	kg/d				0.002366
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	5.58E-04	4.41E-05	4.14E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.58E-04	4.41E-05	4.14E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.90E-06	6.24E-07	5.86E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Averaged Intake by body weight	mg/kg-d	7.90E-06	6.24E-07	5.86E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	127.3000	45.0000	25.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.91E-04	6.75E-05	3.75E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.04E-04	7.20E-05	4.00E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.78E-04	6.30E-05	3.50E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.67E-03	9.45E-04	5.25E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-03	6.30E-04	3.50E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.70E-06	9.55E-07	5.30E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.88E-06	1.02E-06	5.66E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.99E-06	1.06E-06	5.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.13E-05	2.87E-05	1.60E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-04	3.82E-05	2.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	89.1100	31.5000	17.5000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.96E-04	6.93E-05	3.85E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.76E-03	9.77E-04	5.43E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.65E-03	1.29E-03	7.18E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.28E-06	1.16E-06	6.45E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.40E-05	2.97E-05	1.65E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.21E-04	7.83E-05	4.35E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	1.85E-05	1.02E-04	5.71E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	1.87E-05	1.02E-04	5.71E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	1.14E-05	1.22E-04	6.03E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.73E-04	2.13E-04	8.90E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.40E-04	3.33E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.27E+02	4.50E+01	2.50E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.93E-02	6.84E-03	3.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.33E-02	4.70E-03	2.61E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.76E-03	3.10E-03	1.72E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	9.72E-06	1.15E-05	6.37E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.43E-05	7.94E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.59E-05	1.88E-05	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	8.91E+01	3.15E+01	1.75E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.43E-02	5.04E-03	2.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.05E-02	3.72E-03	2.07E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.66E-03	2.71E-03	1.51E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.16E-06	8.44E-06	4.69E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	9.59E-06	1.13E-05	6.28E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.39E-05	1.64E-05	9.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Total Intake by body weight	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.85E-05	1.02E-04	5.71E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.87E-05	1.02E-04	5.71E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.14E-05	1.22E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.73E-04	2.13E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.40E-04	3.33E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.31	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.53	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.83	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.050	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.064	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.088	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.85E-05	1.02E-04	5.71E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.87E-05	1.02E-04	5.71E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.14E-05	1.22E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.73E-04	2.13E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.40E-04	3.33E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Lifetime	Intake by Ingestion	mg/kg-d	4.56E-05	1.24E-04	6.24E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	8.21E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.72E-05	2.03E-05	1.13E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.09E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.313	0.366	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.313	0.366	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.367	0.425	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.608	0.729	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.933	0.796	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.14E-04	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.25 Sample Calculation – Ndilo High Country Food Diet

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
5%	***Berries 1***					
	Concentration	mg/kg	0.0860	0.0073	16.1175	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0049
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.11E-05	1.80E-06	3.95E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	9.78E-06	8.34E-07	1.83E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	8.06E-06	6.87E-07	1.51E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	5.37E-06	4.58E-07	1.01E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.98E-07	2.54E-08	5.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.64E-07	1.40E-08	3.07E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.45E-07	2.09E-08	4.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.26E-07	2.78E-08	6.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
95%	***Berries 2***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	4.08E-05	2.72E-06	9.40E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.77E-07	3.84E-08	1.33E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
10%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.17

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Ingestion Rate	kg/d				0.255
Teen	Ingestion Rate	kg/d				0.1547
Child	Ingestion Rate	kg/d				0.1275
Toddler	Ingestion Rate	kg/d				0.085
Elder	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	6.38E-04	3.83E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.02E-06	5.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	5.74E-03	3.44E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.12E-05	4.87E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0209
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345
Elder	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.89E-04	3.76E-05	5.23E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.69E-05	1.13E-05	1.57E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	7.16E-05	9.32E-06	1.29E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.77E-05	6.21E-06	8.63E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	4.09E-06	5.32E-07	7.39E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.46E-06	1.89E-07	2.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.18E-06	2.83E-07	3.93E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.89E-06	3.76E-07	5.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0182
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	7.21E-04	2.50E-04	3.49E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.01E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	8.32E-05	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.55E-05	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.02E-05	3.54E-06	4.94E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.69E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.53E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.36E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0093
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.70E-04	1.40E-04	3.58E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.65E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.83E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.40E-06	1.97E-06	5.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.79E-07	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.16E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.55E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0265
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.18E-04	5.30E-05	1.39E-02	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.59E-05	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.78E-05	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.52E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	4.50E-06	7.50E-07	1.97E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.68E-07	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.15E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.53E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.020493
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	2.05E-04	4.30E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-06	6.09E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	127.3000	45.0000	25.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.91E-04	6.75E-05	3.75E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.04E-04	7.20E-05	4.00E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.78E-04	6.30E-05	3.50E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.67E-03	9.45E-04	5.25E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-03	6.30E-04	3.50E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.70E-06	9.55E-07	5.30E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.88E-06	1.02E-06	5.66E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.99E-06	1.06E-06	5.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.13E-05	2.87E-05	1.60E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-04	3.82E-05	2.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	89.1100	31.5000	17.5000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.96E-04	6.93E-05	3.85E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.76E-03	9.77E-04	5.43E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.65E-03	1.29E-03	7.18E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.28E-06	1.16E-06	6.45E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.40E-05	2.97E-05	1.65E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.21E-04	7.83E-05	4.35E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	-	-	
Adult	Intake by body weight	mg/kg-d	-	-	-	
Teen	Intake by body weight	mg/kg-d	-	-	-	
Child	Intake by body weight	mg/kg-d	-	-	-	
Toddler	Intake by body weight	mg/kg-d	-	-	-	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	1.07E-05	6.82E-05	1.20E-03	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	2.81E-05	1.06E-04	2.41E-03	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	1.14E-05	7.22E-05	1.28E-03	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.73E-04	1.63E-04	1.94E-03	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.40E-04	2.56E-04	2.61E-03	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.27E+02	4.50E+01	2.50E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.93E-02	6.84E-03	3.80E-03	=Concentration x Dermal Loading Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Intake	mg/d	1.33E-02	4.70E-03	2.61E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.76E-03	3.10E-03	1.72E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	9.72E-06	1.15E-05	6.37E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.43E-05	7.94E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.59E-05	1.88E-05	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	8.91E+01	3.15E+01	1.75E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.43E-02	5.04E-03	2.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.05E-02	3.72E-03	2.07E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.66E-03	2.71E-03	1.51E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.16E-06	8.44E-06	4.69E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	9.59E-06	1.13E-05	6.28E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.39E-05	1.64E-05	9.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.07E-05	6.82E-05	1.20E-03	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	2.81E-05	1.06E-04	2.41E-03	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.14E-05	7.22E-05	1.28E-03	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.73E-04	1.63E-04	1.94E-03	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.40E-04	2.56E-04	2.61E-03	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.17	0.01	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.27	0.02	=Total Intake by Ingestion / TRV - ingestion

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Hazard quotient	-	-	0.18	0.01	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.41	0.02	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.64	0.02	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.050	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.064	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.088	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.07E-05	6.82E-05	1.20E-03	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	2.81E-05	1.06E-04	2.41E-03	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.14E-05	7.22E-05	1.28E-03	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.73E-04	1.63E-04	1.94E-03	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.40E-04	2.56E-04	2.61E-03	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	5.07E-05	1.10E-04	2.12E-03	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	9.13E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs

Sample Calculation		**Units**	**Incremental Arsenic**	**Antimony**	**Manganese**	**Notes**
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.72E-05	2.03E-05	1.13E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.09E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.229	0.008	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.324	0.015	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.242	0.009	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.483	0.016	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.740	0.019	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.23E-04	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.26 Sample Calculation – Ndilo High Diet + Medicinal Tea

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Medicinal Tea					
	Concentration	mg/kg	0.0917	0.0571	251.8600	
Elder	Ingestion Rate	kg/d				0.00005
Adult	Ingestion Rate	kg/d				0.000533333
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	4.59E-06	2.86E-06	1.26E-02	=Concentration x Ingestion Rate
Adult	Intake	mg/d	4.89E-05	3.05E-05	1.34E-01	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	6.49E-08	4.04E-08	1.78E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	6.92E-07	4.31E-07	1.90E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
5%	***Berries 1***					
	Concentration	mg/kg	0.0860	0.0073	16.1175	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0049
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.11E-05	1.80E-06	3.95E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	9.78E-06	8.34E-07	1.83E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	8.06E-06	6.87E-07	1.51E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	5.37E-06	4.58E-07	1.01E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.98E-07	2.54E-08	5.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.64E-07	1.40E-08	3.07E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.45E-07	2.09E-08	4.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation			Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler		Averaged Intake by body weight	mg/kg-d	3.26E-07	2.78E-08	6.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	95%	***Berries 2***					
		Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder		Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult		Intake	mg/d	4.08E-05	2.72E-06	9.40E-02	=Concentration x Ingestion Rate x % from source
Teen		Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child		Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler		Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder		Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult		Averaged Intake by body weight	mg/kg-d	5.77E-07	3.84E-08	1.33E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen		Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child		Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler		Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	10%	***Fish 1***					
		Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder		Ingestion Rate	kg/d				0.17
Adult		Ingestion Rate	kg/d				0.255
Teen		Ingestion Rate	kg/d				0.1547
Child		Ingestion Rate	kg/d				0.1275
Toddler		Ingestion Rate	kg/d				0.085
Elder		Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult		Intake	mg/d	0.00E+00	6.38E-04	3.83E-03	=Concentration x Ingestion Rate x % from source
Teen		Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child		Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler		Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder		Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult		Averaged Intake by body weight	mg/kg-d	0.00E+00	9.02E-06	5.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen		Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child		Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler		Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	90%	***Fish 2***					
		Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder		Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult		Intake	mg/d	0.00E+00	5.74E-03	3.44E-02	=Concentration x Ingestion Rate x % from source
Teen		Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child		Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler		Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder		Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult		Averaged Intake by body weight	mg/kg-d	0.00E+00	8.12E-05	4.87E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen		Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child		Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler		Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
		Moose					
		Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder		Ingestion Rate	kg/d				0.0069
Adult		Ingestion Rate	kg/d				0.0209
Teen		Ingestion Rate	kg/d				0.006279
Child		Ingestion Rate	kg/d				0.005175
Toddler		Ingestion Rate	kg/d				0.00345
Elder		Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Adult		Intake	mg/d	2.89E-04	3.76E-05	5.23E-03	=Concentration x Ingestion Rate
Teen		Intake	mg/d	8.69E-05	1.13E-05	1.57E-03	=Concentration x Ingestion Rate
Child		Intake	mg/d	7.16E-05	9.32E-06	1.29E-03	=Concentration x Ingestion Rate
Toddler		Intake	mg/d	4.77E-05	6.21E-06	8.63E-04	=Concentration x Ingestion Rate
Elder		Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult		Averaged Intake by body weight	mg/kg-d	4.09E-06	5.32E-07	7.39E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen		Averaged Intake by body weight	mg/kg-d	1.46E-06	1.89E-07	2.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child		Averaged Intake by body weight	mg/kg-d	2.18E-06	2.83E-07	3.93E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler		Averaged Intake by body weight	mg/kg-d	2.89E-06	3.76E-07	5.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
		Hare					
		Concentration	mg/kg	0.0396	0.0138	0.1920	

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0182
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	7.21E-04	2.50E-04	3.49E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.01E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	8.32E-05	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.55E-05	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.02E-05	3.54E-06	4.94E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.69E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.53E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.36E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0093
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.70E-04	1.40E-04	3.58E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.65E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.83E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.40E-06	1.97E-06	5.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.79E-07	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.16E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.55E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0265
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.18E-04	5.30E-05	1.39E-02	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.59E-05	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.78E-05	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.52E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	4.50E-06	7.50E-07	1.97E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.68E-07	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.15E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.53E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.020493
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	2.05E-04	4.30E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-06	6.09E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	127.3000	45.0000	25.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.91E-04	6.75E-05	3.75E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.04E-04	7.20E-05	4.00E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.78E-04	6.30E-05	3.50E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.67E-03	9.45E-04	5.25E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-03	6.30E-04	3.50E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.70E-06	9.55E-07	5.30E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.88E-06	1.02E-06	5.66E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.99E-06	1.06E-06	5.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.13E-05	2.87E-05	1.60E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-04	3.82E-05	2.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	89.1100	31.5000	17.5000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.96E-04	6.93E-05	3.85E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.76E-03	9.77E-04	5.43E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.65E-03	1.29E-03	7.18E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.28E-06	1.16E-06	6.45E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.40E-05	2.97E-05	1.65E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.21E-04	7.83E-05	4.35E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Swimming					
	Concentration	mg/L	-	-	-	Not an exposure pathway
Elder	Ingestion Rate	L/hr				0.021
Adult	Ingestion Rate	L/hr				0.021
Teen	Ingestion Rate	L/hr				0.021
Child	Ingestion Rate	L/hr				0.049
Toddler	Ingestion Rate	L/hr				0.049
Elder	Intake	mg/hr	-	-	-	=Concentration x Ingestion Rate
Adult	Intake	mg/hr	-	-	-	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	-	-	-	=Concentration x Ingestion Rate
Child	Intake	mg/hr	-	-	-	=Concentration x Ingestion Rate
Toddler	Intake	mg/hr	-	-	-	=Concentration x Ingestion Rate
	Exposure Duration - hours per day	hrs/d				1
	Exposure Duration - days per week	d/wk				3
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
Elder	Averaged Intake by body weight	mg/kg-d	-	-	-	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	-	-	-	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Averaged Intake by body weight	mg/kg-d	-	-	-	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	-	-	-	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	-	-	-	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	-	-	
Adult	Intake by body weight	mg/kg-d	-	-	-	
Teen	Intake by body weight	mg/kg-d	-	-	-	
Child	Intake by body weight	mg/kg-d	-	-	-	
Toddler	Intake by body weight	mg/kg-d	-	-	-	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	1.07E-05	6.82E-05	1.38E-03	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	2.88E-05	1.07E-04	4.31E-03	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	1.14E-05	7.22E-05	1.28E-03	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.73E-04	1.63E-04	1.94E-03	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.40E-04	2.56E-04	2.61E-03	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.27E+02	4.50E+01	2.50E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.93E-02	6.84E-03	3.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.33E-02	4.70E-03	2.61E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.76E-03	3.10E-03	1.72E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	9.72E-06	1.15E-05	6.37E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.43E-05	7.94E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.59E-05	1.88E-05	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	8.91E+01	3.15E+01	1.75E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.43E-02	5.04E-03	2.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.05E-02	3.72E-03	2.07E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.66E-03	2.71E-03	1.51E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.16E-06	8.44E-06	4.69E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	9.59E-06	1.13E-05	6.28E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.39E-05	1.64E-05	9.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.07E-05	6.82E-05	1.38E-03	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	2.88E-05	1.07E-04	4.31E-03	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.14E-05	7.22E-05	1.28E-03	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.73E-04	1.63E-04	1.94E-03	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.40E-04	2.56E-04	2.61E-03	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.17	0.01	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.27	0.03	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.18	0.01	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.41	0.02	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.64	0.02	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.050	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.064	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.088	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.07E-05	6.82E-05	1.38E-03	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	2.88E-05	1.07E-04	4.31E-03	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.14E-05	7.22E-05	1.28E-03	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.73E-04	1.63E-04	1.94E-03	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.40E-04	2.56E-04	2.61E-03	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	5.12E-05	1.10E-04	3.37E-03	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	9.21E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.72E-05	2.03E-05	1.13E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.09E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.229	0.009	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.325	0.028	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.242	0.009	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.483	0.016	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.740	0.019	=HQ-ing + HQ-inh + HQ-derm

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Lifetime	Total Risk	-	1.24E-04	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.27 Sample Calculation – Ndilo High Diet + Organs

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
5%	***Berries 1***					
	Concentration	mg/kg	0.0860	0.0073	16.1175	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0049
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.11E-05	1.80E-06	3.95E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	9.78E-06	8.34E-07	1.83E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	8.06E-06	6.87E-07	1.51E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	5.37E-06	4.58E-07	1.01E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.98E-07	2.54E-08	5.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.64E-07	1.40E-08	3.07E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.45E-07	2.09E-08	4.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.26E-07	2.78E-08	6.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
95%	***Berries 2***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	4.08E-05	2.72E-06	9.40E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.77E-07	3.84E-08	1.33E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
10%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.17

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Ingestion Rate	kg/d				0.255
Teen	Ingestion Rate	kg/d				0.1547
Child	Ingestion Rate	kg/d				0.1275
Toddler	Ingestion Rate	kg/d				0.085
Elder	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	6.38E-04	3.83E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.02E-06	5.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	5.74E-03	3.44E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.12E-05	4.87E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0209
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345
Elder	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.89E-04	3.76E-05	5.23E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.69E-05	1.13E-05	1.57E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	7.16E-05	9.32E-06	1.29E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.77E-05	6.21E-06	8.63E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	4.09E-06	5.32E-07	7.39E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.46E-06	1.89E-07	2.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.18E-06	2.83E-07	3.93E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.89E-06	3.76E-07	5.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0182
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	7.21E-04	2.50E-04	3.49E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.01E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	8.32E-05	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.55E-05	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.02E-05	3.54E-06	4.94E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.69E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.53E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.36E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0093
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.70E-04	1.40E-04	3.58E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.65E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.83E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.40E-06	1.97E-06	5.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.79E-07	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.16E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.55E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0265
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.18E-04	5.30E-05	1.39E-02	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.59E-05	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.78E-05	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.52E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	4.50E-06	7.50E-07	1.97E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.68E-07	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.15E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.53E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.020493
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	2.05E-04	4.30E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-06	6.09E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Organ					
	Concentration	mg/kg	0.2359	0.0186	1.7507	
Elder	Ingestion Rate	kg/d				0.002366
Adult	Ingestion Rate	kg/d				0.003671
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	5.58E-04	4.41E-05	4.14E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	8.66E-04	6.85E-05	6.43E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.90E-06	6.24E-07	5.86E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Averaged Intake by body weight	mg/kg-d	1.22E-05	9.68E-07	9.09E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	127.3000	45.0000	25.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.91E-04	6.75E-05	3.75E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.04E-04	7.20E-05	4.00E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.78E-04	6.30E-05	3.50E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.67E-03	9.45E-04	5.25E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-03	6.30E-04	3.50E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.70E-06	9.55E-07	5.30E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.88E-06	1.02E-06	5.66E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.99E-06	1.06E-06	5.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.13E-05	2.87E-05	1.60E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-04	3.82E-05	2.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	89.1100	31.5000	17.5000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.96E-04	6.93E-05	3.85E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.76E-03	9.77E-04	5.43E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.65E-03	1.29E-03	7.18E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.28E-06	1.16E-06	6.45E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.40E-05	2.97E-05	1.65E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.21E-04	7.83E-05	4.35E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	-	-	
Adult	Intake by body weight	mg/kg-d	-	-	-	
Teen	Intake by body weight	mg/kg-d	-	-	-	
Child	Intake by body weight	mg/kg-d	-	-	-	
Toddler	Intake by body weight	mg/kg-d	-	-	-	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	1.85E-05	6.88E-05	1.26E-03	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	4.03E-05	1.07E-04	2.50E-03	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	1.14E-05	7.22E-05	1.28E-03	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.73E-04	1.63E-04	1.94E-03	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.40E-04	2.56E-04	2.61E-03	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.27E+02	4.50E+01	2.50E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.93E-02	6.84E-03	3.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.33E-02	4.70E-03	2.61E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.76E-03	3.10E-03	1.72E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	9.72E-06	1.15E-05	6.37E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.43E-05	7.94E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.59E-05	1.88E-05	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	8.91E+01	3.15E+01	1.75E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.43E-02	5.04E-03	2.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.05E-02	3.72E-03	2.07E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.66E-03	2.71E-03	1.51E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.16E-06	8.44E-06	4.69E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	9.59E-06	1.13E-05	6.28E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.39E-05	1.64E-05	9.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Total Intake by body weight	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.85E-05	6.88E-05	1.26E-03	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	4.03E-05	1.07E-04	2.50E-03	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.14E-05	7.22E-05	1.28E-03	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.73E-04	1.63E-04	1.94E-03	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.40E-04	2.56E-04	2.61E-03	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.17	0.01	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.27	0.02	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.18	0.01	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.41	0.02	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.64	0.02	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.050	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.064	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.088	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.85E-05	6.88E-05	1.26E-03	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	4.03E-05	1.07E-04	2.50E-03	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.14E-05	7.22E-05	1.28E-03	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.73E-04	1.63E-04	1.94E-03	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.40E-04	2.56E-04	2.61E-03	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Lifetime	Intake by Ingestion	mg/kg-d	5.96E-05	1.11E-04	2.18E-03	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	1.07E-04	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.72E-05	2.03E-05	1.13E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.09E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.231	0.008	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.327	0.016	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.242	0.009	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.483	0.016	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.740	0.019	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.39E-04	-	-	=Risk-ing + Risk-inh + Risk-derm

I.4 Additional Cases - Latham Island

Table I.28 Sample Calculation – Latham Island + Medicinal Tea

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Medicinal Tea					
	Concentration	mg/kg	0.0715	0.0383	188.0675	
Elder	Ingestion Rate	kg/d				0.00003
Adult	Ingestion Rate	kg/d				0.00003
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	2.14E-06	1.15E-06	5.64E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.14E-06	1.15E-06	5.64E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.03E-08	1.63E-08	7.98E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.03E-08	1.63E-08	7.98E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
5%	***Berries 1***					
	Concentration	mg/kg	0.0777	0.0042	17.5219	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	9.71E-06	5.19E-07	2.19E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	9.71E-06	5.19E-07	2.19E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	8.84E-06	4.72E-07	1.99E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	7.28E-06	3.89E-07	1.64E-03	=Concentration x Ingestion Rate x % from source

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Intake	mg/d	4.86E-06	2.60E-07	1.10E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	1.37E-07	7.34E-09	3.10E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.37E-07	7.34E-09	3.10E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.48E-07	7.91E-09	3.34E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.21E-07	1.18E-08	4.99E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.57E-08	6.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
95%	***Berries 2***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	110.6180	38.5300	27.3100	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.66E-04	5.78E-05	4.10E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.77E-04	6.16E-05	4.37E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.55E-04	5.39E-05	3.82E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.32E-03	8.09E-04	5.74E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.55E-03	5.39E-04	3.82E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.35E-06	8.17E-07	5.79E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.50E-06	8.72E-07	6.18E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.59E-06	9.04E-07	6.40E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	7.06E-05	2.46E-05	1.74E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	9.39E-05	3.27E-05	2.32E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	77.4326	26.9710	19.1170	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.94E-04	6.74E-05	4.78E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.94E-04	6.74E-05	4.78E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.70E-04	5.93E-05	4.21E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.40E-03	8.36E-04	5.93E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.17E-03	1.11E-03	7.84E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	2.74E-06	9.54E-07	6.76E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.74E-06	9.54E-07	6.76E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.85E-06	9.94E-07	7.04E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	7.30E-05	2.54E-05	1.80E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.92E-04	6.70E-05	4.75E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	6.91E-06	5.69E-05	5.68E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	7.06E-06	5.69E-05	5.68E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	7.38E-06	7.45E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.46E-04	1.34E-04	8.85E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.90E-04	2.22E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Concentration	mg/kg	1.11E+02	3.85E+01	2.73E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.89E-02	6.60E-03	4.68E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.89E-02	6.60E-03	4.68E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.68E-02	5.86E-03	4.15E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.16E-02	4.03E-03	2.85E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.61E-03	2.65E-03	1.88E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	8.04E-06	9.33E-06	6.61E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	8.04E-06	9.33E-06	6.61E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	8.45E-06	9.81E-06	6.95E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.05E-05	1.22E-05	8.67E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.38E-05	1.61E-05	1.14E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	7.74E+01	2.70E+01	1.91E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.38E-02	4.80E-03	3.40E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.38E-02	4.80E-03	3.40E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.24E-02	4.32E-03	3.06E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	9.14E-03	3.18E-03	2.26E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	6.66E-03	2.32E-03	1.64E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	5.85E-06	6.79E-06	4.81E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	5.85E-06	6.79E-06	4.81E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	6.23E-06	7.23E-06	5.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	8.33E-06	9.67E-06	6.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.41E-05	9.96E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.47E-05	1.70E-05	1.21E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.89E-05	2.19E-05	1.55E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.59E-05	3.01E-05	2.14E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	6.91E-06	5.69E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	7.06E-06	5.69E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	7.38E-06	7.45E-05	6.00E-02	calculated above

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Total Intake by Ingestion	mg/kg-d	1.46E-04	1.34E-04	8.85E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	2.90E-04	2.22E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.19	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.33	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.56	0.79	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.47E-05	1.70E-05	1.21E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.89E-05	2.19E-05	1.55E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.59E-05	3.01E-05	2.14E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.040	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.040	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.043	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.055	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.075	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	6.91E-06	5.69E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	7.06E-06	5.69E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	7.38E-06	7.45E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.46E-04	1.34E-04	8.85E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	2.90E-04	2.22E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	3.17E-05	7.27E-05	6.21E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	5.70E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.47E-05	1.70E-05	1.21E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.89E-05	2.19E-05	1.55E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.59E-05	3.01E-05	2.14E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.49E-05	1.73E-05	1.23E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	2.69E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.194	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.194	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.240	0.422	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.400	0.725	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.642	0.791	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	8.49E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.29 Sample Calculation – Latham Island + Drinking Water

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0003	0.0003	0.0028	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	4.95E-04	4.43E-04	4.16E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	4.95E-04	4.43E-04	4.16E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.30E-04	2.95E-04	2.77E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.64E-04	2.36E-04	2.22E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.98E-04	1.77E-04	1.66E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	7.00E-06	6.27E-06	5.88E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.00E-06	6.27E-06	5.88E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.53E-06	4.95E-06	4.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.02E-06	7.18E-06	6.74E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.20E-05	1.07E-05	1.01E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
5%	***Berries 1***					
	Concentration	mg/kg	0.0777	0.0042	17.5219	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	9.71E-06	5.19E-07	2.19E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	9.71E-06	5.19E-07	2.19E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	8.84E-06	4.72E-07	1.99E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	7.28E-06	3.89E-07	1.64E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	4.86E-06	2.60E-07	1.10E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	1.37E-07	7.34E-09	3.10E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.37E-07	7.34E-09	3.10E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.48E-07	7.91E-09	3.34E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.21E-07	1.18E-08	4.99E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.57E-08	6.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
95%	***Berries 2***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Ingestion Rate	kg/d				0.0489
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	110.6180	38.5300	27.3100	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.66E-04	5.78E-05	4.10E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.77E-04	6.16E-05	4.37E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.55E-04	5.39E-05	3.82E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.32E-03	8.09E-04	5.74E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.55E-03	5.39E-04	3.82E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.35E-06	8.17E-07	5.79E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.50E-06	8.72E-07	6.18E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.59E-06	9.04E-07	6.40E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	7.06E-05	2.46E-05	1.74E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	9.39E-05	3.27E-05	2.32E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	77.4326	26.9710	19.1170	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.94E-04	6.74E-05	4.78E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.94E-04	6.74E-05	4.78E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.70E-04	5.93E-05	4.21E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.40E-03	8.36E-04	5.93E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.17E-03	1.11E-03	7.84E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	2.74E-06	9.54E-07	6.76E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.74E-06	9.54E-07	6.76E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.85E-06	9.94E-07	7.04E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	7.30E-05	2.54E-05	1.80E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.92E-04	6.70E-05	4.75E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	1.39E-05	5.89E-05	5.68E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	1.40E-05	5.89E-05	5.68E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	1.29E-05	7.61E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.54E-04	1.36E-04	8.85E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.02E-04	2.26E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.11E+02	3.85E+01	2.73E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.89E-02	6.60E-03	4.68E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.89E-02	6.60E-03	4.68E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.68E-02	5.86E-03	4.15E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.16E-02	4.03E-03	2.85E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.61E-03	2.65E-03	1.88E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	8.04E-06	9.33E-06	6.61E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Averaged Intake by body weight	mg/kg-d	8.04E-06	9.33E-06	6.61E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	8.45E-06	9.81E-06	6.95E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.05E-05	1.22E-05	8.67E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.38E-05	1.61E-05	1.14E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	7.74E+01	2.70E+01	1.91E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.38E-02	4.80E-03	3.40E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.38E-02	4.80E-03	3.40E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.24E-02	4.32E-03	3.06E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	9.14E-03	3.18E-03	2.26E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	6.66E-03	2.32E-03	1.64E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	5.85E-06	6.79E-06	4.81E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	5.85E-06	6.79E-06	4.81E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	6.23E-06	7.23E-06	5.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	8.33E-06	9.67E-06	6.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.41E-05	9.96E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.47E-05	1.70E-05	1.21E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.89E-05	2.19E-05	1.55E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.59E-05	3.01E-05	2.14E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.39E-05	5.89E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.40E-05	5.89E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.29E-05	7.61E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.54E-04	1.36E-04	8.85E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.02E-04	2.26E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.15	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.15	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.19	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.34	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.56	0.79	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.47E-05	1.70E-05	1.21E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.89E-05	2.19E-05	1.55E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.59E-05	3.01E-05	2.14E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.040	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.040	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.043	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.055	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.075	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.39E-05	5.89E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.40E-05	5.89E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.29E-05	7.61E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.54E-04	1.36E-04	8.85E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.02E-04	2.26E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	3.88E-05	7.48E-05	6.20E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	6.99E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.47E-05	1.70E-05	1.21E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.89E-05	2.19E-05	1.55E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.59E-05	3.01E-05	2.14E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.49E-05	1.73E-05	1.23E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	2.69E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.199	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.199	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.244	0.422	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.406	0.725	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.651	0.791	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	9.78E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.30 Sample Calculation – Latham Island + Organs

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
5%	***Berries 1***					
	Concentration	mg/kg	0.0777	0.0042	17.5219	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	9.71E-06	5.19E-07	2.19E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	9.71E-06	5.19E-07	2.19E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	8.84E-06	4.72E-07	1.99E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	7.28E-06	3.89E-07	1.64E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	4.86E-06	2.60E-07	1.10E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	1.37E-07	7.34E-09	3.10E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.37E-07	7.34E-09	3.10E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.48E-07	7.91E-09	3.34E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.21E-07	1.18E-08	4.99E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.57E-08	6.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
95%	***Berries 2***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Ingestion Rate	kg/d				0.0489
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Organ					
	Concentration	mg/kg	0.2359	0.0186	1.7507	
Elder	Ingestion Rate	kg/d				0.001057
Adult	Ingestion Rate	kg/d				0.001057
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	2.49E-04	1.97E-05	1.85E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.49E-04	1.97E-05	1.85E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.53E-06	2.79E-07	2.62E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.53E-06	2.79E-07	2.62E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	110.6180	38.5300	27.3100	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Intake	mg/d	1.66E-04	5.78E-05	4.10E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.77E-04	6.16E-05	4.37E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.55E-04	5.39E-05	3.82E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.32E-03	8.09E-04	5.74E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.55E-03	5.39E-04	3.82E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.35E-06	8.17E-07	5.79E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.50E-06	8.72E-07	6.18E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.59E-06	9.04E-07	6.40E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	7.06E-05	2.46E-05	1.74E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	9.39E-05	3.27E-05	2.32E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	77.4326	26.9710	19.1170	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.94E-04	6.74E-05	4.78E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.94E-04	6.74E-05	4.78E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.70E-04	5.93E-05	4.21E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.40E-03	8.36E-04	5.93E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.17E-03	1.11E-03	7.84E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	2.74E-06	9.54E-07	6.76E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.74E-06	9.54E-07	6.76E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.85E-06	9.94E-07	7.04E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	7.30E-05	2.54E-05	1.80E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.92E-04	6.70E-05	4.75E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	1.04E-05	5.71E-05	5.68E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	1.06E-05	5.72E-05	5.68E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	7.38E-06	7.45E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.46E-04	1.34E-04	8.85E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.90E-04	2.22E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.11E+02	3.85E+01	2.73E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.89E-02	6.60E-03	4.68E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.89E-02	6.60E-03	4.68E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.68E-02	5.86E-03	4.15E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.16E-02	4.03E-03	2.85E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.61E-03	2.65E-03	1.88E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	8.04E-06	9.33E-06	6.61E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	8.04E-06	9.33E-06	6.61E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	8.45E-06	9.81E-06	6.95E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.05E-05	1.22E-05	8.67E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.38E-05	1.61E-05	1.14E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	7.74E+01	2.70E+01	1.91E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.38E-02	4.80E-03	3.40E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.38E-02	4.80E-03	3.40E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.24E-02	4.32E-03	3.06E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	9.14E-03	3.18E-03	2.26E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	6.66E-03	2.32E-03	1.64E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	5.85E-06	6.79E-06	4.81E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	5.85E-06	6.79E-06	4.81E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	6.23E-06	7.23E-06	5.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	8.33E-06	9.67E-06	6.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.41E-05	9.96E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.47E-05	1.70E-05	1.21E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.89E-05	2.19E-05	1.55E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.59E-05	3.01E-05	2.14E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.04E-05	5.71E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.06E-05	5.72E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	7.38E-06	7.45E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.46E-04	1.34E-04	8.85E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	2.90E-04	2.22E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.19	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.33	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.56	0.79	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.47E-05	1.70E-05	1.21E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.89E-05	2.19E-05	1.55E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.59E-05	3.01E-05	2.14E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.040	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.040	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.043	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.055	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.075	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.04E-05	5.71E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.06E-05	5.72E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	7.38E-06	7.45E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.46E-04	1.34E-04	8.85E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	2.90E-04	2.22E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	3.44E-05	7.29E-05	6.20E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	6.19E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.39E-05	1.61E-05	1.14E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.47E-05	1.70E-05	1.21E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.89E-05	2.19E-05	1.55E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.59E-05	3.01E-05	2.14E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.49E-05	1.73E-05	1.23E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	2.69E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.195	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.195	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.240	0.422	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.400	0.725	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.642	0.791	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	8.98E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

I.5 Additional Cases - City of Yellowknife

Table I.31 Sample Calculation – City of Yellowknife + Medicinal Tea

Sample Calculation	Units	Incremental Arsenic	Antimony	Manganese	Notes

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Medicinal Tea					
	Concentration	mg/kg	0.0715	0.0383	188.0675	
Elder	Ingestion Rate	kg/d				0.00003
Adult	Ingestion Rate	kg/d				0.00003
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	2.14E-06	1.15E-06	5.64E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.14E-06	1.15E-06	5.64E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.03E-08	1.63E-08	7.98E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.03E-08	1.63E-08	7.98E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	6.1940	3.6730	364.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	9.29E-06	5.51E-06	5.46E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.91E-06	5.88E-06	5.82E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.67E-06	5.14E-06	5.10E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.30E-04	7.71E-05	7.64E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	8.67E-05	5.14E-05	5.10E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	1.31E-07	7.79E-08	7.72E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.40E-07	8.31E-08	8.24E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.45E-07	8.61E-08	8.54E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	3.95E-06	2.34E-06	2.32E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	5.26E-06	3.12E-06	3.09E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	4.3358	2.5711	254.8000	
Elder	Ingestion Rate	kg/d				0.0000025

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	9.54E-06	5.66E-06	5.61E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.34E-04	7.97E-05	7.90E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-04	1.05E-04	1.04E-02	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.60E-07	9.47E-08	9.39E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.09E-06	2.42E-06	2.40E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-05	6.39E-06	6.33E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	1.98E-06	5.53E-05	5.68E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	1.99E-06	5.53E-05	5.68E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	6.19E+00	3.67E+00	3.64E+02	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	9.41E-04	5.58E-04	5.53E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	6.47E-04	3.84E-04	3.80E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	4.26E-04	2.53E-04	2.50E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	4.73E-07	9.35E-07	9.27E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	5.90E-07	1.17E-06	1.16E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	7.75E-07	1.53E-06	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	4.34E+00	2.57E+00	2.55E+02	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	6.94E-04	4.11E-04	4.08E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	5.12E-04	3.03E-04	3.01E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	3.73E-04	2.21E-04	2.19E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	3.49E-07	6.89E-07	6.83E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	4.67E-07	9.22E-07	9.14E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	6.78E-07	1.34E-06	1.33E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.98E-06	5.53E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.99E-06	5.53E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.18	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.22	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.33	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.005	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.007	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.98E-06	5.53E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.99E-06	5.53E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	3.54E-06	6.33E-05	6.21E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	6.37E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	3.52E-06	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8

Sample Calculation		**Units**	**Incremental Arsenic**	**Antimony**	**Manganese**	**Notes**
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	8.37E-07	1.65E-06	1.64E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	1.51E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.154	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.154	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.197	0.423	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.238	0.729	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.349	0.798	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.14E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.32 Sample Calculation – City of Yellowknife + Mushrooms < 10km

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Mushroom					
	Concentration	mg/kg	0.2906	0.0535	0.0000	
Elder	Ingestion Rate	kg/d				0.0075
Adult	Ingestion Rate	kg/d				0.0075
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	2.18E-03	4.01E-04	0.00E+00	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.18E-03	4.01E-04	0.00E+00	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.08E-05	5.67E-06	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.08E-05	5.67E-06	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	6.1940	3.6730	364.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	9.29E-06	5.51E-06	5.46E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.91E-06	5.88E-06	5.82E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.67E-06	5.14E-06	5.10E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.30E-04	7.71E-05	7.64E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	8.67E-05	5.14E-05	5.10E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	1.31E-07	7.79E-08	7.72E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.40E-07	8.31E-08	8.24E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.45E-07	8.61E-08	8.54E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	3.95E-06	2.34E-06	2.32E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	5.26E-06	3.12E-06	3.09E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Dust Concentration	mg/kg	4.3358	2.5711	254.8000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	9.54E-06	5.66E-06	5.61E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.34E-04	7.97E-05	7.90E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-04	1.05E-04	1.04E-02	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.60E-07	9.47E-08	9.39E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.09E-06	2.42E-06	2.40E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-05	6.39E-06	6.33E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	3.28E-05	6.09E-05	5.68E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	3.28E-05	6.09E-05	5.68E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	6.19E+00	3.67E+00	3.64E+02	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	9.41E-04	5.58E-04	5.53E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	6.47E-04	3.84E-04	3.80E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	4.26E-04	2.53E-04	2.50E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	4.73E-07	9.35E-07	9.27E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	5.90E-07	1.17E-06	1.16E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	7.75E-07	1.53E-06	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	4.34E+00	2.57E+00	2.55E+02	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	6.94E-04	4.11E-04	4.08E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	5.12E-04	3.03E-04	3.01E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	3.73E-04	2.21E-04	2.19E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	3.49E-07	6.89E-07	6.83E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	4.67E-07	9.22E-07	9.14E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	6.78E-07	1.34E-06	1.33E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	3.28E-05	6.09E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	3.28E-05	6.09E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.15	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.15	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.18	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.22	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.33	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report

Sample Calculation		**Units**	**Incremental Arsenic**	**Antimony**	**Manganese**	**Notes**
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.005	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.007	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	3.28E-05	6.09E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	3.28E-05	6.09E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	2.74E-05	6.77E-05	6.21E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	4.93E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	3.52E-06	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	calculated above
Elder	Years of lifestage	yr				10

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	8.37E-07	1.65E-06	1.64E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	1.51E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.168	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.168	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.197	0.423	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.238	0.729	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.349	0.798	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	5.44E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.33 Sample Calculation – City of Yellowknife + Mushrooms 10km – 25km

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Mushroom					
	Concentration	mg/kg	0.0282	0.0072	0.0000	
Elder	Ingestion Rate	kg/d				0.0075
Adult	Ingestion Rate	kg/d				0.0075
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	2.11E-04	5.41E-05	0.00E+00	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.11E-04	5.41E-05	0.00E+00	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	2.99E-06	7.65E-07	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.99E-06	7.65E-07	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	6.1940	3.6730	364.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	9.29E-06	5.51E-06	5.46E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.91E-06	5.88E-06	5.82E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.67E-06	5.14E-06	5.10E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.30E-04	7.71E-05	7.64E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	8.67E-05	5.14E-05	5.10E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	1.31E-07	7.79E-08	7.72E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.40E-07	8.31E-08	8.24E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.45E-07	8.61E-08	8.54E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	3.95E-06	2.34E-06	2.32E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	5.26E-06	3.12E-06	3.09E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Dust Concentration	mg/kg	4.3358	2.5711	254.8000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	9.54E-06	5.66E-06	5.61E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.34E-04	7.97E-05	7.90E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-04	1.05E-04	1.04E-02	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.60E-07	9.47E-08	9.39E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.09E-06	2.42E-06	2.40E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-05	6.39E-06	6.33E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	4.94E-06	5.60E-05	5.68E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	4.95E-06	5.60E-05	5.68E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	6.19E+00	3.67E+00	3.64E+02	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	9.41E-04	5.58E-04	5.53E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	6.47E-04	3.84E-04	3.80E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	4.26E-04	2.53E-04	2.50E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	4.73E-07	9.35E-07	9.27E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	5.90E-07	1.17E-06	1.16E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	7.75E-07	1.53E-06	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	4.34E+00	2.57E+00	2.55E+02	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	6.94E-04	4.11E-04	4.08E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	5.12E-04	3.03E-04	3.01E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	3.73E-04	2.21E-04	2.19E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	3.49E-07	6.89E-07	6.83E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	4.67E-07	9.22E-07	9.14E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	6.78E-07	1.34E-06	1.33E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	4.94E-06	5.60E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	4.95E-06	5.60E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.18	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.22	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.33	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.005	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.007	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	4.94E-06	5.60E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	4.95E-06	5.60E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	5.83E-06	6.39E-05	6.21E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	1.05E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	3.52E-06	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	calculated above
Elder	Years of lifestage	yr				10

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	8.37E-07	1.65E-06	1.64E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	1.51E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.155	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.155	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.197	0.423	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.238	0.729	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.349	0.798	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.55E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.34 Sample Calculation – City of Yellowknife + Mushrooms > 25km

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Mushroom					
	Concentration	mg/kg	0.0282	0.0072	0.0000	
Elder	Ingestion Rate	kg/d				0.0075
Adult	Ingestion Rate	kg/d				0.0075
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	2.11E-04	5.41E-05	0.00E+00	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.11E-04	5.41E-05	0.00E+00	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	2.99E-06	7.65E-07	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.99E-06	7.65E-07	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0300	0.0000	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	2.25E-04	0.00E+00	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	2.25E-04	0.00E+00	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.18E-06	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.18E-06	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	6.1940	3.6730	364.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	9.29E-06	5.51E-06	5.46E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.91E-06	5.88E-06	5.82E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.67E-06	5.14E-06	5.10E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.30E-04	7.71E-05	7.64E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	8.67E-05	5.14E-05	5.10E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	1.31E-07	7.79E-08	7.72E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.40E-07	8.31E-08	8.24E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.45E-07	8.61E-08	8.54E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	3.95E-06	2.34E-06	2.32E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	5.26E-06	3.12E-06	3.09E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Dust Concentration	mg/kg	4.3358	2.5711	254.8000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	9.54E-06	5.66E-06	5.61E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.34E-04	7.97E-05	7.90E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-04	1.05E-04	1.04E-02	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.60E-07	9.47E-08	9.39E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.09E-06	2.42E-06	2.40E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-05	6.39E-06	6.33E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	1.95E-06	5.84E-05	5.68E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	1.96E-06	5.84E-05	5.68E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	6.19E+00	3.67E+00	3.64E+02	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	9.41E-04	5.58E-04	5.53E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	6.47E-04	3.84E-04	3.80E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	4.26E-04	2.53E-04	2.50E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	4.73E-07	9.35E-07	9.27E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	5.90E-07	1.17E-06	1.16E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	7.75E-07	1.53E-06	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	4.34E+00	2.57E+00	2.55E+02	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	6.94E-04	4.11E-04	4.08E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	5.12E-04	3.03E-04	3.01E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	3.73E-04	2.21E-04	2.19E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	3.49E-07	6.89E-07	6.83E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	4.67E-07	9.22E-07	9.14E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	6.78E-07	1.34E-06	1.33E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.95E-06	5.84E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.96E-06	5.84E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.15	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.15	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.18	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.22	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.33	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.005	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.007	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.95E-06	5.84E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.96E-06	5.84E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	3.52E-06	6.58E-05	6.21E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	6.33E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	3.52E-06	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	calculated above
Elder	Years of lifestage	yr				10

Sample Calculation		**Units**	**Incremental Arsenic**	**Antimony**	**Manganese**	**Notes**
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	8.37E-07	1.65E-06	1.64E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	1.51E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.161	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.161	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.197	0.423	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.238	0.729	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.349	0.798	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.14E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.35 Sample Calculation – City of Yellowknife + Organs

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Organ					
	Concentration	mg/kg	0.2359	0.0186	1.7507	
Elder	Ingestion Rate	kg/d				0.001057
Adult	Ingestion Rate	kg/d				0.001057
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	2.49E-04	1.97E-05	1.85E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.49E-04	1.97E-05	1.85E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.53E-06	2.79E-07	2.62E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.53E-06	2.79E-07	2.62E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	6.1940	3.6730	364.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	9.29E-06	5.51E-06	5.46E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.91E-06	5.88E-06	5.82E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.67E-06	5.14E-06	5.10E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.30E-04	7.71E-05	7.64E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	8.67E-05	5.14E-05	5.10E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	1.31E-07	7.79E-08	7.72E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.40E-07	8.31E-08	8.24E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.45E-07	8.61E-08	8.54E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	3.95E-06	2.34E-06	2.32E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	5.26E-06	3.12E-06	3.09E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Dust Concentration	mg/kg	4.3358	2.5711	254.8000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	9.54E-06	5.66E-06	5.61E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.34E-04	7.97E-05	7.90E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-04	1.05E-04	1.04E-02	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.60E-07	9.47E-08	9.39E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.09E-06	2.42E-06	2.40E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-05	6.39E-06	6.33E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	5.48E-06	5.55E-05	5.68E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	5.49E-06	5.55E-05	5.68E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	6.19E+00	3.67E+00	3.64E+02	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	9.41E-04	5.58E-04	5.53E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	6.47E-04	3.84E-04	3.80E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	4.26E-04	2.53E-04	2.50E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	4.73E-07	9.35E-07	9.27E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	5.90E-07	1.17E-06	1.16E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	7.75E-07	1.53E-06	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	4.34E+00	2.57E+00	2.55E+02	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	6.94E-04	4.11E-04	4.08E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	5.12E-04	3.03E-04	3.01E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	3.73E-04	2.21E-04	2.19E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	3.49E-07	6.89E-07	6.83E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	4.67E-07	9.22E-07	9.14E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	6.78E-07	1.34E-06	1.33E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.48E-06	5.55E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	5.49E-06	5.55E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.18	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.22	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.33	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.005	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.007	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.48E-06	5.55E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	5.49E-06	5.55E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	6.25E-06	6.35E-05	6.21E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	1.12E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	3.52E-06	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	calculated above
Elder	Years of lifestage	yr				10

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	8.37E-07	1.65E-06	1.64E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	1.51E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.154	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.154	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.197	0.423	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.238	0.729	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.349	0.798	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.63E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

I.6 Additional Cases - Ingraham Trail

Table I.36 Sample Calculation – Ingraham Trail + Medicinal Tea

Sample Calculation	Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS					
Drinking Water					

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Medicinal Tea					
	Concentration	mg/kg	0.0715	0.0383	188.0675	
Elder	Ingestion Rate	kg/d				0.00003
Adult	Ingestion Rate	kg/d				0.00003
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	2.14E-06	1.15E-06	5.64E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.14E-06	1.15E-06	5.64E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.03E-08	1.63E-08	7.98E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.03E-08	1.63E-08	7.98E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489
Adult	Ingestion Rate	kg/d				0.0489

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	0.6270	38.2000	284.9500	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	9.40E-07	5.73E-05	4.27E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.00E-06	6.11E-05	4.56E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.78E-07	5.35E-05	3.99E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.32E-05	8.02E-04	5.98E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	8.78E-06	5.35E-04	3.99E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	1.33E-08	8.10E-07	6.05E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.42E-08	8.64E-07	6.45E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.47E-08	8.96E-07	6.68E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.00E-07	2.44E-05	1.82E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	5.32E-07	3.24E-05	2.42E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	0.4389	26.7400	199.4650	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.10E-06	6.68E-05	4.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.10E-06	6.68E-05	4.99E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	9.66E-07	5.88E-05	4.39E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.36E-05	8.29E-04	6.18E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.80E-05	1.10E-03	8.18E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	1.55E-08	9.46E-07	7.05E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.55E-08	9.46E-07	7.05E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.62E-08	9.85E-07	7.35E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.14E-07	2.52E-05	1.88E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.09E-06	6.64E-05	4.96E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	1.73E-06	5.69E-05	5.68E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	1.73E-06	5.69E-05	5.68E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	1.83E-06	7.45E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	3.50E-06	1.33E-04	8.88E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	5.20E-06	2.21E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	6.27E-01	3.82E+01	2.85E+02	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.07E-04	6.54E-03	4.88E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.07E-04	6.54E-03	4.88E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	9.53E-05	5.81E-03	4.33E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	6.55E-05	3.99E-03	2.98E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	4.31E-05	2.63E-03	1.96E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	4.55E-08	9.25E-06	6.90E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	4.55E-08	9.25E-06	6.90E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	4.79E-08	9.73E-06	7.26E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Averaged Intake by body weight	mg/kg-d	5.97E-08	1.21E-05	9.05E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	7.84E-08	1.59E-05	1.19E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	4.39E-01	2.67E+01	1.99E+02	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	7.81E-05	4.76E-03	3.55E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	7.81E-05	4.76E-03	3.55E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	7.02E-05	4.28E-03	3.19E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	5.18E-05	3.16E-03	2.35E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	3.77E-05	2.30E-03	1.72E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	3.32E-08	6.73E-06	5.02E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	3.32E-08	6.73E-06	5.02E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	3.53E-08	7.17E-06	5.35E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	4.72E-08	9.59E-06	7.15E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	6.86E-08	1.39E-05	1.04E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	7.87E-08	1.60E-05	1.19E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	7.87E-08	1.60E-05	1.19E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	8.32E-08	1.69E-05	1.26E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.07E-07	2.17E-05	1.62E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.47E-07	2.99E-05	2.23E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.73E-06	5.69E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.73E-06	5.69E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.83E-06	7.45E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	3.50E-06	1.33E-04	8.88E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	5.20E-06	2.21E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.19	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.33	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.55	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.87E-08	1.60E-05	1.19E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.87E-08	1.60E-05	1.19E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.32E-08	1.69E-05	1.26E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.07E-07	2.17E-05	1.62E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.47E-07	2.99E-05	2.23E-05	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.040	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.040	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.042	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.054	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.075	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.73E-06	5.69E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.73E-06	5.69E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.83E-06	7.45E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	3.50E-06	1.33E-04	8.88E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	5.20E-06	2.21E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	2.05E-06	7.26E-05	6.21E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	3.68E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	3.52E-06	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.87E-08	1.60E-05	1.19E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.87E-08	1.60E-05	1.19E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.32E-08	1.69E-05	1.26E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.07E-07	2.17E-05	1.62E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.47E-07	2.99E-05	2.23E-05	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	8.47E-08	1.72E-05	1.28E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
						yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	1.52E-07	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.194	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.194	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.240	0.422	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.399	0.728	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.640	0.796	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	7.35E-06	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.37 Sample Calculation – Ingraham Trail + Organs

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Organ					
	Concentration	mg/kg	0.2359	0.0186	1.7507	
Elder	Ingestion Rate	kg/d				0.001057
Adult	Ingestion Rate	kg/d				0.001057
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	2.49E-04	1.97E-05	1.85E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.49E-04	1.97E-05	1.85E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.53E-06	2.79E-07	2.62E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.53E-06	2.79E-07	2.62E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	0.6270	38.2000	284.9500	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	9.40E-07	5.73E-05	4.27E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.00E-06	6.11E-05	4.56E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.78E-07	5.35E-05	3.99E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.32E-05	8.02E-04	5.98E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	8.78E-06	5.35E-04	3.99E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	1.33E-08	8.10E-07	6.05E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.42E-08	8.64E-07	6.45E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.47E-08	8.96E-07	6.68E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.00E-07	2.44E-05	1.82E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	5.32E-07	3.24E-05	2.42E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Dust Concentration	mg/kg	0.4389	26.7400	199.4650	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.10E-06	6.68E-05	4.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.10E-06	6.68E-05	4.99E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	9.66E-07	5.88E-05	4.39E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.36E-05	8.29E-04	6.18E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.80E-05	1.10E-03	8.18E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	1.55E-08	9.46E-07	7.05E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.55E-08	9.46E-07	7.05E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.62E-08	9.85E-07	7.35E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.14E-07	2.52E-05	1.88E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.09E-06	6.64E-05	4.96E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	5.22E-06	5.71E-05	5.68E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	5.23E-06	5.72E-05	5.68E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	1.83E-06	7.45E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	3.50E-06	1.33E-04	8.88E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	5.20E-06	2.21E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	6.27E-01	3.82E+01	2.85E+02	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.07E-04	6.54E-03	4.88E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.07E-04	6.54E-03	4.88E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	9.53E-05	5.81E-03	4.33E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	6.55E-05	3.99E-03	2.98E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	4.31E-05	2.63E-03	1.96E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	4.55E-08	9.25E-06	6.90E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	4.55E-08	9.25E-06	6.90E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	4.79E-08	9.73E-06	7.26E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	5.97E-08	1.21E-05	9.05E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	7.84E-08	1.59E-05	1.19E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	4.39E-01	2.67E+01	1.99E+02	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	7.81E-05	4.76E-03	3.55E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	7.81E-05	4.76E-03	3.55E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	7.02E-05	4.28E-03	3.19E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	5.18E-05	3.16E-03	2.35E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	3.77E-05	2.30E-03	1.72E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	3.32E-08	6.73E-06	5.02E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	3.32E-08	6.73E-06	5.02E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	3.53E-08	7.17E-06	5.35E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	4.72E-08	9.59E-06	7.15E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	6.86E-08	1.39E-05	1.04E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	7.87E-08	1.60E-05	1.19E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	7.87E-08	1.60E-05	1.19E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	8.32E-08	1.69E-05	1.26E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.07E-07	2.17E-05	1.62E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.47E-07	2.99E-05	2.23E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.22E-06	5.71E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	5.23E-06	5.72E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.83E-06	7.45E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	3.50E-06	1.33E-04	8.88E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	5.20E-06	2.21E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.19	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.33	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.55	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.87E-08	1.60E-05	1.19E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.87E-08	1.60E-05	1.19E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.32E-08	1.69E-05	1.26E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.07E-07	2.17E-05	1.62E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.47E-07	2.99E-05	2.23E-05	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.040	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.040	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.042	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.054	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.075	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.22E-06	5.71E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	5.23E-06	5.72E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.83E-06	7.45E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	3.50E-06	1.33E-04	8.88E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	5.20E-06	2.21E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	4.76E-06	7.28E-05	6.21E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	8.56E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	3.52E-06	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.87E-08	1.60E-05	1.19E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.87E-08	1.60E-05	1.19E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.32E-08	1.69E-05	1.26E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.07E-07	2.17E-05	1.62E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.47E-07	2.99E-05	2.23E-05	calculated above
Elder	Years of lifestage	yr				10

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	8.47E-08	1.72E-05	1.28E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	1.52E-07	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.194	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.194	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.240	0.422	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.399	0.728	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.640	0.796	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.22E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

I.7 Townsite

Table I.38 Sample Calculation – Current Townsite + Wading @ Townsite

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	261.5800	76.0000	1179.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	3.92E-04	1.14E-04	1.77E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	4.19E-04	1.22E-04	1.89E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.66E-04	1.06E-04	1.65E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	5.49E-03	1.60E-03	2.48E-02	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.66E-03	1.06E-03	1.65E-02	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	5.55E-06	1.61E-06	2.50E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.92E-06	1.72E-06	2.67E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	6.13E-06	1.78E-06	2.76E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.67E-04	4.85E-05	7.53E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.22E-04	6.45E-05	1.00E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Sediment					
	Concentration	mg/kg	237.1798	No data	No data	
Elder	Ingestion Rate	kg/hr				0.0000077
Adult	Ingestion Rate	kg/hr				0.0000077
Teen	Ingestion Rate	kg/hr				0.0000077
Child	Ingestion Rate	kg/hr				0.0000077
Toddler	Ingestion Rate	kg/hr				0.0000077
Elder	Intake	mg/hr	1.83E-03	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Adult	Intake	mg/hr	1.83E-03	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	1.83E-03	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/hr	1.83E-03	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/hr	1.83E-03	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
	Exposure Duration - hours per day	hrs/d				2

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
Elder	Averaged Intake by body weight	mg/kg-d	5.17E-05	0.00E+00	0.00E+00	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.17E-05	0.00E+00	0.00E+00	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	6.12E-05	0.00E+00	0.00E+00	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.11E-04	0.00E+00	0.00E+00	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.21E-04	0.00E+00	0.00E+00	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	183.1060	53.2000	825.3000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	4.58E-04	1.33E-04	2.06E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	4.58E-04	1.33E-04	2.06E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.03E-04	1.17E-04	1.82E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	5.68E-03	1.65E-03	2.56E-02	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	7.51E-03	2.18E-03	3.38E-02	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	6.47E-06	1.88E-06	2.92E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	6.47E-06	1.88E-06	2.92E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	6.75E-06	1.96E-06	3.04E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.73E-04	5.01E-05	7.78E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	4.55E-04	1.32E-04	2.05E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	6.54E-05	5.86E-05	5.68E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	6.57E-05	5.87E-05	5.68E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	7.59E-05	7.63E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	4.53E-04	1.82E-04	9.00E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	9.02E-04	3.19E-04	1.11E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	2.62E+02	7.60E+01	1.18E+03	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	4.48E-02	1.30E-02	2.02E-01	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	4.48E-02	1.30E-02	2.02E-01	=Concentration x Dermal Loading Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Intake	mg/d	3.98E-02	1.16E-02	1.79E-01	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	2.73E-02	7.94E-03	1.23E-01	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	1.80E-02	5.23E-03	8.11E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	1.90E-05	1.84E-05	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	1.90E-05	1.84E-05	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	2.00E-05	1.94E-05	3.00E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	2.49E-05	2.41E-05	3.74E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	3.27E-05	3.17E-05	4.92E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Sediment	Units				
	Concentration	mg/kg	2.37E+02	No data	No data	
Elder	Dermal Loading Rate	kg/d				0.000696
Adult	Dermal Loading Rate	kg/d				0.000696
Teen	Dermal Loading Rate	kg/d				0.0006264
Child	Dermal Loading Rate	kg/d				0.0028804
Toddler	Dermal Loading Rate	kg/d				0.00189
Elder	Intake	mg/d	1.65E-01	0.00E+00	0.00E+00	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.65E-01	0.00E+00	0.00E+00	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.49E-01	0.00E+00	0.00E+00	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	6.83E-01	0.00E+00	0.00E+00	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	4.48E-01	0.00E+00	0.00E+00	=Concentration x Dermal Loading Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	7.00E-05	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	7.00E-05	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.47E-05	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	6.23E-04	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	8.15E-04	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	Dust	Units				
	Concentration	mg/kg	1.83E+02	5.32E+01	8.25E+02	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	3.26E-02	9.47E-03	1.47E-01	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	3.26E-02	9.47E-03	1.47E-01	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	2.93E-02	8.51E-03	1.32E-01	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	2.16E-02	6.28E-03	9.74E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	1.57E-02	4.58E-03	7.10E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	1.38E-05	1.34E-05	2.08E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	1.38E-05	1.34E-05	2.08E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	1.47E-05	1.43E-05	2.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	1.97E-05	1.91E-05	2.96E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Averaged Intake by body weight	mg/kg-d	2.86E-05	2.77E-05	4.30E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.03E-04	3.18E-05	4.93E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.03E-04	3.18E-05	4.93E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.09E-04	3.36E-05	5.21E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	6.68E-04	4.32E-05	6.70E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	8.76E-04	5.94E-05	9.22E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	6.54E-05	5.86E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	6.57E-05	5.87E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	7.59E-05	7.63E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	4.53E-04	1.82E-04	9.00E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	9.02E-04	3.19E-04	1.11E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.15	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.15	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.19	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.46	0.74	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.80	0.81	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.03E-04	3.18E-05	4.93E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.03E-04	3.18E-05	4.93E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.09E-04	3.36E-05	5.21E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	6.68E-04	4.32E-05	6.70E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	8.76E-04	5.94E-05	9.22E-05	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.079	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.079	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.084	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.108	0.001	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.149	0.001	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	6.54E-05	5.86E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	6.57E-05	5.87E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	7.59E-05	7.63E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	4.53E-04	1.82E-04	9.00E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	9.02E-04	3.19E-04	1.11E-01	calculated above

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	1.38E-04	8.27E-05	6.23E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	2.48E-04	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	3.52E-06	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.03E-04	3.18E-05	4.93E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.03E-04	3.18E-05	4.93E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.09E-04	3.36E-05	5.21E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	6.68E-04	4.32E-05	6.70E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	8.76E-04	5.94E-05	9.22E-05	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.85E-04	3.42E-05	5.31E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.32E-04	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.237	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.238	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.286	0.423	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.575	0.738	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.958	0.814	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	5.83E-04	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.39 Sample Calculation – Current Townsite + Recreational Use of Giant Mine

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
5%	***Berries 1***					
	Concentration	mg/kg	6.3718	0.5400	269.0000	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	7.96E-04	6.75E-05	3.36E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	7.96E-04	6.75E-05	3.36E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	7.25E-04	6.14E-05	3.06E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	5.97E-04	5.06E-05	2.52E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	3.98E-04	3.38E-05	1.68E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	1.13E-05	9.55E-07	4.76E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.13E-05	9.55E-07	4.76E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.03E-06	5.13E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.82E-05	1.54E-06	7.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.41E-05	2.05E-06	1.02E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
95%	***Berries 2***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	261.5800	76.0000	1179.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	3.92E-04	1.14E-04	1.77E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	4.19E-04	1.22E-04	1.89E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.66E-04	1.06E-04	1.65E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	5.49E-03	1.60E-03	2.48E-02	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.66E-03	1.06E-03	1.65E-02	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	5.55E-06	1.61E-06	2.50E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.92E-06	1.72E-06	2.67E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	6.13E-06	1.78E-06	2.76E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.67E-04	4.85E-05	7.53E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.22E-04	6.45E-05	1.00E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Recreational Soil					
	Concentration	mg/kg	1015.3600	162.0000	969.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.52E-03	2.43E-04	1.45E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.62E-03	2.59E-04	1.55E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.42E-03	2.27E-04	1.36E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.13E-02	3.40E-03	2.03E-02	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.42E-02	2.27E-03	1.36E-02	=Concentration x Ingestion Rate
	Exposure Duration - hours per day	hrs/d				12
	Exposure Duration - days per week	d/wk				2
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
Elder	Averaged Intake by body weight	mg/kg-d	3.08E-06	4.91E-07	2.94E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk / 24 hrs/d
Adult	Averaged Intake by body weight	mg/kg-d	3.28E-06	5.24E-07	3.13E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk / 24 hrs/d
Teen	Averaged Intake by body weight	mg/kg-d	3.40E-06	5.43E-07	3.25E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk / 24 hrs/d
Child	Averaged Intake by body weight	mg/kg-d	9.26E-05	1.48E-05	8.84E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk / 24 hrs/d
Toddler	Averaged Intake by body weight	mg/kg-d	1.23E-04	1.96E-05	1.17E-04	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk / 24 hrs/d
	Dust					
	Dust Concentration	mg/kg	183.1060	53.2000	825.3000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	4.58E-04	1.33E-04	2.06E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	4.58E-04	1.33E-04	2.06E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.03E-04	1.17E-04	1.82E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	5.68E-03	1.65E-03	2.56E-02	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	7.51E-03	2.18E-03	3.38E-02	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	6.47E-06	1.88E-06	2.92E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	6.47E-06	1.88E-06	2.92E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	6.75E-06	1.96E-06	3.04E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.73E-04	5.01E-05	7.78E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	4.55E-04	1.32E-04	2.05E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	2.80E-05	6.00E-05	5.72E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	2.86E-05	6.02E-05	5.72E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	3.02E-05	7.79E-05	6.05E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	4.53E-04	1.99E-04	9.08E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	8.28E-04	3.41E-04	1.12E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Concentration	mg/kg	2.62E+02	7.60E+01	1.18E+03	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	4.48E-02	1.30E-02	2.02E-01	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	4.48E-02	1.30E-02	2.02E-01	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	3.98E-02	1.16E-02	1.79E-01	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	2.73E-02	7.94E-03	1.23E-01	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	1.80E-02	5.23E-03	8.11E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	1.90E-05	1.84E-05	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	1.90E-05	1.84E-05	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	2.00E-05	1.94E-05	3.00E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	2.49E-05	2.41E-05	3.74E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	3.27E-05	3.17E-05	4.92E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Recreational Soil	Units				
	Concentration	mg/kg	1.02E+03	1.62E+02	9.69E+02	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.74E-01	2.77E-02	1.66E-01	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.74E-01	2.77E-02	1.66E-01	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.54E-01	2.46E-02	1.47E-01	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.06E-01	1.69E-02	1.01E-01	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	6.99E-02	1.11E-02	6.67E-02	=Concentration x Dermal Loading Rate
	Exposure Duration - days per week	d/wk				2
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	2.11E-05	1.12E-05	6.70E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	2.11E-05	1.12E-05	6.70E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	2.22E-05	1.18E-05	7.05E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	2.76E-05	1.47E-05	8.79E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	3.63E-05	1.93E-05	1.15E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	Dust	Units				
	Concentration	mg/kg	1.83E+02	5.32E+01	8.25E+02	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	3.26E-02	9.47E-03	1.47E-01	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	3.26E-02	9.47E-03	1.47E-01	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	2.93E-02	8.51E-03	1.32E-01	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	2.16E-02	6.28E-03	9.74E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	1.57E-02	4.58E-03	7.10E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	1.38E-05	1.34E-05	2.08E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	1.38E-05	1.34E-05	2.08E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	1.47E-05	1.43E-05	2.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	1.97E-05	1.91E-05	2.96E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	2.86E-05	2.77E-05	4.30E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	5.39E-05	4.30E-05	5.60E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	5.39E-05	4.30E-05	5.60E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	5.69E-05	4.54E-05	5.92E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	7.23E-05	5.79E-05	7.58E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	9.76E-05	7.87E-05	1.04E-04	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	2.80E-05	6.00E-05	5.72E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	2.86E-05	6.02E-05	5.72E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	3.02E-05	7.79E-05	6.05E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	4.53E-04	1.99E-04	9.08E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	8.28E-04	3.41E-04	1.12E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.15	0.37	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.15	0.37	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.19	0.43	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.50	0.74	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.85	0.82	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	5.39E-05	4.30E-05	5.60E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	5.39E-05	4.30E-05	5.60E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	5.69E-05	4.54E-05	5.92E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	7.23E-05	5.79E-05	7.58E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	9.76E-05	7.87E-05	1.04E-04	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.108	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.108	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.113	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.145	0.001	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.197	0.001	=Total Intake by Dermal/ TRV - dermal

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	2.80E-05	6.00E-05	5.72E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	2.86E-05	6.02E-05	5.72E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	3.02E-05	7.79E-05	6.05E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	4.53E-04	1.99E-04	9.08E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	8.28E-04	3.41E-04	1.12E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	1.00E-04	8.63E-05	6.28E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	1.81E-04	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	3.52E-06	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	5.39E-05	4.30E-05	5.60E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	5.39E-05	4.30E-05	5.60E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	5.69E-05	4.54E-05	5.92E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	7.23E-05	5.79E-05	7.58E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	9.76E-05	7.87E-05	1.04E-04	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	5.78E-05	4.61E-05	6.02E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	1.04E-04	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.269	0.367	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.269	0.367	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.320	0.426	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.653	0.745	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	1.060	0.822	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	2.88E-04	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.40 Sample Calculation – Future Townsite + Wading @ Townsite

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.2758	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	6.34E-05	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	6.34E-05	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	5.77E-05	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	4.76E-05	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.17E-05	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	8.97E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	8.97E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	9.67E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.45E-06	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.92E-06	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	12.2800	16.0000	220.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.84E-05	2.40E-05	3.30E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.96E-05	2.56E-05	3.52E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.72E-05	2.24E-05	3.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.58E-04	3.36E-04	4.62E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.72E-04	2.24E-04	3.08E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.61E-07	3.39E-07	4.67E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.78E-07	3.62E-07	4.98E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.88E-07	3.75E-07	5.16E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	7.84E-06	1.02E-05	1.40E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.04E-05	1.36E-05	1.87E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Sediment					
	Concentration	mg/kg	1.8798	No data	No data	
Elder	Ingestion Rate	kg/hr				0.0000077
Adult	Ingestion Rate	kg/hr				0.0000077
Teen	Ingestion Rate	kg/hr				0.0000077
Child	Ingestion Rate	kg/hr				0.0000077
Toddler	Ingestion Rate	kg/hr				0.0000077
Elder	Intake	mg/hr	1.45E-05	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Adult	Intake	mg/hr	1.45E-05	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	1.45E-05	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/hr	1.45E-05	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/hr	1.45E-05	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
	Exposure Duration - hours per day	hrs/d				2
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
Elder	Averaged Intake by body weight	mg/kg-d	4.09E-07	0.00E+00	0.00E+00	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	4.09E-07	0.00E+00	0.00E+00	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Averaged Intake by body weight	mg/kg-d	4.85E-07	0.00E+00	0.00E+00	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	0.00E+00	0.00E+00	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.75E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	8.5960	11.2000	154.0000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.15E-05	2.80E-05	3.85E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.15E-05	2.80E-05	3.85E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.89E-05	2.46E-05	3.39E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.66E-04	3.47E-04	4.77E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.52E-04	4.59E-04	6.31E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.04E-07	3.96E-07	5.45E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.04E-07	3.96E-07	5.45E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.17E-07	4.13E-07	5.68E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.10E-06	1.06E-05	1.45E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.14E-05	2.78E-05	3.83E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	3.41E-06	5.58E-05	5.68E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	3.43E-06	5.58E-05	5.68E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	3.72E-06	7.34E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	2.07E-05	1.04E-04	8.87E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.88E-05	1.64E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.23E+01	1.60E+01	2.20E+02	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.10E-03	2.74E-03	3.77E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.10E-03	2.74E-03	3.77E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.87E-03	2.43E-03	3.34E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.28E-03	1.67E-03	2.30E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.45E-04	1.10E-03	1.51E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	8.92E-07	3.87E-06	5.33E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	8.92E-07	3.87E-06	5.33E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	9.38E-07	4.07E-06	5.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.17E-06	5.08E-06	6.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.54E-06	6.67E-06	9.17E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Sediment	Units				
	Concentration	mg/kg	1.88E+00	No data	No data	
Elder	Dermal Loading Rate	kg/d				0.000696
Adult	Dermal Loading Rate	kg/d				0.000696
Teen	Dermal Loading Rate	kg/d				0.0006264
Child	Dermal Loading Rate	kg/d				0.0028804
Toddler	Dermal Loading Rate	kg/d				0.00189
Elder	Intake	mg/d	1.31E-03	0.00E+00	0.00E+00	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.31E-03	0.00E+00	0.00E+00	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.18E-03	0.00E+00	0.00E+00	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	5.41E-03	0.00E+00	0.00E+00	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	3.55E-03	0.00E+00	0.00E+00	=Concentration x Dermal Loading Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	5.55E-07	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	5.55E-07	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	5.92E-07	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	4.94E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	6.46E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	Dust	Units				
	Concentration	mg/kg	8.60E+00	1.12E+01	1.54E+02	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.53E-03	1.99E-03	2.74E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.53E-03	1.99E-03	2.74E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.38E-03	1.79E-03	2.46E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.01E-03	1.32E-03	1.82E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.39E-04	9.63E-04	1.32E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	6.49E-07	2.82E-06	3.88E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	6.49E-07	2.82E-06	3.88E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	6.91E-07	3.00E-06	4.13E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	9.25E-07	4.02E-06	5.52E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.34E-06	5.84E-06	8.03E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	2.10E-06	6.69E-06	9.20E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	2.10E-06	6.69E-06	9.20E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Total Intake by body weight	mg/kg-d	2.22E-06	7.08E-06	9.73E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	7.03E-06	9.10E-06	1.25E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	9.34E-06	1.25E-05	1.72E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	3.41E-06	5.58E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	3.43E-06	5.58E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	3.72E-06	7.34E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.07E-05	1.04E-04	8.87E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.88E-05	1.64E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.18	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.26	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.41	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	2.10E-06	6.69E-06	9.20E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	2.10E-06	6.69E-06	9.20E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	2.22E-06	7.08E-06	9.73E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	7.03E-06	9.10E-06	1.25E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	9.34E-06	1.25E-05	1.72E-05	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.017	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.017	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.018	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.023	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.031	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	3.41E-06	5.58E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	3.43E-06	5.58E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	3.72E-06	7.34E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.07E-05	1.04E-04	8.87E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.88E-05	1.64E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Lifetime	Intake by Ingestion	mg/kg-d	6.52E-06	6.66E-05	6.20E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	1.17E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	3.52E-06	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	2.10E-06	6.69E-06	9.20E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	2.10E-06	6.69E-06	9.20E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	2.22E-06	7.08E-06	9.73E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	7.03E-06	9.10E-06	1.25E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	9.34E-06	1.25E-05	1.72E-05	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	2.84E-06	7.20E-06	9.90E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	5.11E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.168	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.168	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.213	0.422	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.295	0.728	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.453	0.795	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	2.04E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.41 Sample Calculation – Future Townsite + Recreational Use of Giant Mine

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
5%	***Berries 1***					
	Concentration	mg/kg	1.0518	0.2800	350.0000	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	1.31E-04	3.50E-05	4.38E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	1.31E-04	3.50E-05	4.38E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.20E-04	3.19E-05	3.98E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	9.86E-05	2.63E-05	3.28E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	6.57E-05	1.75E-05	2.19E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	1.86E-06	4.95E-07	6.19E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.86E-06	4.95E-07	6.19E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.00E-06	5.34E-07	6.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	3.00E-06	7.98E-07	9.97E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.98E-06	1.06E-06	1.33E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
95%	***Berries 2***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.2758	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	6.34E-05	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	6.34E-05	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	5.77E-05	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	4.76E-05	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.17E-05	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	8.97E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	8.97E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	9.67E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.45E-06	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.92E-06	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	12.2800	16.0000	220.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.84E-05	2.40E-05	3.30E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.96E-05	2.56E-05	3.52E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.72E-05	2.24E-05	3.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.58E-04	3.36E-04	4.62E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.72E-04	2.24E-04	3.08E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.61E-07	3.39E-07	4.67E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.78E-07	3.62E-07	4.98E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.88E-07	3.75E-07	5.16E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	7.84E-06	1.02E-05	1.40E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.04E-05	1.36E-05	1.87E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Recreational Soil					
	Concentration	mg/kg	248.1400	49.0000	1083.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	3.72E-04	7.35E-05	1.62E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.97E-04	7.84E-05	1.73E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.47E-04	6.86E-05	1.52E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	5.21E-03	1.03E-03	2.27E-02	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.47E-03	6.86E-04	1.52E-02	=Concentration x Ingestion Rate
	Exposure Duration - hours per day	hrs/d				12
	Exposure Duration - days per week	d/wk				2
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
Elder	Averaged Intake by body weight	mg/kg-d	7.52E-07	1.49E-07	3.28E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk / 24 hrs/d
Adult	Averaged Intake by body weight	mg/kg-d	8.02E-07	1.58E-07	3.50E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk / 24 hrs/d
Teen	Averaged Intake by body weight	mg/kg-d	8.31E-07	1.64E-07	3.63E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk / 24 hrs/d
Child	Averaged Intake by body weight	mg/kg-d	2.26E-05	4.47E-06	9.88E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk / 24 hrs/d
Toddler	Averaged Intake by body weight	mg/kg-d	3.01E-05	5.94E-06	1.31E-04	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk / 24 hrs/d
	Dust					
	Dust Concentration	mg/kg	8.5960	11.2000	154.0000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.15E-05	2.80E-05	3.85E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.15E-05	2.80E-05	3.85E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.89E-05	2.46E-05	3.39E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.66E-04	3.47E-04	4.77E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.52E-04	4.59E-04	6.31E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.04E-07	3.96E-07	5.45E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.04E-07	3.96E-07	5.45E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.17E-07	4.13E-07	5.68E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.10E-06	1.06E-05	1.45E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.14E-05	2.78E-05	3.83E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	5.60E-06	5.65E-05	5.73E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	5.67E-06	5.65E-05	5.73E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	6.05E-06	7.41E-05	6.06E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	4.55E-05	1.10E-04	8.98E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	7.10E-05	1.71E-04	1.10E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Concentration	mg/kg	1.23E+01	1.60E+01	2.20E+02	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.10E-03	2.74E-03	3.77E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.10E-03	2.74E-03	3.77E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.87E-03	2.43E-03	3.34E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.28E-03	1.67E-03	2.30E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.45E-04	1.10E-03	1.51E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	8.92E-07	3.87E-06	5.33E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	8.92E-07	3.87E-06	5.33E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	9.38E-07	4.07E-06	5.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.17E-06	5.08E-06	6.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.54E-06	6.67E-06	9.17E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Recreational Soil	Units				
	Concentration	mg/kg	2.48E+02	4.90E+01	1.08E+03	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	4.25E-02	8.39E-03	1.85E-01	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	4.25E-02	8.39E-03	1.85E-01	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	3.77E-02	7.45E-03	1.65E-01	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	2.59E-02	5.12E-03	1.13E-01	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	1.71E-02	3.37E-03	7.45E-02	=Concentration x Dermal Loading Rate
	Exposure Duration - days per week	d/wk				2
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	5.15E-06	3.39E-06	7.49E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	5.15E-06	3.39E-06	7.49E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	5.42E-06	3.56E-06	7.88E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	6.76E-06	4.45E-06	9.83E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	8.87E-06	5.84E-06	1.29E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	Dust	Units				
	Concentration	mg/kg	8.60E+00	1.12E+01	1.54E+02	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.53E-03	1.99E-03	2.74E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.53E-03	1.99E-03	2.74E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.38E-03	1.79E-03	2.46E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.01E-03	1.32E-03	1.82E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.39E-04	9.63E-04	1.32E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	6.49E-07	2.82E-06	3.88E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	6.49E-07	2.82E-06	3.88E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	6.91E-07	3.00E-06	4.13E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	9.25E-07	4.02E-06	5.52E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.34E-06	5.84E-06	8.03E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	6.69E-06	1.01E-05	1.67E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	6.69E-06	1.01E-05	1.67E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	7.04E-06	1.06E-05	1.76E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	8.85E-06	1.35E-05	2.23E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.17E-05	1.83E-05	3.01E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.60E-06	5.65E-05	5.73E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	5.67E-06	5.65E-05	5.73E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	6.05E-06	7.41E-05	6.06E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	4.55E-05	1.10E-04	8.98E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	7.10E-05	1.71E-04	1.10E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.14	0.37	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.14	0.37	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.19	0.43	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.27	0.74	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.43	0.81	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	6.69E-06	1.01E-05	1.67E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	6.69E-06	1.01E-05	1.67E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	7.04E-06	1.06E-05	1.76E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	8.85E-06	1.35E-05	2.23E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.17E-05	1.83E-05	3.01E-05	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.025	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.025	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.027	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.034	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.046	0.000	=Total Intake by Dermal/ TRV - dermal

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	5.60E-06	5.65E-05	5.73E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	5.67E-06	5.65E-05	5.73E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	6.05E-06	7.41E-05	6.06E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	4.55E-05	1.10E-04	8.98E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	7.10E-05	1.71E-04	1.10E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	1.19E-05	6.80E-05	6.27E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	2.15E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	3.52E-06	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	6.69E-06	1.01E-05	1.67E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	6.69E-06	1.01E-05	1.67E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	7.04E-06	1.06E-05	1.76E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	8.85E-06	1.35E-05	2.23E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.17E-05	1.83E-05	3.01E-05	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	7.14E-06	1.08E-05	1.79E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	1.29E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.178	0.368	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.178	0.368	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.223	0.427	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.320	0.736	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.485	0.805	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	3.79E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

I.8 Future

Table I.42 Sample Calculation – City of Yellowknife Future Recreational Use of Giant Mine

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
5%	***Berries 1***					
	Concentration	mg/kg	1.0518	0.2800	350.0000	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	1.31E-04	3.50E-05	4.38E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	1.31E-04	3.50E-05	4.38E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.20E-04	3.19E-05	3.98E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	9.86E-05	2.63E-05	3.28E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	6.57E-05	1.75E-05	2.19E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	1.86E-06	4.95E-07	6.19E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.86E-06	4.95E-07	6.19E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.00E-06	5.34E-07	6.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	3.00E-06	7.98E-07	9.97E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.98E-06	1.06E-06	1.33E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
95%	***Berries 2***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	6.1940	3.6730	364.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	9.29E-06	5.51E-06	5.46E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.91E-06	5.88E-06	5.82E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.67E-06	5.14E-06	5.10E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.30E-04	7.71E-05	7.64E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	8.67E-05	5.14E-05	5.10E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	1.31E-07	7.79E-08	7.72E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.40E-07	8.31E-08	8.24E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.45E-07	8.61E-08	8.54E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	3.95E-06	2.34E-06	2.32E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	5.26E-06	3.12E-06	3.09E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Recreational Soil					
	Concentration	mg/kg	12.2800	16.0000	220.0000	

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.84E-05	2.40E-05	3.30E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.96E-05	2.56E-05	3.52E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.72E-05	2.24E-05	3.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.58E-04	3.36E-04	4.62E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.72E-04	2.24E-04	3.08E-03	=Concentration x Ingestion Rate
	Exposure Duration - hours per day	hrs/d				12
	Exposure Duration - days per week	d/wk				2
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
Elder	Averaged Intake by body weight	mg/kg-d	3.72E-08	4.85E-08	6.67E-07	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk / 24 hrs/d
Adult	Averaged Intake by body weight	mg/kg-d	3.97E-08	5.17E-08	7.11E-07	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk / 24 hrs/d
Teen	Averaged Intake by body weight	mg/kg-d	4.11E-08	5.36E-08	7.37E-07	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk / 24 hrs/d
Child	Averaged Intake by body weight	mg/kg-d	1.12E-06	1.46E-06	2.01E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk / 24 hrs/d
Toddler	Averaged Intake by body weight	mg/kg-d	1.49E-06	1.94E-06	2.67E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk / 24 hrs/d
	Dust					
	Dust Concentration	mg/kg	4.3358	2.5711	254.8000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	9.54E-06	5.66E-06	5.61E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.34E-04	7.97E-05	7.90E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-04	1.05E-04	1.04E-02	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.60E-07	9.47E-08	9.39E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.09E-06	2.42E-06	2.40E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-05	6.39E-06	6.33E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	3.83E-06	5.58E-05	5.73E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	3.85E-06	5.58E-05	5.73E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	4.13E-06	7.33E-05	6.06E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.48E-05	9.06E-05	8.99E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.50E-05	1.35E-04	1.10E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	6.19E+00	3.67E+00	3.64E+02	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	9.41E-04	5.58E-04	5.53E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	6.47E-04	3.84E-04	3.80E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	4.26E-04	2.53E-04	2.50E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	4.73E-07	9.35E-07	9.27E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	5.90E-07	1.17E-06	1.16E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	7.75E-07	1.53E-06	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Recreational Soil	Units				
	Concentration	mg/kg	1.23E+01	1.60E+01	2.20E+02	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.10E-03	2.74E-03	3.77E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.10E-03	2.74E-03	3.77E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.87E-03	2.43E-03	3.34E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.28E-03	1.67E-03	2.30E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.45E-04	1.10E-03	1.51E-02	=Concentration x Dermal Loading Rate
	Exposure Duration - days per week	d/wk				2
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	2.55E-07	1.11E-06	1.52E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	2.55E-07	1.11E-06	1.52E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	2.68E-07	1.16E-06	1.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	3.34E-07	1.45E-06	2.00E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	4.39E-07	1.91E-06	2.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	Dust	Units				
	Concentration	mg/kg	4.34E+00	2.57E+00	2.55E+02	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	6.94E-04	4.11E-04	4.08E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	5.12E-04	3.03E-04	3.01E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	3.73E-04	2.21E-04	2.19E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	3.49E-07	6.89E-07	6.83E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	4.67E-07	9.22E-07	9.14E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	6.78E-07	1.34E-06	1.33E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.03E-06	2.64E-06	1.68E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.03E-06	2.64E-06	1.68E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.09E-06	2.79E-06	1.77E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.39E-06	3.54E-06	2.27E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.89E-06	4.78E-06	3.11E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	3.83E-06	5.58E-05	5.73E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	3.85E-06	5.58E-05	5.73E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	4.13E-06	7.33E-05	6.06E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.48E-05	9.06E-05	8.99E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	2.50E-05	1.35E-04	1.10E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.14	0.37	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.14	0.37	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.18	0.43	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.23	0.74	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.34	0.81	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.03E-06	2.64E-06	1.68E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.03E-06	2.64E-06	1.68E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.09E-06	2.79E-06	1.77E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.39E-06	3.54E-06	2.27E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.89E-06	4.78E-06	3.11E-05	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.007	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.007	0.000	=Total Intake by Dermal/ TRV - dermal

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Hazard quotient	-	-	0.007	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.009	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.012	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	3.83E-06	5.58E-05	5.73E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	3.85E-06	5.58E-05	5.73E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	4.13E-06	7.33E-05	6.06E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.48E-05	9.06E-05	8.99E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	2.50E-05	1.35E-04	1.10E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	5.76E-06	6.41E-05	6.27E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	1.04E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	3.52E-06	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.03E-06	2.64E-06	1.68E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.03E-06	2.64E-06	1.68E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.09E-06	2.79E-06	1.77E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.39E-06	3.54E-06	2.27E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.89E-06	4.78E-06	3.11E-05	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.11E-06	2.83E-06	1.80E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	1.99E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.158	0.368	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.158	0.368	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.202	0.427	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.247	0.737	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.361	0.807	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.59E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

I.9 Sensitivity Assessments - Ndilo

Table I.43 Sample Calculation – Ndilo Typical Diet + Max Measured Country Food

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
5%	***Berries 1***					
	Concentration	mg/kg	0.2018	0.0000	0.0000	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.52E-05	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.52E-05	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	2.30E-05	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.89E-05	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.26E-05	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.57E-07	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.57E-07	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.85E-07	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.75E-07	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.64E-07	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
95%	***Berries 2***					
	Concentration	mg/kg	0.0518	0.0000	0.0000	
Elder	Intake	mg/d	1.23E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	1.23E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.12E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	9.23E-05	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	6.15E-05	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	1.74E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.74E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.88E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.80E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Averaged Intake by body weight	mg/kg-d	3.73E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
10%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.17
Adult	Ingestion Rate	kg/d				0.17
Teen	Ingestion Rate	kg/d				0.1547
Child	Ingestion Rate	kg/d				0.1275
Toddler	Ingestion Rate	kg/d				0.085
Elder	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0674	0.0013	0.0000	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0069
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345
Elder	Intake	mg/d	4.65E-04	8.97E-06	0.00E+00	=Concentration x Ingestion Rate
Adult	Intake	mg/d	4.65E-04	8.97E-06	0.00E+00	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.23E-04	8.16E-06	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.49E-04	6.73E-06	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.33E-04	4.49E-06	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	6.58E-06	1.27E-07	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	6.58E-06	1.27E-07	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.09E-06	1.37E-07	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.06E-05	2.04E-07	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.41E-05	2.72E-07	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0770	0.0000	0.0000	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	2.16E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.16E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.96E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.62E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.08E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.05E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.05E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.29E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Averaged Intake by body weight	mg/kg-d	4.91E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.53E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.2933	0.0000	0.0000	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	8.21E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Adult	Intake	mg/d	8.21E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Teen	Intake	mg/d	7.47E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.16E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.11E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.16E-05	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.16E-05	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.25E-05	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.87E-05	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.49E-05	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0500	0.0000	0.0000	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0042
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	2.10E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.10E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.91E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.58E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.05E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	2.97E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.97E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.20E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.79E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.36E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.1111	0.4128	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	2.11E-04	7.84E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	2.11E-04	7.84E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.92E-04	7.14E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.58E-04	5.88E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.06E-04	3.92E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.98E-06	1.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.98E-06	1.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.22E-06	1.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.81E-06	1.79E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.39E-06	2.38E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	127.3000	45.0000	25.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.91E-04	6.75E-05	3.75E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.04E-04	7.20E-05	4.00E-05	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Intake	mg/d	1.78E-04	6.30E-05	3.50E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.67E-03	9.45E-04	5.25E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-03	6.30E-04	3.50E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.70E-06	9.55E-07	5.30E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.88E-06	1.02E-06	5.66E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.99E-06	1.06E-06	5.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.13E-05	2.87E-05	1.60E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-04	3.82E-05	2.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	89.1100	31.5000	17.5000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.96E-04	6.93E-05	3.85E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.76E-03	9.77E-04	5.43E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.65E-03	1.29E-03	7.18E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.28E-06	1.16E-06	6.45E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.40E-05	2.97E-05	1.65E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.21E-04	7.83E-05	4.35E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	3.22E-05	1.03E-04	5.63E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	3.23E-05	1.03E-04	5.63E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	3.46E-05	1.24E-04	5.94E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	2.08E-04	2.15E-04	8.77E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.86E-04	3.36E-04	1.07E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.27E+02	4.50E+01	2.50E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.93E-02	6.84E-03	3.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.33E-02	4.70E-03	2.61E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.76E-03	3.10E-03	1.72E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	9.72E-06	1.15E-05	6.37E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.43E-05	7.94E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.59E-05	1.88E-05	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	8.91E+01	3.15E+01	1.75E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.43E-02	5.04E-03	2.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.05E-02	3.72E-03	2.07E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.66E-03	2.71E-03	1.51E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.16E-06	8.44E-06	4.69E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	9.59E-06	1.13E-05	6.28E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.39E-05	1.64E-05	9.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	3.22E-05	1.03E-04	5.63E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	3.23E-05	1.03E-04	5.63E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	3.46E-05	1.24E-04	5.94E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.08E-04	2.15E-04	8.77E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.86E-04	3.36E-04	1.07E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.26	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.26	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.31	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.54	0.72	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.84	0.78	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.050	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.064	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.088	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	3.22E-05	1.03E-04	5.63E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	3.23E-05	1.03E-04	5.63E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	3.46E-05	1.24E-04	5.94E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.08E-04	2.15E-04	8.77E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.86E-04	3.36E-04	1.07E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	6.34E-05	1.25E-04	6.15E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	1.14E-04	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.72E-05	2.03E-05	1.13E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.09E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.315	0.361	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.315	0.361	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.371	0.419	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.613	0.719	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.940	0.784	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.46E-04	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.44 Sample Calculation – Ndilo Typical Diet + All Ptarmigan

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						

Sample Calculation			Units	Incremental Arsenic	Antimony	Manganese	Notes
Drinking Water							
		Concentration	mg/L	0.0000	0.0002	0.0021	
Elder		Ingestion Rate	L/d				1.5
Adult		Ingestion Rate	L/d				1.5
Teen		Ingestion Rate	L/d				1
Child		Ingestion Rate	L/d				0.8
Toddler		Ingestion Rate	L/d				0.6
Elder		Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult		Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen		Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child		Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler		Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder		Body weight	kg				70.7
Adult		Body weight	kg				70.7
Teen		Body weight	kg				59.7
Child		Body weight	kg				32.9
Toddler		Body weight	kg				16.5
		Exposure Duration - days per week	d/wk				7
		Exposure Duration - weeks per year	wk/yr				52
		Averaging Period - weeks per year	wk/yr				52
Elder		Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult		Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen		Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child		Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler		Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	5%	***Berries 1***					
		Concentration	mg/kg	0.0860	0.0073	16.1175	
Elder		Ingestion Rate	kg/d				0.0025
Adult		Ingestion Rate	kg/d				0.0025
Teen		Ingestion Rate	kg/d				0.002275
Child		Ingestion Rate	kg/d				0.001875
Toddler		Ingestion Rate	kg/d				0.00125
Elder		Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Adult		Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Teen		Intake	mg/d	9.78E-06	8.34E-07	1.83E-03	=Concentration x Ingestion Rate x % from source
Child		Intake	mg/d	8.06E-06	6.87E-07	1.51E-03	=Concentration x Ingestion Rate x % from source
Toddler		Intake	mg/d	5.37E-06	4.58E-07	1.01E-03	=Concentration x Ingestion Rate x % from source
Elder		Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult		Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen		Averaged Intake by body weight	mg/kg-d	1.64E-07	1.40E-08	3.07E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child		Averaged Intake by body weight	mg/kg-d	2.45E-07	2.09E-08	4.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler		Averaged Intake by body weight	mg/kg-d	3.26E-07	2.78E-08	6.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	95%	***Berries 2***					
		Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder		Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult		Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Teen		Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child		Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler		Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder		Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult		Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen		Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child		Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler		Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	10%	***Fish 1***					
		Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder		Ingestion Rate	kg/d				0.17
Adult		Ingestion Rate	kg/d				0.17
Teen		Ingestion Rate	kg/d				0.1547
Child		Ingestion Rate	kg/d				0.1275
Toddler		Ingestion Rate	kg/d				0.085
Elder		Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0186
Adult	Ingestion Rate	kg/d				0.0186
Teen	Ingestion Rate	kg/d				0.016926
Child	Ingestion Rate	kg/d				0.01395
Toddler	Ingestion Rate	kg/d				0.0093
Elder	Intake	mg/d	3.39E-04	2.79E-04	7.16E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.39E-04	2.79E-04	7.16E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.09E-04	2.54E-04	6.52E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.55E-04	2.09E-04	5.37E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.70E-04	1.40E-04	3.58E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	4.80E-06	3.95E-06	1.01E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	4.80E-06	3.95E-06	1.01E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.17E-06	4.25E-06	1.09E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	7.74E-06	6.36E-06	1.63E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.03E-05	8.45E-06	2.17E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Organ					
	Concentration	mg/kg	1.0748	0.0073	10.6800	
Elder	Ingestion Rate	kg/d				0.002366
Adult	Ingestion Rate	kg/d				0.002366
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	2.54E-03	1.72E-05	2.53E-02	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.54E-03	1.72E-05	2.53E-02	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.60E-05	2.43E-07	3.57E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.60E-05	2.43E-07	3.57E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	127.3000	45.0000	25.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Intake	mg/d	1.91E-04	6.75E-05	3.75E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.04E-04	7.20E-05	4.00E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.78E-04	6.30E-05	3.50E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.67E-03	9.45E-04	5.25E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-03	6.30E-04	3.50E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.70E-06	9.55E-07	5.30E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.88E-06	1.02E-06	5.66E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.99E-06	1.06E-06	5.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.13E-05	2.87E-05	1.60E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-04	3.82E-05	2.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	89.1100	31.5000	17.5000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.96E-04	6.93E-05	3.85E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.76E-03	9.77E-04	5.43E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.65E-03	1.29E-03	7.18E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.28E-06	1.16E-06	6.45E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.40E-05	2.97E-05	1.65E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.21E-04	7.83E-05	4.35E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	4.71E-05	1.04E-04	5.74E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	4.72E-05	1.04E-04	5.74E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	1.19E-05	1.25E-04	6.03E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.74E-04	2.17E-04	8.90E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.41E-04	3.38E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.27E+02	4.50E+01	2.50E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.93E-02	6.84E-03	3.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.33E-02	4.70E-03	2.61E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.76E-03	3.10E-03	1.72E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	9.72E-06	1.15E-05	6.37E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.43E-05	7.94E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.59E-05	1.88E-05	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	8.91E+01	3.15E+01	1.75E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.43E-02	5.04E-03	2.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.05E-02	3.72E-03	2.07E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.66E-03	2.71E-03	1.51E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.16E-06	8.44E-06	4.69E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	9.59E-06	1.13E-05	6.28E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.39E-05	1.64E-05	9.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	4.71E-05	1.04E-04	5.74E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	4.72E-05	1.04E-04	5.74E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.19E-05	1.25E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.74E-04	2.17E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.41E-04	3.38E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.26	0.37	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.26	0.37	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.31	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.54	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.85	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.050	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.064	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.088	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	4.71E-05	1.04E-04	5.74E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	4.72E-05	1.04E-04	5.74E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.19E-05	1.25E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.74E-04	2.17E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.41E-04	3.38E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	6.78E-05	1.26E-04	6.26E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	1.22E-04	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.72E-05	2.03E-05	1.13E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.09E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.318	0.368	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.318	0.368	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.373	0.425	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.617	0.730	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.945	0.796	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.54E-04	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.45 Sample Calculation – Ndilo Typical Diet + 100% Berry from Ndilo

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Medicinal Tea					
	Concentration	mg/kg	0.0917	0.0571	251.8600	
Elder	Ingestion Rate	kg/d				0.00005
Adult	Ingestion Rate	kg/d				0.00005
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	4.59E-06	2.86E-06	1.26E-02	=Concentration x Ingestion Rate
Adult	Intake	mg/d	4.59E-06	2.86E-06	1.26E-02	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	6.49E-08	4.04E-08	1.78E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	6.49E-08	4.04E-08	1.78E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0860	0.0073	16.1175	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.15E-04	1.83E-05	4.03E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.15E-04	1.83E-05	4.03E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.96E-04	1.67E-05	3.67E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.61E-04	1.37E-05	3.02E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.07E-04	9.16E-06	2.01E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.04E-06	2.59E-07	5.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.04E-06	2.59E-07	5.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.28E-06	2.79E-07	6.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.90E-06	4.18E-07	9.19E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.51E-06	5.55E-07	1.22E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
10%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.17
Adult	Ingestion Rate	kg/d				0.17
Teen	Ingestion Rate	kg/d				0.1547
Child	Ingestion Rate	kg/d				0.1275

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Ingestion Rate	kg/d				0.085
Elder	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0069
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345
Elder	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.69E-05	1.13E-05	1.57E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	7.16E-05	9.32E-06	1.29E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.77E-05	6.21E-06	8.63E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.46E-06	1.89E-07	2.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.18E-06	2.83E-07	3.93E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.89E-06	3.76E-07	5.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.01E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	8.32E-05	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.55E-05	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.69E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.53E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.36E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.65E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.83E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.79E-07	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.16E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.55E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0042
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.59E-05	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.78E-05	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.52E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.68E-07	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.15E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.53E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	127.3000	45.0000	25.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.91E-04	6.75E-05	3.75E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.04E-04	7.20E-05	4.00E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.78E-04	6.30E-05	3.50E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.67E-03	9.45E-04	5.25E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-03	6.30E-04	3.50E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.70E-06	9.55E-07	5.30E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Averaged Intake by body weight	mg/kg-d	2.88E-06	1.02E-06	5.66E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.99E-06	1.06E-06	5.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.13E-05	2.87E-05	1.60E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-04	3.82E-05	2.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	89.1100	31.5000	17.5000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.96E-04	6.93E-05	3.85E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.76E-03	9.77E-04	5.43E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.65E-03	1.29E-03	7.18E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.28E-06	1.16E-06	6.45E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.40E-05	2.97E-05	1.65E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.21E-04	7.83E-05	4.35E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	1.33E-05	1.01E-04	5.71E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	1.35E-05	1.01E-04	5.71E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	1.42E-05	1.22E-04	6.01E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.77E-04	2.13E-04	8.88E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.45E-04	3.34E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.27E+02	4.50E+01	2.50E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.93E-02	6.84E-03	3.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.33E-02	4.70E-03	2.61E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.76E-03	3.10E-03	1.72E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	9.72E-06	1.15E-05	6.37E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.43E-05	7.94E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.59E-05	1.88E-05	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	8.91E+01	3.15E+01	1.75E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.43E-02	5.04E-03	2.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.05E-02	3.72E-03	2.07E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.66E-03	2.71E-03	1.51E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.16E-06	8.44E-06	4.69E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	9.59E-06	1.13E-05	6.28E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.39E-05	1.64E-05	9.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.33E-05	1.01E-04	5.71E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.35E-05	1.01E-04	5.71E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.42E-05	1.22E-04	6.01E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.77E-04	2.13E-04	8.88E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.45E-04	3.34E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.31	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.53	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.83	0.79	=Total Intake by Ingestion / TRV - ingestion

Sample Calculation		**Units**	**Incremental Arsenic**	**Antimony**	**Manganese**	**Notes**
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.050	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.064	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.088	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.33E-05	1.01E-04	5.71E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.35E-05	1.01E-04	5.71E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.42E-05	1.22E-04	6.01E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.77E-04	2.13E-04	8.88E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.45E-04	3.34E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	4.24E-05	1.24E-04	6.23E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	7.63E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.72E-05	2.03E-05	1.13E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.09E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.312	0.366	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.312	0.366	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.367	0.424	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.609	0.728	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.934	0.794	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.08E-04	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.46 Sample Calculation – Ndilo Typical Diet + Max Moose Sample

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
5%	***Berries 1***					
	Concentration	mg/kg	0.0860	0.0073	16.1175	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	9.78E-06	8.34E-07	1.83E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	8.06E-06	6.87E-07	1.51E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	5.37E-06	4.58E-07	1.01E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.64E-07	1.40E-08	3.07E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.45E-07	2.09E-08	4.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.26E-07	2.78E-08	6.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
95%	***Berries 2***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
10%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.17
Adult	Ingestion Rate	kg/d				0.17
Teen	Ingestion Rate	kg/d				0.1547
Child	Ingestion Rate	kg/d				0.1275
Toddler	Ingestion Rate	kg/d				0.085
Elder	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.3189	0.0000	0.0000	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0069
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345
Elder	Intake	mg/d	2.20E-03	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.20E-03	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.00E-03	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.65E-03	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.10E-03	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.11E-05	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.11E-05	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.35E-05	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.02E-05	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.67E-05	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.01E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	8.32E-05	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.55E-05	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.69E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.53E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.36E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.65E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.83E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.79E-07	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Averaged Intake by body weight	mg/kg-d	1.16E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.55E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0042
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.59E-05	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.78E-05	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.52E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.68E-07	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.15E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.53E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	127.3000	45.0000	25.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.91E-04	6.75E-05	3.75E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.04E-04	7.20E-05	4.00E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.78E-04	6.30E-05	3.50E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.67E-03	9.45E-04	5.25E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-03	6.30E-04	3.50E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.70E-06	9.55E-07	5.30E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.88E-06	1.02E-06	5.66E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.99E-06	1.06E-06	5.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.13E-05	2.87E-05	1.60E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-04	3.82E-05	2.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	89.1100	31.5000	17.5000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.96E-04	6.93E-05	3.85E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.76E-03	9.77E-04	5.43E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.65E-03	1.29E-03	7.18E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.28E-06	1.16E-06	6.45E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.40E-05	2.97E-05	1.65E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.21E-04	7.83E-05	4.35E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	4.04E-05	1.01E-04	5.70E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	4.06E-05	1.01E-04	5.70E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	4.35E-05	1.22E-04	6.03E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	2.21E-04	2.13E-04	8.89E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	4.04E-04	3.33E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.27E+02	4.50E+01	2.50E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.93E-02	6.84E-03	3.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.33E-02	4.70E-03	2.61E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.76E-03	3.10E-03	1.72E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	9.72E-06	1.15E-05	6.37E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.43E-05	7.94E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.59E-05	1.88E-05	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	8.91E+01	3.15E+01	1.75E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.43E-02	5.04E-03	2.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.05E-02	3.72E-03	2.07E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.66E-03	2.71E-03	1.51E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.16E-06	8.44E-06	4.69E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	9.59E-06	1.13E-05	6.28E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.39E-05	1.64E-05	9.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	4.04E-05	1.01E-04	5.70E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	4.06E-05	1.01E-04	5.70E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	4.35E-05	1.22E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.21E-04	2.13E-04	8.89E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.04E-04	3.33E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.31	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.53	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.83	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.050	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.064	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.088	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	4.04E-05	1.01E-04	5.70E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	4.06E-05	1.01E-04	5.70E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	4.35E-05	1.22E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.21E-04	2.13E-04	8.89E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.04E-04	3.33E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	7.25E-05	1.23E-04	6.23E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	1.31E-04	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.72E-05	2.03E-05	1.13E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
						yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.09E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.311	0.366	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.311	0.366	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.366	0.424	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.607	0.729	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.932	0.796	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.62E-04	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.47 Sample Calculation – Ndilo Typical Diet + Hot Spot Soil Removed

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7

Sample Calculation			Units	Incremental Arsenic	Antimony	Manganese	Notes
Child		Body weight	kg				32.9
Toddler		Body weight	kg				16.5
		Exposure Duration - days per week	d/wk				7
		Exposure Duration - weeks per year	wk/yr				52
		Averaging Period - weeks per year	wk/yr				52
Elder		Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult		Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen		Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child		Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler		Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	5%	***Berries 1***					
		Concentration	mg/kg	0.0860	0.0073	16.1175	
Elder		Ingestion Rate	kg/d				0.0025
Adult		Ingestion Rate	kg/d				0.0025
Teen		Ingestion Rate	kg/d				0.002275
Child		Ingestion Rate	kg/d				0.001875
Toddler		Ingestion Rate	kg/d				0.00125
Elder		Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Adult		Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Teen		Intake	mg/d	9.78E-06	8.34E-07	1.83E-03	=Concentration x Ingestion Rate x % from source
Child		Intake	mg/d	8.06E-06	6.87E-07	1.51E-03	=Concentration x Ingestion Rate x % from source
Toddler		Intake	mg/d	5.37E-06	4.58E-07	1.01E-03	=Concentration x Ingestion Rate x % from source
Elder		Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult		Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen		Averaged Intake by body weight	mg/kg-d	1.64E-07	1.40E-08	3.07E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child		Averaged Intake by body weight	mg/kg-d	2.45E-07	2.09E-08	4.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler		Averaged Intake by body weight	mg/kg-d	3.26E-07	2.78E-08	6.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	95%	***Berries 2***					
		Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder		Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult		Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Teen		Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child		Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler		Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder		Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult		Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen		Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child		Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler		Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	10%	***Fish 1***					
		Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder		Ingestion Rate	kg/d				0.17
Adult		Ingestion Rate	kg/d				0.17
Teen		Ingestion Rate	kg/d				0.1547
Child		Ingestion Rate	kg/d				0.1275
Toddler		Ingestion Rate	kg/d				0.085
Elder		Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult		Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Teen		Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child		Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler		Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder		Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult		Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen		Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child		Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler		Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	90%	***Fish 2***					
		Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder		Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult		Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Teen		Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child		Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0069
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345
Elder	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.69E-05	1.13E-05	1.57E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	7.16E-05	9.32E-06	1.29E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.77E-05	6.21E-06	8.63E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.46E-06	1.89E-07	2.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.18E-06	2.83E-07	3.93E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.89E-06	3.76E-07	5.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.01E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	8.32E-05	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.55E-05	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.69E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.53E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.36E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.65E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.83E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.79E-07	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.16E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.55E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0042
Teen	Ingestion Rate	kg/d				0.003822

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.59E-05	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.78E-05	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.52E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.68E-07	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.15E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.53E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	104.8800	45.0000	25.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.57E-04	6.75E-05	3.75E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.68E-04	7.20E-05	4.00E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.47E-04	6.30E-05	3.50E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.20E-03	9.45E-04	5.25E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.47E-03	6.30E-04	3.50E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.23E-06	9.55E-07	5.30E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.37E-06	1.02E-06	5.66E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.46E-06	1.06E-06	5.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	6.69E-05	2.87E-05	1.60E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	8.90E-05	3.82E-05	2.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	73.4160	31.5000	17.5000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.84E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.84E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.62E-04	6.93E-05	3.85E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.28E-03	9.77E-04	5.43E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.01E-03	1.29E-03	7.18E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	2.60E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.60E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.71E-06	1.16E-06	6.45E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	6.92E-05	2.97E-05	1.65E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.82E-04	7.83E-05	4.35E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	9.62E-06	1.01E-04	5.70E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	9.77E-06	1.01E-04	5.70E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	1.03E-05	1.22E-04	6.03E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.44E-04	2.13E-04	8.90E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.82E-04	3.33E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.05E+02	4.50E+01	2.50E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.80E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.80E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.59E-02	6.84E-03	3.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.10E-02	4.70E-03	2.61E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.22E-03	3.10E-03	1.72E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	7.62E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	7.62E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	8.01E-06	1.15E-05	6.37E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	9.99E-06	1.43E-05	7.94E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.31E-05	1.88E-05	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	7.34E+01	3.15E+01	1.75E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.31E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.31E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.17E-02	5.04E-03	2.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	8.66E-03	3.72E-03	2.07E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	6.31E-03	2.71E-03	1.51E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	5.55E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	5.55E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	5.90E-06	8.44E-06	4.69E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	7.90E-06	1.13E-05	6.28E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.15E-05	1.64E-05	9.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.32E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.32E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.39E-05	1.99E-05	1.11E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.79E-05	2.56E-05	1.42E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.46E-05	3.52E-05	1.95E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	9.62E-06	1.01E-04	5.70E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	9.77E-06	1.01E-04	5.70E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.03E-05	1.22E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.44E-04	2.13E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	2.82E-04	3.33E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.31	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.53	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.83	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.32E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.32E-05	1.88E-05	1.05E-06	calculated above

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Total Intake by Dermal	mg/kg-d	1.39E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.79E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.46E-05	3.52E-05	1.95E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.050	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.064	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.088	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	9.62E-06	1.01E-04	5.70E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	9.77E-06	1.01E-04	5.70E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.03E-05	1.22E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.44E-04	2.13E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	2.82E-04	3.33E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	3.35E-05	1.23E-04	6.23E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	6.02E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.32E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.32E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.39E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.79E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.46E-05	3.52E-05	1.95E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.42E-05	2.03E-05	1.13E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	2.55E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.311	0.366	=HQ-ing + HQ-inh + HQ-derm

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Total Hazard Quotient	-	-	0.312	0.366	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.367	0.425	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.608	0.729	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.933	0.796	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	8.67E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.48 Sample Calculation – Ndilo Typical Diet + Indoor Dust = Outdoor Soil

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Medicinal Tea					
	Concentration	mg/kg	0.0917	0.0571	251.8600	
Elder	Ingestion Rate	kg/d				0.00005
Adult	Ingestion Rate	kg/d				0.00005
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	4.59E-06	2.86E-06	1.26E-02	=Concentration x Ingestion Rate
Adult	Intake	mg/d	4.59E-06	2.86E-06	1.26E-02	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	6.49E-08	4.04E-08	1.78E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	6.49E-08	4.04E-08	1.78E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
5%	***Berries 1***					
	Concentration	mg/kg	0.0860	0.0073	16.1175	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	9.78E-06	8.34E-07	1.83E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	8.06E-06	6.87E-07	1.51E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	5.37E-06	4.58E-07	1.01E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.64E-07	1.40E-08	3.07E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.45E-07	2.09E-08	4.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.26E-07	2.78E-08	6.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
95%	***Berries 2***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
10%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.17
Adult	Ingestion Rate	kg/d				0.17
Teen	Ingestion Rate	kg/d				0.1547
Child	Ingestion Rate	kg/d				0.1275
Toddler	Ingestion Rate	kg/d				0.085
Elder	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0069
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345
Elder	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.69E-05	1.13E-05	1.57E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	7.16E-05	9.32E-06	1.29E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.77E-05	6.21E-06	8.63E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.46E-06	1.89E-07	2.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.18E-06	2.83E-07	3.93E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.89E-06	3.76E-07	5.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.01E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	8.32E-05	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.55E-05	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.69E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.53E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.36E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.65E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.83E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.79E-07	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.16E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.55E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0042
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.59E-05	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.78E-05	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.52E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.68E-07	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.15E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.53E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	127.3000	45.0000	25.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.91E-04	6.75E-05	3.75E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.04E-04	7.20E-05	4.00E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.78E-04	6.30E-05	3.50E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.67E-03	9.45E-04	5.25E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-03	6.30E-04	3.50E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.70E-06	9.55E-07	5.30E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.88E-06	1.02E-06	5.66E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.99E-06	1.06E-06	5.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.13E-05	2.87E-05	1.60E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-04	3.82E-05	2.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	127.3000	45.0000	25.0000	
Elder	Ingestion Rate	kg/d				0.0000025

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	3.18E-04	1.13E-04	6.25E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.18E-04	1.13E-04	6.25E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.80E-04	9.90E-05	5.50E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.95E-03	1.40E-03	7.75E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.22E-03	1.85E-03	1.03E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	4.50E-06	1.59E-06	8.84E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	4.50E-06	1.59E-06	8.84E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	4.69E-06	1.66E-06	9.21E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.20E-04	4.24E-05	2.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.16E-04	1.12E-04	6.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	1.21E-05	1.02E-04	5.72E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	1.22E-05	1.02E-04	5.72E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	1.29E-05	1.23E-04	6.03E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	2.09E-04	2.26E-04	8.90E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	4.35E-04	3.67E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.27E+02	4.50E+01	2.50E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.93E-02	6.84E-03	3.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.33E-02	4.70E-03	2.61E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.76E-03	3.10E-03	1.72E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	9.72E-06	1.15E-05	6.37E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.43E-05	7.94E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.59E-05	1.88E-05	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	1.27E+02	4.50E+01	2.50E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	2.27E-02	8.01E-03	4.45E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.27E-02	8.01E-03	4.45E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	2.04E-02	7.20E-03	4.00E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.50E-02	5.31E-03	2.95E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	1.09E-02	3.87E-03	2.15E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.62E-06	1.13E-05	6.29E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	9.62E-06	1.13E-05	6.29E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	1.02E-05	1.21E-05	6.70E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	1.37E-05	1.61E-05	8.97E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.99E-05	2.35E-05	1.30E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.89E-05	2.22E-05	1.23E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.89E-05	2.22E-05	1.23E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	2.00E-05	2.35E-05	1.31E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.58E-05	3.04E-05	1.69E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.58E-05	4.22E-05	2.35E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.21E-05	1.02E-04	5.72E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.22E-05	1.02E-04	5.72E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.29E-05	1.23E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.09E-04	2.26E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.35E-04	3.67E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.31	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.56	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.92	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.89E-05	2.22E-05	1.23E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.89E-05	2.22E-05	1.23E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	2.00E-05	2.35E-05	1.31E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.58E-05	3.04E-05	1.69E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	3.58E-05	4.22E-05	2.35E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.056	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.056	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.059	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.076	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.106	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.21E-05	1.02E-04	5.72E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.22E-05	1.02E-04	5.72E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.29E-05	1.23E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.09E-04	2.26E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.35E-04	3.67E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	4.82E-05	1.26E-04	6.25E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	8.67E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.89E-05	2.22E-05	1.23E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.89E-05	2.22E-05	1.23E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	2.00E-05	2.35E-05	1.31E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.58E-05	3.04E-05	1.69E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	3.58E-05	4.22E-05	2.35E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	2.03E-05	2.40E-05	1.33E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.66E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.321	0.367	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.321	0.367	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.377	0.425	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.652	0.729	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	1.034	0.796	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.24E-04	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.49 Sample Calculation – Ndilo Typical Diet + 100% Meat Bioaccessibility

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
5%	***Berries 1***					
	Concentration	mg/kg	0.0860	0.0073	16.1175	
Elder	Ingestion Rate	kg/d				0.0025

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	9.78E-06	8.34E-07	1.83E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	8.06E-06	6.87E-07	1.51E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	5.37E-06	4.58E-07	1.01E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.64E-07	1.40E-08	3.07E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.45E-07	2.09E-08	4.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.26E-07	2.78E-08	6.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
95%	***Berries 2***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
10%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.17
Adult	Ingestion Rate	kg/d				0.17
Teen	Ingestion Rate	kg/d				0.1547
Child	Ingestion Rate	kg/d				0.1275
Toddler	Ingestion Rate	kg/d				0.085
Elder	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	4.25E-04	2.55E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.87E-04	2.32E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	3.19E-04	1.91E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	2.13E-04	1.28E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.01E-06	3.61E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.48E-06	3.89E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.69E-06	5.81E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.29E-05	7.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	3.83E-03	2.30E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	3.48E-03	2.09E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	2.87E-03	1.72E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	1.91E-03	1.15E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.41E-05	3.25E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.83E-05	3.50E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.72E-05	5.23E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.16E-04	6.95E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0338	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0069
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Intake	mg/d	2.33E-04	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.33E-04	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.12E-04	1.13E-05	1.57E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.75E-04	9.32E-06	1.29E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.17E-04	6.21E-06	8.63E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.30E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.30E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.55E-06	1.89E-07	2.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.31E-06	2.83E-07	3.93E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.06E-06	3.76E-07	5.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0872	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	2.44E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.44E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.22E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.83E-04	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.22E-04	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.46E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.46E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.72E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.57E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.40E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0383	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.07E-04	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.07E-04	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	9.75E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	8.03E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.36E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.51E-06	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.51E-06	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.63E-06	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.44E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.25E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0390	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0042
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	1.64E-04	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.64E-04	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.49E-04	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.23E-04	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	8.19E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	2.32E-06	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.32E-06	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.50E-06	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	3.73E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	4.96E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	127.3000	45.0000	25.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.91E-04	6.75E-05	3.75E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.04E-04	7.20E-05	4.00E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.78E-04	6.30E-05	3.50E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.67E-03	9.45E-04	5.25E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-03	6.30E-04	3.50E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.70E-06	9.55E-07	5.30E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.88E-06	1.02E-06	5.66E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.99E-06	1.06E-06	5.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.13E-05	2.87E-05	1.60E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-04	3.82E-05	2.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	89.1100	31.5000	17.5000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.96E-04	6.93E-05	3.85E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.76E-03	9.77E-04	5.43E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.65E-03	1.29E-03	7.18E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.28E-06	1.16E-06	6.45E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.40E-05	2.97E-05	1.65E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.21E-04	7.83E-05	4.35E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	1.69E-05	1.01E-04	5.70E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	1.71E-05	1.01E-04	5.70E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	1.82E-05	1.22E-04	6.03E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.83E-04	2.13E-04	8.90E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	3.53E-04	3.33E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.27E+02	4.50E+01	2.50E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.93E-02	6.84E-03	3.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.33E-02	4.70E-03	2.61E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.76E-03	3.10E-03	1.72E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	9.72E-06	1.15E-05	6.37E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.43E-05	7.94E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.59E-05	1.88E-05	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	8.91E+01	3.15E+01	1.75E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.43E-02	5.04E-03	2.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.05E-02	3.72E-03	2.07E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.66E-03	2.71E-03	1.51E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.16E-06	8.44E-06	4.69E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	9.59E-06	1.13E-05	6.28E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.39E-05	1.64E-05	9.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.69E-05	1.01E-04	5.70E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.71E-05	1.01E-04	5.70E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.82E-05	1.22E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.83E-04	2.13E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.53E-04	3.33E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.25	0.37	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.31	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.53	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.83	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.050	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.064	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.088	0.000	=Total Intake by Dermal/ TRV - dermal

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.69E-05	1.01E-04	5.70E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.71E-05	1.01E-04	5.70E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	1.82E-05	1.22E-04	6.03E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.83E-04	2.13E-04	8.90E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	3.53E-04	3.33E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	4.64E-05	1.23E-04	6.23E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	8.35E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.60E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.69E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	2.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	2.99E-05	3.52E-05	1.95E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	1.72E-05	2.03E-05	1.13E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.09E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.311	0.366	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.312	0.366	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.367	0.425	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.608	0.729	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.933	0.796	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.15E-04	-	-	=Risk-ing + Risk-inh + Risk-derm

I.10 Sensitivity Assessments - Mushroom

Table I.50 Sample Calculation – City of Yellowknife + Mushrooms < 10km 100% Bioaccessibility

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Mushroom					
	Concentration	mg/kg	0.6290	0.0535	0.0000	
Elder	Ingestion Rate	kg/d				0.0075
Adult	Ingestion Rate	kg/d				0.0075
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	4.72E-03	4.01E-04	0.00E+00	=Concentration x Ingestion Rate
Adult	Intake	mg/d	4.72E-03	4.01E-04	0.00E+00	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	6.67E-05	5.67E-06	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	6.67E-05	5.67E-06	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	6.1940	3.6730	364.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	9.29E-06	5.51E-06	5.46E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.91E-06	5.88E-06	5.82E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.67E-06	5.14E-06	5.10E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.30E-04	7.71E-05	7.64E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	8.67E-05	5.14E-05	5.10E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	1.31E-07	7.79E-08	7.72E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.40E-07	8.31E-08	8.24E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.45E-07	8.61E-08	8.54E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	3.95E-06	2.34E-06	2.32E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	5.26E-06	3.12E-06	3.09E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	4.3358	2.5711	254.8000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	9.54E-06	5.66E-06	5.61E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.34E-04	7.97E-05	7.90E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-04	1.05E-04	1.04E-02	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.60E-07	9.47E-08	9.39E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.09E-06	2.42E-06	2.40E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-05	6.39E-06	6.33E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	6.87E-05	6.09E-05	5.68E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	6.87E-05	6.09E-05	5.68E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	=SUM(all intake pathways)

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	6.19E+00	3.67E+00	3.64E+02	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	9.41E-04	5.58E-04	5.53E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	6.47E-04	3.84E-04	3.80E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	4.26E-04	2.53E-04	2.50E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	4.73E-07	9.35E-07	9.27E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	5.90E-07	1.17E-06	1.16E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	7.75E-07	1.53E-06	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	4.34E+00	2.57E+00	2.55E+02	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	6.94E-04	4.11E-04	4.08E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	5.12E-04	3.03E-04	3.01E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	3.73E-04	2.21E-04	2.19E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	3.49E-07	6.89E-07	6.83E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	4.67E-07	9.22E-07	9.14E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF

Sample Calculation		**Units**	**Incremental Arsenic**	**Antimony**	**Manganese**	**Notes**
Toddler	Averaged Intake by body weight	mg/kg-d	6.78E-07	1.34E-06	1.33E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	6.87E-05	6.09E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	6.87E-05	6.09E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.15	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.15	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.18	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.22	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.33	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.005	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.007	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	6.87E-05	6.09E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	6.87E-05	6.09E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	calculated above

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	5.52E-05	6.77E-05	6.21E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	9.94E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	3.52E-06	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	8.37E-07	1.65E-06	1.64E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	1.51E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.168	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.168	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.197	0.423	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.238	0.729	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.349	0.798	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.04E-04	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.51 Sample Calculation – City of Yellowknife + Mushrooms 10km – 25km 100% Bioaccessibility

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Mushroom					
	Concentration	mg/kg	0.0610	0.0072	0.0000	
Elder	Ingestion Rate	kg/d				0.0075
Adult	Ingestion Rate	kg/d				0.0075
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	4.57E-04	5.41E-05	0.00E+00	=Concentration x Ingestion Rate
Adult	Intake	mg/d	4.57E-04	5.41E-05	0.00E+00	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	6.47E-06	7.65E-07	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	6.47E-06	7.65E-07	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	6.1940	3.6730	364.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	9.29E-06	5.51E-06	5.46E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.91E-06	5.88E-06	5.82E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.67E-06	5.14E-06	5.10E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.30E-04	7.71E-05	7.64E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	8.67E-05	5.14E-05	5.10E-03	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	1.31E-07	7.79E-08	7.72E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.40E-07	8.31E-08	8.24E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.45E-07	8.61E-08	8.54E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	3.95E-06	2.34E-06	2.32E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	5.26E-06	3.12E-06	3.09E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	4.3358	2.5711	254.8000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	9.54E-06	5.66E-06	5.61E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.34E-04	7.97E-05	7.90E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-04	1.05E-04	1.04E-02	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.60E-07	9.47E-08	9.39E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.09E-06	2.42E-06	2.40E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-05	6.39E-06	6.33E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	8.42E-06	5.60E-05	5.68E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	8.43E-06	5.60E-05	5.68E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Concentration	mg/kg	6.19E+00	3.67E+00	3.64E+02	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	9.41E-04	5.58E-04	5.53E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	6.47E-04	3.84E-04	3.80E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	4.26E-04	2.53E-04	2.50E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	4.73E-07	9.35E-07	9.27E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	5.90E-07	1.17E-06	1.16E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	7.75E-07	1.53E-06	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	4.34E+00	2.57E+00	2.55E+02	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	6.94E-04	4.11E-04	4.08E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	5.12E-04	3.03E-04	3.01E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	3.73E-04	2.21E-04	2.19E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	3.49E-07	6.89E-07	6.83E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	4.67E-07	9.22E-07	9.14E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	6.78E-07	1.34E-06	1.33E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	8.42E-06	5.60E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	8.43E-06	5.60E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	calculated above

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Total Intake by Ingestion	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Adult	Hazard quotient	-	-	0.14	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.18	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.22	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.33	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.005	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.007	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	8.42E-06	5.60E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	8.43E-06	5.60E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	8.53E-06	6.39E-05	6.21E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	1.53E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	3.52E-06	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	8.37E-07	1.65E-06	1.64E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	1.51E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.155	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.155	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.197	0.423	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.238	0.729	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.349	0.798	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	2.04E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

Table I.52 Sample Calculation – City of Yellowknife + Mushrooms > 25km 100% Bioaccessibility

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0000	0.0002	0.0021	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	3.00E-04	3.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-04	2.14E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-04	1.71E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-04	1.28E-03	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-06	4.54E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-06	3.58E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-06	5.20E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-06	7.78E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Berries 1***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.19E-05	1.46E-06	5.05E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.99E-05	1.33E-06	4.60E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.64E-05	1.09E-06	3.79E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.10E-05	7.29E-07	2.53E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.10E-07	2.06E-08	7.14E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.34E-07	2.22E-08	7.70E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.00E-07	3.32E-08	1.15E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.64E-07	4.42E-08	1.53E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Mushroom					
	Concentration	mg/kg	0.0000	0.0300	0.0000	
Elder	Ingestion Rate	kg/d				0.0075
Adult	Ingestion Rate	kg/d				0.0075
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Elder	Intake	mg/d	0.00E+00	2.25E-04	0.00E+00	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	2.25E-04	0.00E+00	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.18E-06	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.18E-06	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
100%	***Fish 1***					
	Concentration	mg/kg	0.0000	0.0250	0.1500	
Elder	Ingestion Rate	kg/d				0.0489
Adult	Ingestion Rate	kg/d				0.0489
Teen	Ingestion Rate	kg/d				0.044499
Child	Ingestion Rate	kg/d				0.036675
Toddler	Ingestion Rate	kg/d				0.02445
Elder	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	1.22E-03	7.34E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	1.11E-03	6.67E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	9.17E-04	5.50E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	6.11E-04	3.67E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.73E-05	1.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.86E-05	1.12E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.79E-05	1.67E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.70E-05	2.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.00279
Adult	Ingestion Rate	kg/d				0.00279
Teen	Ingestion Rate	kg/d				0.0025389
Child	Ingestion Rate	kg/d				0.0020925
Toddler	Ingestion Rate	kg/d				0.001395
Elder	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	3.86E-05	5.02E-06	6.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	3.51E-05	4.57E-06	6.35E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.90E-05	3.77E-06	5.23E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.93E-05	2.51E-06	3.49E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	5.46E-07	7.10E-08	9.87E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	5.89E-07	7.65E-08	1.06E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.80E-07	1.14E-07	1.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.17E-06	1.52E-07	2.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.00023
Adult	Ingestion Rate	kg/d				0.00023
Teen	Ingestion Rate	kg/d				0.0002093
Child	Ingestion Rate	kg/d				0.0001725
Toddler	Ingestion Rate	kg/d				0.000115
Elder	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.11E-06	3.16E-06	4.42E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.29E-06	2.88E-06	4.02E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	6.83E-06	2.37E-06	3.31E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.56E-06	1.58E-06	2.21E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.29E-07	4.47E-08	6.25E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.39E-07	4.82E-08	6.73E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.08E-07	7.21E-08	1.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.76E-07	9.58E-08	1.34E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0014
Adult	Ingestion Rate	kg/d				0.0014
Teen	Ingestion Rate	kg/d				0.001274
Child	Ingestion Rate	kg/d				0.00105
Toddler	Ingestion Rate	kg/d				0.0007
Elder	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.33E-05	1.91E-05	4.90E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.92E-05	1.58E-05	4.04E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.28E-05	1.05E-05	2.70E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.61E-07	2.97E-07	7.62E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.89E-07	3.20E-07	8.22E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.82E-07	4.79E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.74E-07	6.36E-07	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.28E-05	3.80E-06	9.98E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	2.07E-05	3.46E-06	9.08E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.71E-05	2.85E-06	7.48E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.14E-05	1.90E-06	4.99E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.22E-07	5.37E-08	1.41E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.48E-07	5.79E-08	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	5.20E-07	8.66E-08	2.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	6.91E-07	1.15E-07	3.02E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.00047
Adult	Ingestion Rate	kg/d				0.00047
Teen	Ingestion Rate	kg/d				0.0004277
Child	Ingestion Rate	kg/d				0.0003525
Toddler	Ingestion Rate	kg/d				0.000235
Elder	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	4.70E-06	9.87E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.28E-06	8.98E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.53E-06	7.40E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.35E-06	4.94E-05	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.65E-08	1.40E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.16E-08	1.50E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.07E-07	2.25E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-07	2.99E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	6.1940	3.6730	364.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	9.29E-06	5.51E-06	5.46E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.91E-06	5.88E-06	5.82E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.67E-06	5.14E-06	5.10E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.30E-04	7.71E-05	7.64E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	8.67E-05	5.14E-05	5.10E-03	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	1.31E-07	7.79E-08	7.72E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.40E-07	8.31E-08	8.24E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.45E-07	8.61E-08	8.54E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	3.95E-06	2.34E-06	2.32E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	5.26E-06	3.12E-06	3.09E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	4.3358	2.5711	254.8000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.08E-05	6.43E-06	6.37E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	9.54E-06	5.66E-06	5.61E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.34E-04	7.97E-05	7.90E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-04	1.05E-04	1.04E-02	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.53E-07	9.09E-08	9.01E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.60E-07	9.47E-08	9.39E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.09E-06	2.42E-06	2.40E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-05	6.39E-06	6.33E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	1.95E-06	5.84E-05	5.68E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	1.96E-06	5.84E-05	5.68E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	6.19E+00	3.67E+00	3.64E+02	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.06E-03	6.29E-04	6.23E-02	=Concentration x Dermal Loading Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Intake	mg/d	9.41E-04	5.58E-04	5.53E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	6.47E-04	3.84E-04	3.80E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	4.26E-04	2.53E-04	2.50E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	4.50E-07	8.89E-07	8.81E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	4.73E-07	9.35E-07	9.27E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	5.90E-07	1.17E-06	1.16E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	7.75E-07	1.53E-06	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Dust	Units				
	Concentration	mg/kg	4.34E+00	2.57E+00	2.55E+02	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	7.72E-04	4.58E-04	4.54E-02	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	6.94E-04	4.11E-04	4.08E-02	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	5.12E-04	3.03E-04	3.01E-02	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	3.73E-04	2.21E-04	2.19E-02	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	3.27E-07	6.47E-07	6.42E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	3.49E-07	6.89E-07	6.83E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	4.67E-07	9.22E-07	9.14E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	6.78E-07	1.34E-06	1.33E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.95E-06	5.84E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.96E-06	5.84E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.15	0.36	=Total Intake by Ingestion / TRV - ingestion

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Hazard quotient	-	-	0.15	0.36	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.18	0.42	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.22	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.33	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.004	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.005	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.007	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	1.95E-06	5.84E-05	5.68E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	1.96E-06	5.84E-05	5.68E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	2.10E-06	7.28E-05	6.00E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	1.07E-05	8.84E-05	8.89E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	1.96E-05	1.32E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	3.52E-06	6.58E-05	6.21E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	6.33E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	5.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
						toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	3.52E-06	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Adult	Total Intake by Dermal	mg/kg-d	7.77E-07	1.54E-06	1.52E-05	calculated above
Teen	Total Intake by Dermal	mg/kg-d	8.22E-07	1.62E-06	1.61E-05	calculated above
Child	Total Intake by Dermal	mg/kg-d	1.06E-06	2.09E-06	2.07E-05	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	1.45E-06	2.87E-06	2.85E-05	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	8.37E-07	1.65E-06	1.64E-05	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	1.51E-06	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.161	0.364	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.161	0.364	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.197	0.423	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.238	0.729	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	0.349	0.798	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.14E-05	-	-	=Risk-ing + Risk-inh + Risk-derm

I.11 Climate Change

Table I.53 Sample Calculation – Ndilo Future Climate Change

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
INGESTION PATHWAYS						
Drinking Water						
	Concentration	mg/L	0.0015	0.0003	0.0000	
Elder	Ingestion Rate	L/d				1.5
Adult	Ingestion Rate	L/d				1.5
Teen	Ingestion Rate	L/d				1
Child	Ingestion Rate	L/d				0.8
Toddler	Ingestion Rate	L/d				0.6
Elder	Intake	mg/d	2.25E-03	4.40E-04	0.00E+00	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.25E-03	4.40E-04	0.00E+00	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.50E-03	2.93E-04	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/d	1.20E-03	2.35E-04	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	9.00E-04	1.76E-04	0.00E+00	=Concentration x Ingestion Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.18E-05	6.22E-06	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.18E-05	6.22E-06	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.51E-05	4.91E-06	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	3.65E-05	7.13E-06	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	5.45E-05	1.07E-05	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
5%	***Berries 1***					
	Concentration	mg/kg	0.0860	0.0073	16.1175	
Elder	Ingestion Rate	kg/d				0.0025
Adult	Ingestion Rate	kg/d				0.0025
Teen	Ingestion Rate	kg/d				0.002275
Child	Ingestion Rate	kg/d				0.001875
Toddler	Ingestion Rate	kg/d				0.00125
Elder	Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	1.07E-05	9.16E-07	2.01E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	9.78E-06	8.34E-07	1.83E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	8.06E-06	6.87E-07	1.51E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	5.37E-06	4.58E-07	1.01E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.52E-07	1.30E-08	2.85E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.64E-07	1.40E-08	3.07E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.45E-07	2.09E-08	4.59E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.26E-07	2.78E-08	6.11E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
95%	***Berries 2***					
	Concentration	mg/kg	0.0088	0.0006	20.2017	
Elder	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	2.08E-05	1.39E-06	4.80E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.89E-05	1.26E-06	4.37E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.56E-05	1.04E-06	3.60E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	1.04E-05	6.93E-07	2.40E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.94E-07	1.96E-08	6.79E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.17E-07	2.11E-08	7.31E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.75E-07	3.16E-08	1.09E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Toddler	Averaged Intake by body weight	mg/kg-d	6.31E-07	4.20E-08	1.45E-03	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Mushroom					
	Concentration	mg/kg	-	-	-	Not an exposure pathway
Elder	Ingestion Rate	kg/d				0
Adult	Ingestion Rate	kg/d				0
Teen	Ingestion Rate	kg/d				0
Child	Ingestion Rate	kg/d				0
Toddler	Ingestion Rate	kg/d				0
Elder	Intake	mg/d	-	-	-	=Concentration x Ingestion Rate
Adult	Intake	mg/d	-	-	-	=Concentration x Ingestion Rate
Teen	Intake	mg/d	-	-	-	=Concentration x Ingestion Rate
Child	Intake	mg/d	-	-	-	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	-	-	-	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	-	-	-	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	-	-	-	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	-	-	-	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	-	-	-	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	-	-	-	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
10%	***Fish 1***					
	Concentration	mg/kg	0.0110	0.0325	0.1950	
Elder	Ingestion Rate	kg/d				0.17
Adult	Ingestion Rate	kg/d				0.17
Teen	Ingestion Rate	kg/d				0.1547
Child	Ingestion Rate	kg/d				0.1275
Toddler	Ingestion Rate	kg/d				0.085
Elder	Intake	mg/d	1.87E-04	5.53E-04	3.32E-03	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	1.87E-04	5.53E-04	3.32E-03	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	1.70E-04	5.03E-04	3.02E-03	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	1.40E-04	4.14E-04	2.49E-03	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	9.34E-05	2.76E-04	1.66E-03	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	2.64E-06	7.81E-06	4.69E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.64E-06	7.81E-06	4.69E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.85E-06	8.42E-06	5.05E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	4.26E-06	1.26E-05	7.56E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	5.66E-06	1.67E-05	1.00E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
90%	***Fish 2***					
	Concentration	mg/kg	0.0000	0.0325	0.1950	
Elder	Intake	mg/d	0.00E+00	4.97E-03	2.98E-02	=Concentration x Ingestion Rate x % from source
Adult	Intake	mg/d	0.00E+00	4.97E-03	2.98E-02	=Concentration x Ingestion Rate x % from source
Teen	Intake	mg/d	0.00E+00	4.52E-03	2.71E-02	=Concentration x Ingestion Rate x % from source
Child	Intake	mg/d	0.00E+00	3.73E-03	2.24E-02	=Concentration x Ingestion Rate x % from source
Toddler	Intake	mg/d	0.00E+00	2.49E-03	1.49E-02	=Concentration x Ingestion Rate x % from source
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.03E-05	4.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.03E-05	4.22E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.58E-05	4.55E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.13E-04	6.80E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.51E-04	9.04E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Moose					
	Concentration	mg/kg	0.0138	0.0018	0.2500	
Elder	Ingestion Rate	kg/d				0.0069
Adult	Ingestion Rate	kg/d				0.0069
Teen	Ingestion Rate	kg/d				0.006279
Child	Ingestion Rate	kg/d				0.005175
Toddler	Ingestion Rate	kg/d				0.00345
Elder	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	9.55E-05	1.24E-05	1.73E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	8.69E-05	1.13E-05	1.57E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	7.16E-05	9.32E-06	1.29E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	4.77E-05	6.21E-06	8.63E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.35E-06	1.76E-07	2.44E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.46E-06	1.89E-07	2.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Child	Averaged Intake by body weight	mg/kg-d	2.18E-06	2.83E-07	3.93E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.89E-06	3.76E-07	5.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare					
	Concentration	mg/kg	0.0396	0.0138	0.1920	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	1.11E-04	3.85E-05	5.38E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.01E-04	3.50E-05	4.89E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	8.32E-05	2.89E-05	4.03E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	5.55E-05	1.93E-05	2.69E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.57E-06	5.45E-07	7.60E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.69E-06	5.87E-07	8.19E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	2.53E-06	8.78E-07	1.23E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	3.36E-06	1.17E-06	1.63E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse					
	Concentration	mg/kg	0.0183	0.0150	0.3850	
Elder	Ingestion Rate	kg/d				0.0028
Adult	Ingestion Rate	kg/d				0.0028
Teen	Ingestion Rate	kg/d				0.002548
Child	Ingestion Rate	kg/d				0.0021
Toddler	Ingestion Rate	kg/d				0.0014
Elder	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.11E-05	4.20E-05	1.08E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.65E-05	3.82E-05	9.81E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.83E-05	3.15E-05	8.09E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.56E-05	2.10E-05	5.39E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.23E-07	5.94E-07	1.52E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.79E-07	6.40E-07	1.64E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.16E-06	9.57E-07	2.46E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.55E-06	1.27E-06	3.27E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Duck					
	Concentration	mg/kg	0.0120	0.0020	0.5250	
Elder	Ingestion Rate	kg/d				0.0042
Adult	Ingestion Rate	kg/d				0.0042
Teen	Ingestion Rate	kg/d				0.003822
Child	Ingestion Rate	kg/d				0.00315
Toddler	Ingestion Rate	kg/d				0.0021
Elder	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Adult	Intake	mg/d	5.04E-05	8.40E-06	2.21E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	4.59E-05	7.64E-06	2.01E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	3.78E-05	6.30E-06	1.65E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	2.52E-05	4.20E-06	1.10E-03	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	7.13E-07	1.19E-07	3.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	7.68E-07	1.28E-07	3.36E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	1.15E-06	1.91E-07	5.03E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.53E-06	2.55E-07	6.68E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Muskrat					
	Concentration	mg/kg	0.0000	0.0100	0.2100	
Elder	Ingestion Rate	kg/d				0.0019
Adult	Ingestion Rate	kg/d				0.0019
Teen	Ingestion Rate	kg/d				0.001729
Child	Ingestion Rate	kg/d				0.001425
Toddler	Ingestion Rate	kg/d				0.00095
Elder	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate
Adult	Intake	mg/d	0.00E+00	1.90E-05	3.99E-04	=Concentration x Ingestion Rate

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Intake	mg/d	0.00E+00	1.73E-05	3.63E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.43E-05	2.99E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	9.50E-06	2.00E-04	=Concentration x Ingestion Rate
Elder	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.69E-07	5.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.90E-07	6.08E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.33E-07	9.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.76E-07	1.21E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Soil					
	Concentration	mg/kg	127.3000	45.0000	25.0000	
Elder	Ingestion Rate	kg/d				0.0000015
Adult	Ingestion Rate	kg/d				0.0000016
Teen	Ingestion Rate	kg/d				0.0000014
Child	Ingestion Rate	kg/d				0.000021
Toddler	Ingestion Rate	kg/d				0.000014
Elder	Intake	mg/d	1.91E-04	6.75E-05	3.75E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.04E-04	7.20E-05	4.00E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.78E-04	6.30E-05	3.50E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.67E-03	9.45E-04	5.25E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	1.78E-03	6.30E-04	3.50E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
Elder	Averaged Intake by body weight	mg/kg-d	2.70E-06	9.55E-07	5.30E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	2.88E-06	1.02E-06	5.66E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	2.99E-06	1.06E-06	5.86E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.13E-05	2.87E-05	1.60E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	1.08E-04	3.82E-05	2.12E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Sediment					
	Concentration	mg/kg	7.5998	0.0000	0.0000	
Elder	Ingestion Rate	kg/hr				0.0000077
Adult	Ingestion Rate	kg/hr				0.0000077
Teen	Ingestion Rate	kg/hr				0.0000077
Child	Ingestion Rate	kg/hr				0.0000077
Toddler	Ingestion Rate	kg/hr				0.0000077
Elder	Intake	mg/hr	5.85E-05	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Adult	Intake	mg/hr	5.85E-05	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	5.85E-05	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	mg/hr	5.85E-05	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	mg/hr	5.85E-05	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
	Exposure Duration - hours per day	hrs/d				2
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
Elder	Averaged Intake by body weight	mg/kg-d	1.66E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	1.66E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	1.96E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	3.56E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	7.09E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Dust					
	Dust Concentration	mg/kg	89.1100	31.5000	17.5000	
Elder	Ingestion Rate	kg/d				0.0000025
Adult	Ingestion Rate	kg/d				0.0000025
Teen	Ingestion Rate	kg/d				0.0000022
Child	Ingestion Rate	kg/d				0.000031
Toddler	Ingestion Rate	kg/d				0.000041
Elder	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Adult	Intake	mg/d	2.23E-04	7.88E-05	4.38E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	1.96E-04	6.93E-05	3.85E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	2.76E-03	9.77E-04	5.43E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	3.65E-03	1.29E-03	7.18E-04	=Concentration x Ingestion Rate
	Exposure Duration - days per week	d/wk				7

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Intake by body weight	mg/kg-d	3.15E-06	1.11E-06	6.19E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	3.28E-06	1.16E-06	6.45E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	8.40E-05	2.97E-05	1.65E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	2.21E-04	7.83E-05	4.35E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods					
Elder	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Adult	Intake by body weight	mg/kg-d	-	3.30E-05	5.59E-02	
Teen	Intake by body weight	mg/kg-d	-	5.00E-05	5.90E-02	
Child	Intake by body weight	mg/kg-d	-	5.00E-05	8.70E-02	
Toddler	Intake by body weight	mg/kg-d	-	7.70E-05	1.06E-01	
	TOTAL INGESTION					
Elder	Total Intake by body weight	mg/kg-d	4.68E-05	1.21E-04	5.71E-02	=SUM(all intake pathways)
Adult	Total Intake by body weight	mg/kg-d	4.70E-05	1.21E-04	5.71E-02	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	4.14E-05	1.43E-04	6.04E-02	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	2.17E-04	2.44E-04	8.91E-02	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	4.07E-04	3.75E-04	1.08E-01	=SUM(all intake pathways)
	INHALATION PATHWAYS					
	Air	Units				
	Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=Concentration x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	DERMAL PATHWAYS					
	Soil	Units				
	Concentration	mg/kg	1.27E+02	4.50E+01	2.50E+01	
Elder	Dermal Loading Rate	kg/d				0.0001712
Adult	Dermal Loading Rate	kg/d				0.0001712
Teen	Dermal Loading Rate	kg/d				0.000152
Child	Dermal Loading Rate	kg/d				0.0001045
Toddler	Dermal Loading Rate	kg/d				0.0000688
Elder	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	2.18E-02	7.70E-03	4.28E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.93E-02	6.84E-03	3.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.33E-02	4.70E-03	2.61E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	8.76E-03	3.10E-03	1.72E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				16
	Averaging Period - weeks per year	wk/yr				16
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Adult	Averaged Intake by body weight	mg/kg-d	9.25E-06	1.09E-05	6.05E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Teen	Averaged Intake by body weight	mg/kg-d	9.72E-06	1.15E-05	6.37E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Child	Averaged Intake by body weight	mg/kg-d	1.21E-05	1.43E-05	7.94E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.59E-05	1.88E-05	1.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x DermalRAF
	Sediment	Units				
	Concentration	mg/kg	7.60E+00	0.00E+00	0.00E+00	
Elder	Dermal Loading Rate	kg/d				0.000696
Adult	Dermal Loading Rate	kg/d				0.000696

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Teen	Dermal Loading Rate	kg/d				0.0006264
Child	Dermal Loading Rate	kg/d				0.0028804
Toddler	Dermal Loading Rate	kg/d				0.00189
Elder	Intake	mg/d	5.29E-03	0.00E+00	0.00E+00	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	5.29E-03	0.00E+00	0.00E+00	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	4.76E-03	0.00E+00	0.00E+00	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	2.19E-02	0.00E+00	0.00E+00	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	1.44E-02	0.00E+00	0.00E+00	=Concentration x Dermal Loading Rate
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				10
	Averaging Period - weeks per year	wk/yr				10
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	2.24E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	2.24E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	2.39E-06	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	2.00E-05	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	2.61E-05	0.00E+00	0.00E+00	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	Dust	Units				
	Concentration	mg/kg	8.91E+01	3.15E+01	1.75E+01	
Elder	Dermal Loading Rate	kg/d				0.000178
Adult	Dermal Loading Rate	kg/d				0.000178
Teen	Dermal Loading Rate	kg/d				0.00016
Child	Dermal Loading Rate	kg/d				0.000118
Toddler	Dermal Loading Rate	kg/d				0.000086
Elder	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Adult	Intake	mg/d	1.59E-02	5.61E-03	3.12E-03	=Concentration x Dermal Loading Rate
Teen	Intake	mg/d	1.43E-02	5.04E-03	2.80E-03	=Concentration x Dermal Loading Rate
Child	Intake	mg/d	1.05E-02	3.72E-03	2.07E-03	=Concentration x Dermal Loading Rate
Toddler	Intake	mg/d	7.66E-03	2.71E-03	1.51E-03	=Concentration x Dermal Loading Rate
Elder	Body weight	kg				70.7
Adult	Body weight	kg				70.7
Teen	Body weight	kg				59.7
Child	Body weight	kg				32.9
Toddler	Body weight	kg				16.5
	Exposure Duration - days per week	d/wk				7
	Exposure Duration - weeks per year	wk/yr				52
	Averaging Period - weeks per year	wk/yr				52
	Dermal RAF	-	0.03	0.1	0.01	see Report
Elder	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Adult	Averaged Intake by body weight	mg/kg-d	6.73E-06	7.93E-06	4.41E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Teen	Averaged Intake by body weight	mg/kg-d	7.16E-06	8.44E-06	4.69E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Child	Averaged Intake by body weight	mg/kg-d	9.59E-06	1.13E-05	6.28E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
Toddler	Averaged Intake by body weight	mg/kg-d	1.39E-05	1.64E-05	9.12E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk x Dermal RAF
	TOTAL DERMAL					
Elder	Total Intake by body weight	mg/kg-d	1.82E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Adult	Total Intake by body weight	mg/kg-d	1.82E-05	1.88E-05	1.05E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Teen	Total Intake by body weight	mg/kg-d	1.93E-05	1.99E-05	1.11E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Child	Total Intake by body weight	mg/kg-d	4.17E-05	2.56E-05	1.42E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
Toddler	Total Intake by body weight	mg/kg-d	5.60E-05	3.52E-05	1.95E-06	=SUM(soil, recreational soil, sediment, and dust dermal pathways)
	NON-CARCINOGENIC RISK CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	4.68E-05	1.21E-04	5.71E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	4.70E-05	1.21E-04	5.71E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	4.14E-05	1.43E-04	6.04E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.17E-04	2.44E-04	8.91E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.07E-04	3.75E-04	1.08E-01	calculated above
Elder	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - ingestion	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - ingestion	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - ingestion	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - ingestion	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.30	0.37	=Total Intake by Ingestion / TRV - ingestion

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
Adult	Hazard quotient	-	-	0.30	0.37	=Total Intake by Ingestion / TRV - ingestion
Teen	Hazard quotient	-	-	0.36	0.43	=Total Intake by Ingestion / TRV - ingestion
Child	Hazard quotient	-	-	0.61	0.73	=Total Intake by Ingestion / TRV - ingestion
Toddler	Hazard quotient	-	-	0.94	0.80	=Total Intake by Ingestion / TRV - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Adult	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Teen	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Child	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Toddler	TRV - inhalation	mg/m3	-	2.00E-04	5.00E-05	see Report
Elder	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Adult	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Teen	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Child	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Toddler	Hazard quotient	-	-	0.01	0.00	=Averaged Exposure Concentration / TRV - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.82E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.82E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.93E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	4.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	5.60E-05	3.52E-05	1.95E-06	calculated above
Elder	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Adult	TRV - dermal	mg/kg-d	-	4.00E-04	1.56E-01	see Report
Teen	TRV - dermal	mg/kg-d	-	4.00E-04	1.42E-01	see Report
Child	TRV - dermal	mg/kg-d	-	4.00E-04	1.22E-01	see Report
Toddler	TRV - dermal	mg/kg-d	-	4.00E-04	1.36E-01	see Report
Elder	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Adult	Hazard quotient	-	-	0.047	0.000	=Total Intake by Dermal/ TRV - dermal
Teen	Hazard quotient	-	-	0.050	0.000	=Total Intake by Dermal/ TRV - dermal
Child	Hazard quotient	-	-	0.064	0.000	=Total Intake by Dermal/ TRV - dermal
Toddler	Hazard quotient	-	-	0.088	0.000	=Total Intake by Dermal/ TRV - dermal
	INCREMENTAL RISK LEVEL CALCULATIONS					
Elder	Total Intake by Ingestion	mg/kg-d	4.68E-05	1.21E-04	5.71E-02	calculated above
Adult	Total Intake by Ingestion	mg/kg-d	4.70E-05	1.21E-04	5.71E-02	calculated above
Teen	Total Intake by Ingestion	mg/kg-d	4.14E-05	1.43E-04	6.04E-02	calculated above
Child	Total Intake by Ingestion	mg/kg-d	2.17E-04	2.44E-04	8.91E-02	calculated above
Toddler	Total Intake by Ingestion	mg/kg-d	4.07E-04	3.75E-04	1.08E-01	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Ingestion	mg/kg-d	7.71E-05	1.45E-04	6.24E-02	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - ingestion	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - ingestion	-	1.39E-04	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
Elder	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Adult	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Teen	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Child	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Toddler	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Averaged Exposure Concentration	mg/m3	1.50E-07	2.30E-06	0.00E+00	=(avg conc elder x elder yrs + avg conc adult x adult yrs + avg conc teen x teen yrs + avg conc child x child yrs + avg conc

Sample Calculation		Units	Incremental Arsenic	Antimony	Manganese	Notes
						toddler x toddler yrs)/total yrs
Lifetime	Slope Factor - inhalation	1/(mg/m3)	6.40E+00	-	-	see Report
Lifetime	Incremental risk - inhalation	-	9.60E-07	-	-	=Lifetime Avg Conc x Slope Factor - inhalation
Elder	Total Intake by Dermal	mg/kg-d	1.82E-05	1.88E-05	1.05E-06	calculated above
Adult	Total Intake by Dermal	mg/kg-d	1.82E-05	1.88E-05	1.05E-06	calculated above
Teen	Total Intake by Dermal	mg/kg-d	1.93E-05	1.99E-05	1.11E-06	calculated above
Child	Total Intake by Dermal	mg/kg-d	4.17E-05	2.56E-05	1.42E-06	calculated above
Toddler	Total Intake by Dermal	mg/kg-d	5.60E-05	3.52E-05	1.95E-06	calculated above
Elder	Years of lifestage	yr				10
Adult	Years of lifestage	yr				52
Teen	Years of lifestage	yr				8
Child	Years of lifestage	yr				6
Toddler	Years of lifestage	yr				4
Lifetime	Intake by Dermal	mg/kg-d	2.20E-05	2.03E-05	1.13E-06	=(elder intake x elder yrs + adult intake x adult yrs + teen intake x teen yrs + child intake x child yrs + toddler intake x toddler yrs)/total yrs
Lifetime	Slope Factor - dermal	1/(mg/kg-d)	1.80E+00	-	-	see Report
Lifetime	Incremental risk - dermal	-	3.96E-05	-	-	=Lifetime Intake by Ingestion x Slope Factor - ingestion
	TOTALS					
Elder	Total Hazard Quotient	-	-	0.362	0.366	=HQ-ing + HQ-inh + HQ-derm
Adult	Total Hazard Quotient	-	-	0.362	0.366	=HQ-ing + HQ-inh + HQ-derm
Teen	Total Hazard Quotient	-	-	0.419	0.425	=HQ-ing + HQ-inh + HQ-derm
Child	Total Hazard Quotient	-	-	0.686	0.730	=HQ-ing + HQ-inh + HQ-derm
Toddler	Total Hazard Quotient	-	-	1.038	0.797	=HQ-ing + HQ-inh + HQ-derm
Lifetime	Total Risk	-	1.79E-04	-	-	=Risk-ing + Risk-inh + Risk-derm

APPENDIX J

ECOLOGICAL RECEPTOR SELECTION AND DETAILED PROFILES

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APPENDIX J: ECOLOGICAL RECEPTOR SELECTION AND DETAILED PROFILES

J.1 Ecological Receptor Selection

J.1.1 Background

A migratory bird survey was conducted between May and October 2004 on site by Cyngus Environmental (2005). A total of 89 species were detected. These surveys indicated that disturbed tailings areas and associated water bodies were not used extensively by waterfowl, likely due to the ample selection of undisturbed water bodies adjacent to the site (Golder 2016). Birds observed nesting on buildings at the site include barn swallow (*Hirundo rustica*), great horned owl (*Bubo virginianus*), cliff swallow (*Petrochelidon pyrrhonota*), American kestrel (*Falco sparverius*), osprey (*Pandion haliaetus*), northern flicker (*Colaptes auratus*), eastern phoebe (*Sayornis phoebe*), and common raven (*Corvus corax*) (Cygnus Environmental 2005; Golder 2012, 2013a, 2015, 2016).

Golder (2016) identified six avian species of concern with ranges that are known to overlap or potentially overlap with Yellowknife: short-eared owl (*Asio flammeus*), common nighthawk (*Chordeiles minor*), olive-sided flycatcher (*Contopus cooperi*), rusty blackbird (*Euphagus carolinus*), barn swallow (*Hirundo rustica*), horned grebe (*Podiceps auritus*). Short-eared owl, common nighthawk, olive-sided flycatcher and rusty blackbird have not been observed at the site during any of the surveys. Barn swallows are regularly present, and they are considered Threatened according to Committee on the Status of Endangered Wildlife in Canada (COSEWIC) but are not listed under the Species at Risk Act (SARA). The barn swallow has no status under the Northwest Territories (NWT) list of species at risk (ENR 2016). Horned grebes are present is small ponds and swamps of the Yellowknife area and were observed on the Mill Pond 11 in 2015. They are considered Special Concern under COSEWIC but are not listed under the SARA. The horned grebe has no status under the NWT list of species at risk (ENR 2016).

Based on the wildlife survey conducted at the site, coyote (*Canis latrans*), red fox (*Vulpes vulpes*), snowshoe hare (*Lepus americanus*), red squirrel (*Tamiasciurus hudsonicus*), ptarmigan (*Lagopus lagopus*), and small mammal species (mice, voles, shrews) are common on the Giant Mine.

The little brown bat (little brown myotis) (*Myotis lucifugus*) has been assessed as Endangered by COSEWIC but has not been assessed in the NWT (ENR 2016). In the

NWT, it has been found north and south of Great Slave Lake and in the Dehcho (ENR 2016); therefore, it may be potentially present at the Giant Mine. One other mammal of concern was identified as having a range that includes the Giant Mine is the wolverine (*Gulo gulo*). Wolverine has been identified as Special Concern under COSEWIC but is Not at Risk in the NWT (ENR 2016). Due to habitat requirements, the wolverine would not be expected to be present at the site.

J.1.2 Aquatic Receptors

The selection of the receptors to be included in the aquatic environment was based on an understanding of the Giant Mine as well as consideration of the previous assessments and discussions with stakeholders. Table J.1 provides the ecological receptors selected in the aquatic environment.

Table J.1 Ecological receptors selected for the aquatic environment

Aquatic Receptor Group	Aquatic Receptor Type	Selected Receptor
Water column organisms	Phytoplankton	Phytoplankton Community
	Zooplankton	Zooplankton Community
Benthic Invertebrates	Benthos Community	Benthic Invertebrate Infaunal Community
Fish	Benthivorous Planktivorous Piscivorous	Stickleback; Sculpin Arctic Grayling Northern Pike
Mammal	Herbivorous Insectivorous Piscivorous	Muskrat Bat (Little Brown Myotis) Mink
Bird	Herbivorous Insectivorous Piscivorous	Mallard Barn Swallow Horned Grebe, Osprey, Merganser

The aquatic biota were selected to be consistent with a previous assessment of Baker Creek (Golder 2013b). Amphibians and reptiles have not been observed at the site and were, therefore, not included in the assessment. This was discussed with Environment Canada and Climate Change (ECCC) and is consistent with the previous Golder (2013b) study.

Muskrat and mink were included as mammals with a diet primarily in the aquatic environment. The diet for these receptors includes a range of food species and, therefore, a separate omnivore was not identified.

The horned grebe was selected as it has been observed on the site and is a Special Concern under COSEWIC. It is a diving water bird that consumes aquatic insects and small fish.

The little brown bat and barn swallow both consume a diet of flying insects; benthic invertebrates comprise the larvae stage of many flying insects; thus, there is a connection between insectivores and the aquatic environment. The barn swallow was selected as it has been observed on the site and has been classified as Threatened under COSEWIC. It should be noted that since they build their nest almost exclusively on manmade buildings, they may not be present in the future with the same frequency as currently observed, but are included to represent insectivorous birds. Little brown bats may be present in the area and have been classified as Endangered under COSEWIC.

The osprey was included as a piscivorous bird. In addition, two ducks were included: a mallard (*Anas platyrhynchos*) that primarily consumes seeds and aquatic vegetation and a merganser (*Mergus merganser*) that consumes fish. The merganser was included, as the home range is much smaller than an osprey.

J.1.3 Terrestrial Receptors

The selection of the receptors to be included in the terrestrial environment was based on an understanding of the Giant Mine and with consideration of the previous assessments and discussions with stakeholders. The results of the previous ecological risk assessment (ERA) determined that large mammals were not at risk from exposure at the Giant Mine due to their wide home range. Therefore, the focus of this ERA is on mammals and birds with small home ranges. Table J.2 provides the ecological receptors selected for the terrestrial environment.

Table J.2 Ecological receptors selected for the terrestrial environment

Terrestrial Receptor Group	Terrestrial Receptor Type	Selected Receptor
Vegetation	Vegetation Community	Vegetation Community
Mammal	Herbivorous Insectivorous Carnivorous Omnivorous	Deer Mouse, Snowshoe Hare Bat (Little Brown Myotis), Masked Shrew Lynx Fox
Bird	Herbivorous Insectivorous Carnivorous	Willow Ptarmigan Barn Swallow Peregrine Falcon, Great Horned Owl

The deer mouse, masked shrew, snowshoe hare, great horned owl, fox, ptarmigan, and lynx have been observed on the Giant Mine. Consideration was given to include an omnivorous bird, but it was determined that this would not add any additional information, considering the range of receptors identified (i.e., robin has a similar home range as the herbivorous and insectivorous bird identified, and the diet is bounded by these receptors).

Consideration was also given to identifying invertebrates (i.e., ground-dwelling and aerial insects) as receptors for the terrestrial environment. Due to the bedrock outcroppings and climatic conditions, ground-dwelling invertebrates such as earthworms are not present in this location.

A bat species was chosen because the range includes the Giant Mine and the little brown myotis (*Myotis lucifugus*) has been identified as Endangered under COSEWIC. White nose fungus, which is the cause of the decline in bat populations across Canada, has not yet been found in the NWT (ENR 2016).

The barn swallow was selected as it has been observed on the site and has also been classified as Threatened under COSEWIC. It should be noted that, since they build their nests almost exclusively on man-made buildings, they may not be present in the future with the same frequency as currently observed as there will be minimal buildings on site; nonetheless, the barn swallow is included to represent insectivorous birds.

The peregrine falcon was included as a receptor. It has not been observed at the site but has the potential to be present. It was included in the Developer's Assessment Report (DAR; INAC/GNWT 2010) at the request of the Review Board. They are considered Special Concern under COSEWIC but are not listed under the SARA and have no status under the NWT list of species at risk (ENR 2016).

J.2 Receptor Exposure Pathways and Characteristics

The receptors selected cover a range of diets and trophic levels. Table J.3 summarizes the pathways of exposure that are considered for each of the receptors.

It should be noted that dermal exposure and inhalation are two pathways that are considered complete but will not be included in the ERA. Dermal exposure (direct contact with soil and sediment and transfer through the skin) for mammals and birds is usually considered to be insignificant, as the feathers of birds and fur on mammals reduce dermal exposure by limiting the contact of the skin surface with the contaminated media (U.S. EPA 2003). With respect to inhalation, none of the contaminants are volatile; however, there could be wind-blown dust. This exposure is expected to be much lower than those from other pathways such as food ingestion and is typically not included in ERAs (FCSAP 2012).

Table J.3 Exposure pathways for the selected receptors

Group	Receptor	Direct Contact (water)	Direct Contact (sediment or soil)	Water Ingestion	Sediment Ingestion	Soil Ingestion	Ingestion of Food	Food items
Water column organisms	Phytoplankton community	✓						
	Zooplankton community	✓						
Benthic invertebrates	Benthic invertebrate community	○	✓					
Vegetation	Vegetation community		✓					
Fish	Small-bodied resident fish (stickleback, sculpin)	✓	✓		○		○	
	Large-bodied fish (arctic grayling, northern pike)	✓			○		○	
Mammals	Muskrat			✓	✓		✓	Benthic invertebrate Aquatic plant
	Mink			✓	✓		✓	Fish Benthic invertebrate Small mammals / birds
	Masked Shrew			✓		✓	✓	Insects, Vegetation
	Snowshoe Hare			✓		✓	✓	Vegetation
	Deer Mouse			✓		✓	✓	Vegetation, Insects
	Bat*			✓		✓	✓	Insects
	Lynx			✓		✓	✓	Small mammals / birds Moose Caribou
	Fox			✓		✓	✓	Vegetation Small mammals / birds Invertebrates
Birds	Mallard			✓	✓		✓	Benthic invertebrate Aquatic plant
	Horned Grebe			✓	✓		✓	Benthic invertebrate Fish
	Barn Swallow*			✓		✓	✓	Insects
	Great Horned Owl			✓		✓	✓	Small mammals / birds
	Osprey			✓	✓		✓	Fish
	Merganser			✓	✓		✓	Benthic invertebrate Aquatic plant Fish
	Willow ptarmigan			✓		✓	✓	Vegetation
	Peregrine Falcon			✓		✓	✓	Small mammals / birds

Notes: Direct contact with water includes absorption and uptake across surface membranes/gills, ingestion, as well as indirect pathways such as food.
Direct contact with sediment includes absorption and uptake across surface membranes, ingestion, as well as indirect pathways such as food.
* Included in both the aquatic and terrestrial environments; ○ Pathway of exposure implicitly included in the assessment.
✓ Pathway of exposure explicitly included in the assessment.

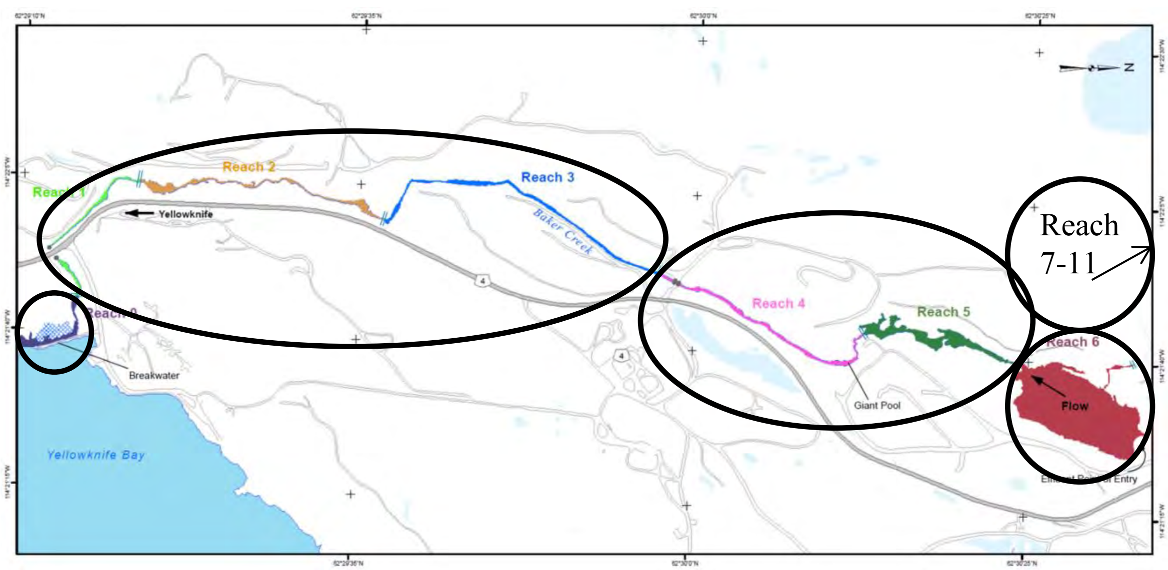
Section J.4 provides a summary of the receptor characteristics, including, for example, body weight, amount of food consumed, and diet composition. These were taken from FCSAP guidance where available, augmented by other literature as required.

J.3 Receptor Exposure Locations

The available data was divided into different segments of the site. For Baker Creek, five different segments were defined as shown in Figure J.1:

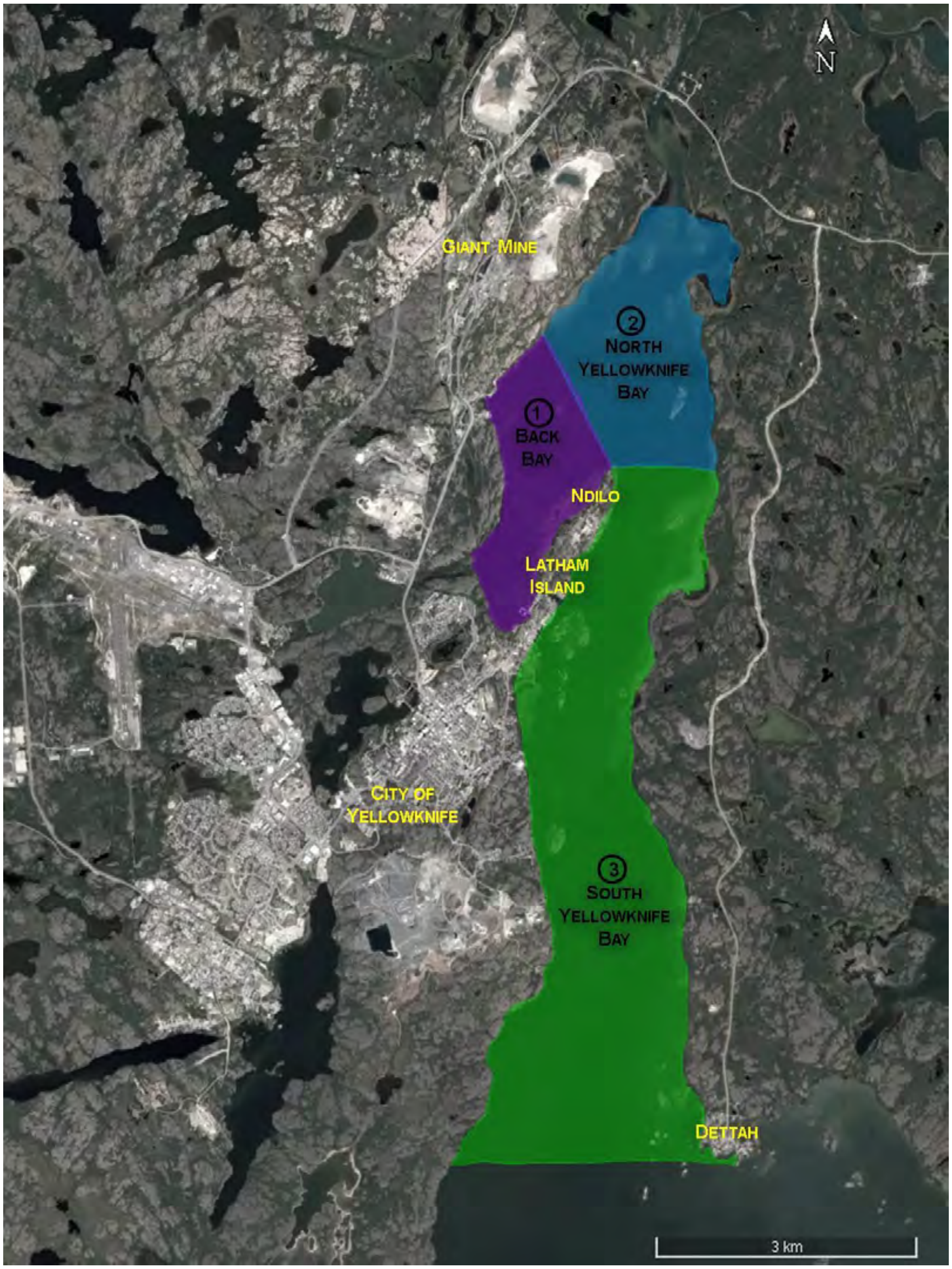
- Reach 0
- Reach 1-3
- Reach 4-5
- Reach 6
- Reach 7-11

Figure J.1 Segments of Baker Creek



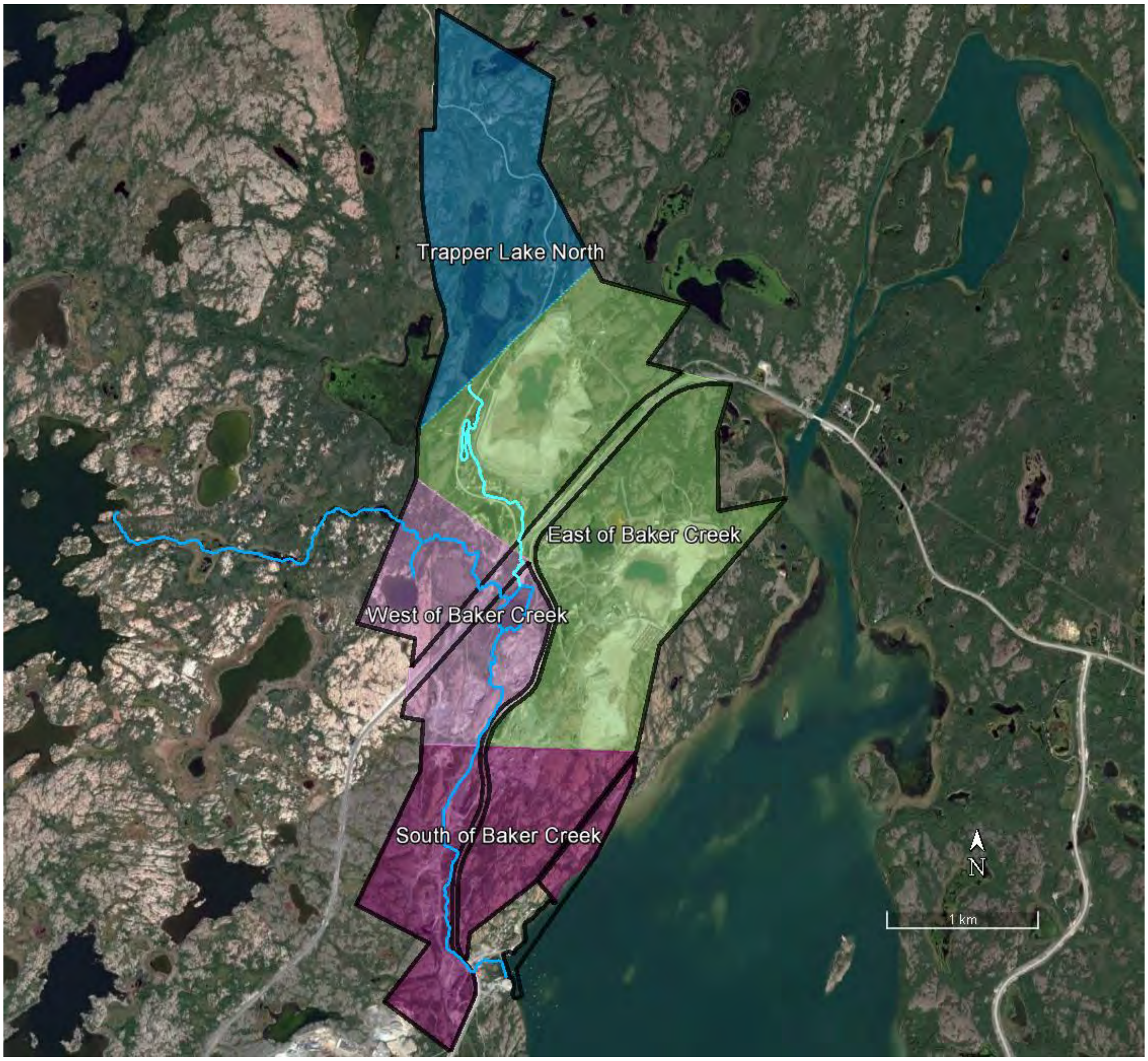
Yellowknife Bay was divided into three large segments as shown in Figure J.2. The assessment will focus on Back Bay section of Yellowknife Bay. This location is immediately downstream of Baker Creek and will receive the treatment plant effluent once the discharge location is moved.

Figure J.2 Segments of Yellowknife Bay



The on-site terrestrial environment of the Giant Mine Site was divided into four quadrants, as shown in Figure J.3.

Figure J.3 Terrestrial on-site quadrants considered for ERA



The selection of the location for the terrestrial receptors considers the habitat and use of the site as well as the foraging area of each receptor. Golder (2016) has indicated that Yellowknife is located in Nesting Zone C8, where nesting extends from May 8th through August 11th. For migratory species, although they are only present in the study area for part of the year, the fraction of time at site is assumed to be 1.0 for the purposes of the ERA, since the receptor is assumed to be present for a sufficient time on the Giant Mine such that effects could be realized.

A summary of selected locations for ecological receptors is provided in Table J.4 along with the amount of time spent at each location.

Table J.4 Locations assessed for ecological receptors

Receptor	Foraging Area (km^2) [(a)]	Locations [(b)]	Rationale
Aquatic Environment			
Phytoplankton community	NA	• Each segment of Baker Creek • Back Bay of Yellowknife Bay	Phytoplankton present in all locations.
Zooplankton community	NA	• Each segment of Baker Creek • Back Bay of Yellowknife Bay	Zooplankton present in all locations.
Benthic invertebrate community	NA	• Each segment of Baker Creek • Back Bay of Yellowknife Bay	Benthic invertebrates present in all locations.
Small-bodied resident fish (stickleback, sculpin)	NA	• Baker Creek • Back Bay of Yellowknife Bay	Fish can move throughout Baker Creek. Although Golder (2013b) indicate that small-bodied sentinel species have only been observed in Reach 0.
Large-bodied fish (arctic grayling, northern pike)	NA	• Baker Creek • Back Bay of Yellowknife Bay	Fish can move throughout Baker Creek.
Muskrat	< 0.001 to 0.008	• Each segment of Baker Creek • Back Bay of Yellowknife Bay	Small home range, assumed to be present at all locations.
Mink	0.06 to 16.3	• Baker Creek • Back Bay of Yellowknife Bay	Due to mid-sized home range evaluate on lower reaches of Baker Creek and on Back Bay.
Bat	0.3 - 1.4	• Baker Creek • Back Bay of Yellowknife Bay	Due to mid-sized home range evaluate on lower reaches of Baker Creek and on Back Bay.
Mallard	0.09 to 2.4	• Baker Creek • Back Bay of Yellowknife Bay	Due to mid-sized home range evaluate on lower reaches of Baker Creek and on Back Bay.
Horned Grebe	–	• Baker Creek • Back Bay of Yellowknife Bay	Due to mid-sized home range evaluate on lower reaches of Baker Creek and on Back Bay.
Barn Swallow	0.8 to 4.5	• Baker Creek • Back Bay of Yellowknife Bay	Due to mid-sized home range evaluate on lower reaches of Baker Creek and on Back Bay.
Osprey	1.7 to 10	• Baker Creek / Back Bay	Larger home range; will obtain food from a wider area.
Merganser	0.04 to 13.9	• Baker Creek • Back Bay of Yellowknife Bay	Due to mid-sized home range evaluate on lower reaches of Baker Creek and on Back Bay.
Terrestrial Environment			
Vegetation	NA	• Each quadrant of the site	Terrestrial vegetation present in all locations.
Deer Mouse	0.0001 to 0.004	• Each quadrant of the site	Small home range, assumed to be present at all locations.
Masked Shrew	0.006	• Each quadrant of the site	Small home range, assumed to be present at all locations.

Receptor	Foraging Area (km^2) [(a)]	Locations [(b)]	Rationale
Snowshoe Hare	0.016 to 0.1	• Each quadrant of the site	Small home range, assumed to be present at all locations.
Bat	0.3 - 1.4	• Each quadrant of the site	Mid-sized home range, assumed to be present at all locations.
Lynx	11 to 300	• Site-wide	Large home range. Assume half of exposure from site and half from other background sources.
Fox	2.8 to 34.2	• Site-wide	Due to mid-sized home range evaluate on a site-wide basis.
Willow Ptarmigan	0.067 to 0.079	• Each quadrant of the site	Small home range, assumed to be present at all locations.
Barn Swallow	0.8 to 4.5	• Each quadrant of the site	Mid-sized home range, assumed to be present at all locations.
Great Horned Owl	8 to 10	• Site-wide	Due to mid-sized home range evaluate on a site-wide basis.
Peregrine falcon	78 (16 to 1,508)	• Site-wide	Large home range. Assume half of exposure from site and half from other background sources.

Note: NA – Not Applicable.
a See Section J.4 for details.
b Details on how the exposure estimates were derived are provided in Appendix K.

J.4 Detailed Ecological Receptor Profiles

Table J.5 Little brown bat receptor characteristics

Parameter	Units	Value	Reference and Discussion
Characteristics:			
Body weight	kg	0.01	According to Havens (2006), little brown bat range from 5 g to 14 g body weight (0.005 kg to 0.014 kg).
Water ingestion rate	m^3/d	1.5×10^{-6}	Based on U.S. EPA (1993) allometric equation for mammals.
Food ingestion rate – dry weight basis	g (dw)/d	1.5	Based on U.S. EPA (1993) allometric equation for all mammals.
Food ingestion rate – wet weight basis	g (ww)/d	3.8	Applies an assumed moisture content of 60% for food to the dry weight food ingestion rate.
Sediment ingestion rate	g (dw)/d	0	Not considered based on feeding habits.
Soil ingestion rate	g (dw)/d	0.03	Based on generic soil ingestion rate for mammals (2% of a dry weight diet)
Foraging range	km^2	0.3 - 1.4	Little brown bats travel several kilometers between day roosts and feeding sites (Havens 2006). According to COSEWIC (2013), little brown bats forage within small (< 2 km^2) area. The home range of pregnant little brown bats in Quebec was 30 ha (0.3 km^2) (Henry et al. 2002). The mean home range area was 143 ha for bats in New York.
Diet Composition:			
Insects	–	1.0	Little brown bats feed largely on aquatic insects, including midges, caddisflies, moths, mayflies, lacewings, and occasionally mosquitoes (Havens 2006).

References:

Beyer, W.N., E.E. Connor, S. Gerould. 1994. Estimates of soil ingestion by wildlife. The Journal of Wildlife Management, Vol. 58, No.2 (April), pp. 375-382.

Committee on the Status of Endangered Wildlife in Canada (COSEWIC). 2013. Assessment and status report on the little brown myotis (*Myotis lucifugus*), northern myotis (*Myotis septentrionalis*), and tri-colored bat (*Perimyotis subflavus*) in Canada.

Havens, A. 2006. "*Myotis lucifugus*," Animal Diversity Web. http://animaldiversity.org/accounts/Myotis_lucifugus/. Accessed March 21st, 2016.

Henry, M., D.W. Thomas, R. Vaudry, and M. Carrier. 2002 Foraging distances and home range of pregnant and lactating little brown bats (*Myotis Lucifugus*). J Mammal (2002) 83 (3): 767-774.

United States Environmental Protection Agency (U.S. EPA). 1993. Wildlife exposure factors handbook. Volume I of II. Office of Research and Development. EPA/600/R-93/187. December.

Table J.6 Peregrine falcon receptor characteristics

Parameter	Units	Value	Reference and Discussion
Characteristics			
Body weight	kg	0.815	Average value from EC (2012), based on Court et al. (1988), with range of 0.652 kg to 0.977 kg.
Water ingestion rate	m^3/d	5.1×10^{-5}	Based on U.S. EPA (1993) allometric equation for birds (consistent with EC 2012 approach).
Food ingestion rate – dry weight basis	g (dw)/d	49	Based on EC (2012) (in U.S. EPA 1993) – 0.06 kg dry food/kg BW/day.
Food ingestion rate – wet weight basis	g (ww)/d	163	Calculated using an assumed moisture content of 70% for birds and mammals.
Sediment ingestion rate	g (dw)/d	0	Not considered based on feeding habits.
Soil ingestion rate	g (dw)/d	0.98	EC (2012) did not identify an incidental soil ingestion rate specifically for falcon, but recommended a default value of 2%.
Foraging range	km^2	16 to 1,508	Range from EC (2012). Believed to largely forage within 5 km of breeding sites or within 78.5 km^2 area.
Diet Composition:			
Ptarmigan	–	0.90	According to EC (2012), the peregrine falcon is a hunting carnivore. Birds are the most common prey species (consumed 77 to 99% of the time). Consistent with EC (2012), 10% of the diet is attributed to small mammals.
Mice	–	0.10	

References:

Court, G.S., D.M. Bradley, C.C. Gates, and D.A. Bong. 1988. The population biology of peregrine falcons in the Keewatin District of the Northwest Territories, Canada. Pages 729-739 Cited in Peregrine Falcon Populations: Their Management and Recovery (Cade, T.J., J.H. Enderson, C.G. Thelander and C.M. White, Eds.) The Peregrine Fund Inc. Boise, Idaho.

Environment Canada (EC). 2012. Federal Contaminated Sites Action Plan (FCSAP) ecological risk assessment guidance. Module 3: Standardization of wildlife receptor characteristics. Prepared by Azimuth Consulting Group. March.

United States Environmental Protection Agency (U.S. EPA). 1993. Wildlife exposure factors Handbook. Volume I of II. Office of Research and Development. EPA/600/R-93/187. December.

Table J.7 Red fox receptor characteristics

Parameter	Units	Value	Reference and Discussion
Characteristics			
Body weight	kg	3.8	Average value from EC (2012), with range of 3.4 kg to 4.1 kg.
Water ingestion rate	m^3/d	3.3×10^{-4}	Based on U.S. EPA (1993) allometric equation for mammals (consistent with EC 2012 approach).
Food ingestion rate – dry weight basis	g (dw)/d	100	Calculated using the ww consumption rate in EC (2012) and an assumed moisture content of 70%.
Food ingestion rate – wet weight basis	g (ww)/d	340	Based on EC (2012) for adults in captivity (in U.S. EPA 1993) – 0.09 kg wet food/kg BW/day.
Sediment ingestion rate	g (dw)/d	0	Not considered based on feeding habits
Soil ingestion rate	g (dw)/d	2.9	Based on EC (2012), using a 2.8% of dry weight food ingestion from Beyer et al. (1994).
Foraging range	km^2	2.8 to 34.2	Varies depending on season and location; range from EC (2012).
Diet Composition:			
Fruits and flowers	–	0.15	The fox is an omnivore, and primarily consumes small rodents, rabbits, and birds, with the addition of fruits and berries in the summer (EC 2012). Diet composition is consistent with EC (2012), with small mammals (40%) attributed equally to mice and hare, invertebrates (25%) attributed to insects, birds (20%) attributed to ptarmigan, and fruits and plant material (15%) attributed to fruits and flowers.
Insects	–	0.25	
Ptarmigan	–	0.2	
Hare	–	0.2	
Mice	–	0.2	

References:

Environment Canada (EC). 2012. Federal Contaminated Sites Action Plan (FCSAP) Ecological risk assessment guidance. Module 3: Standardization of wildlife receptor characteristics. Prepared by Azimuth Consulting Group. March.

United States Environmental Protection Agency (U.S. EPA). 1993. Wildlife exposure factors handbook. Volume I of II. Office of Research and Development. EPA/600/R-93/187. December.

Table J.8 Horned grebe receptor characteristics

Parameter	Units	Value	Reference and Discussion
Characteristics:			
Body weight	kg	0.44	According to Cornell Lab of Ornithology (2015), horned grebe range from 300 g to 570 g (0.3 kg to 0.57 kg) body weight. COSEWIC (2009) is consistent with this information.
Water ingestion rate	m^3/d	3.4×10^{-5}	Based on U.S. EPA (1993) allometric equation for birds (consistent with EC 2012 approach).
Food ingestion rate – dry weight basis	g (dw)/d	34	Based on U.S. EPA (1993) allometric equation for all birds (consistent with EC 2012 approach).
Food ingestion rate – wet weight basis	g (ww)/d	170	Applies an assumed moisture content of 80% for food to the dry weight food ingestion rate.
Sediment ingestion rate	g (dw)/d	1.6	Based on Beyer et al. (1994) for average duck species of 4.6% of dry weight food ingestion; distribution defined by range of body weights.
Soil ingestion rate	g (dw)/d	0	Not considered based on feeding habits.
Foraging range	km^2	No information available	
Diet Composition:			
Fish	–	0.1	The Horned Grebe is a diver that catches and eats most of its prey underwater (COSEWIC 2009). According to Cornell Lab of Ornithology (2015), aquatic insects, fish, crustaceans, and other small aquatic animals are the primary dietary components. According to Stedman (2000), they feed largely on aquatic arthropods during the breeding season, but their diet also includes fish, small frogs, salamanders and tadpoles. They will also pick insects from the water surface and aquatic plants.
Benthic invertebrates	–	0.9	

References:

Beyer, W.N., E.E. Connor, and S. Gerould. 1994. Estimates of soil ingestion by wildlife. The Journal of Wildlife Management, Vol. 58, No.2 (April), pp. 375-382.

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Environment Canada (EC). 2012. Federal Contaminated Sites Action Plan (FCSAP) ecological risk assessment guidance. Module 3: Standardization of wildlife receptor characteristics. Prepared by Azimuth Consulting Group. March.

Stedman, S. 2000. Horned grebe (*Podiceps auritus*). A Poole, F Gill, eds. The Birds of North America, Vol. 505. Philadelphia, PA: The Birds of North America, Inc.

United States Environmental Protection Agency (U.S. EPA). 1993. Wildlife exposure factors handbook. Volume I of II. Office of Research and Development. EPA/600/R-93/187. December.

Table J.9 Snowshoe hare receptor characteristics

Parameter	Units	Value	Reference and Discussion
Characteristics:			
Body weight	kg	1.3	Average value from EC (2012), with range of 0.9 kg to 1.9 kg.
Water ingestion rate	m^3/d	1.3×10^{-4}	Based on U.S. EPA (1993) allometric equation for mammals (consistent with EC 2012 approach).
Food ingestion rate – dry weight basis	g (dw)/d	82	Based on EC (2012) for adults (both sexes) with a mixed diet of browse and commercial rabbit pellets – 0.06 kg dry food/kg BW/day.
Food ingestion rate – wet weight basis	g (ww)/d	270	Applies an assumed moisture content of 70% for food to the dry weight food ingestion rate.
Sediment ingestion rate	g (dw)/d	0	Not considered based on feeding habits.
Soil ingestion rate	g (dw)/d	5.2	Consistent with EC (2012), based on U.S. EPA (1993) value for jackrabbit of 6.3% dry weight food ingestion.
Foraging range	km^2	0.016 to 0.1	Based on EC (2012).
Diet Composition:			
Foliage	–	0.3	Consistent with the dietary properties in EC (2012), with grasses (30%) attributed to foliage, shrubs (60%) attributed to woody vegetation, and berries (10%) attributed to fruits and flowers.
Woody vegetation	–	0.6	
Fruits and flowers	–	0.1	

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Table J.10 Canada lynx receptor characteristics

Parameter	Units	Value	Reference and Discussion
Characteristics:			
Body weight	kg	11	According to CWF (2016), lynx range from 8 kg to 14 kg body weight.
Water ingestion rate	m^3/d	8.6×10^{-4}	Based on U.S. EPA (1993) allometric equation for mammals.
Food ingestion rate – dry weight basis	g (dw)/d	4.9×10^{2}	Based on U.S. EPA (1993) allometric equation for all mammals.
Food ingestion rate – wet weight basis	g (ww)/d	1.6×10^{3}	Applies an assumed moisture content of 70% for food to the dry weight food ingestion rate.
Sediment ingestion rate	g (dw)/d	0	Not considered based on feeding habits.
Soil ingestion rate	g (dw)/d	13.8	Based Beyer et al. (1994) value for red fox of 2.8% of dry weight food ingestion.
Foraging range	km^2	11 to 300	Home ranges are larger in summer than winter (CWF 2016). Fox and Murphy (2002) provide a home range of 11 to 300 km^2.
Diet Composition:			
Hare	–	0.75	Snowshoe hare comprise more than 75% of the winter diet for the lynx, and continue to be the main part of the diet during summer months, with additional supplementation from grouse, voles, mice, squirrels, and fox (CWF 2016). Carrion is also a component of the lynx diet (CWF 2016).
Ptarmigan	–	0.09	
Moose	–	0.08	
Caribou	–	0.08	

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Table J.11 Mallard receptor characteristics

Parameter	Units	Value	Reference and Discussion
Characteristics:			
Body weight	kg	1.2	Average value from EC (2012), based on Bellrose (1976), with range of 0.5 kg to 1.7 kg.
Water ingestion rate	m^3/d	6.3×10^{-5}	Based on U.S. EPA (1993) allometric equation for birds (consistent with EC 2012 approach.
Food ingestion rate – dry weight basis	g (dw)/d	62	Based on U.S. EPA (1993) allometric equation for all birds (consistent with EC 2012 approach.
Food ingestion rate – wet weight basis	g (ww)/d	308	Applies an assumed moisture content of 80% for food to the dry weight food ingestion rate.
Sediment ingestion rate	g (dw)/d	2	Based on Beyer et al. (1994) for mallard 3.3% of dry weight food ingestion; distribution defined by range of body weights (0.5 kg to 1.7 kg) provided in EC (2012). EC (2012) provides an incidental sediment ingestion rate of 2.0-3.3% of dry food ingestion, based on Beyer et al. (1994) and U.S. EPA (1993).
Soil ingestion rate	g (dw)/d	0	Not considered based on feeding habits
Foraging range	km^2	0.09 to 2.4	EC (2012).
Diet Composition:			
Aquatic vegetation	–	0.25	Mallard are dabbling ducks, feeding at or just below the surface of the water. According to EC (2012), laying females consume more animal food (72%) than males and non-laying females. In winter, there is a shift to more green vegetation. Seasonal dietary characteristics provided in U.S. EPA (1993) also illustrate this pattern. Since mallard are assumed to be in the area during the summer breeding season, the diet was assumed to be comprised primarily of benthic invertebrates, which is consistent with the summer season diet in U.S. EPA (1993).
Benthic invertebrates	–	0.75	

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Table J.12 Common merganser receptor characteristics

Parameter	Units	Value	Reference and Discussion
Characteristics			
Body weight	kg	1.5	Average value provided by EC (2012); range of 0.9 kg to 2.2 kg.
Water ingestion rate	m^3/d	7.8×10^{-5}	Based on U.S. EPA (1993) allometric equation for birds (consistent with EC 2012 approach.
Food ingestion rate – dry weight basis	g (dw)/d	76	Based on U.S. EPA (1993) allometric equation for all birds (consistent with EC 2012 approach.
Food ingestion rate – wet weight basis	g (ww)/d	380	Applies an assumed moisture content of 80% for food to the dry weight food ingestion rate.
Sediment ingestion rate	g (dw)/d	1.5	EC (2012) did not identify an incidental sediment ingestion rate for merganser. Based on Beyer et al. (1994) for blue-winged teal and ring-necked duck average value of 2% of dry weight food ingestion.
Soil ingestion rate	g (dw)/d	0	Not considered based on feeding habits.
Foraging range	km^2	0.04 to 13.9	Habitat size is variable based on season, location, and habitat suitability (EC 2012).
Diet Composition:			
Fish	–	0.9	Common mergansers are piscivorous birds, primarily consuming fish. According to EC (2012), they will occasionally eat aquatic invertebrates, frogs, small mammals, birds, and plants. The diet composition is consistent with EC (2012).
Aquatic vegetation	–	0.02	
Benthic invertebrates	–	0.08	

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Table J.13 American mink receptor characteristics

Parameter	Units	Value	Reference and Discussion
Characteristics:			
Body weight	kg	0.82	Average value from EC (2012), with range of 0.57 kg to 1.1 kg.
Water ingestion rate	m^3/d	2.5×10^{-5}	Consistent with EC (2012), based on an adult farm raised female (in U.S. EPA 1993) – 0.03 L/kg BW/day.
Food ingestion rate – dry weight basis	g (dw)/d	39	Calculated using the ww consumption rate in EC (2012) and the 66.2%moisture content of feed specified for the study in U.S. EPA (1993).
Food ingestion rate – wet weight basis	g (ww)/d	116	Based on EC (2012) from the average of farm raised adults (both sexes) (in U.S. EPA 1993) – 0.14 kg wet food/kg BW/day.
Sediment ingestion rate	g (dw)/d	1.9	EC (2012) did not identify an incidental sediment ingestion rate for mink. Based on Beyer et al. (1994) average value for all mammals of 4.8% dry weight food ingestion; distribution defined by range of body weights (0.57 kg to 1.1 kg) provided in EC (2012).
Soil ingestion rate	g (dw)/d	0	Not considered based on feeding habits
Foraging range	km^2	0.06 to 16.3	Based on EC (2012), range is based on adult females and adult males.
Diet Composition:			
Fish	–	0.4	According to EC (2012), the mink diet consists of invertebrates, amphibians, fish, waterfowl and their eggs, mice, voles, rabbits, snakes and aquatic invertebrates. Diet composition is consistent with the dietary properties in EC (2012), with amphibians (10%) attributed to fish (30%), small mammals/birds (25%) attributed to mice, and insects (10%) and crustaceans (25%) attributed to benthic invertebrates.
Mice	–	0.25	
Benthic invertebrates	–	0.35	

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Table J.14 Deer mouse receptor characteristics

Parameter	Units	Value	Reference and Discussion
Characteristics:			
Body weight	kg	0.0217	Average value from EC (2012), with range of 15 g to 41.8 g.
Water ingestion rate	m^3/d	4.1×10^{-6}	EC 2012 provides a rate of 0.19 L / kg BW / d for adults, both sexes.
Food ingestion rate – dry weight basis	g (dw)/d	1.8	Calculated using the ww consumption rate in EC (2012) and an assumed moisture content of 70%.
Food ingestion rate – wet weight basis	g (ww)/d	5.9	EC (2012) provides a rate of 0.27 kg wet food / kg BW / d based on an average of 6 food ingestion rates for adults, both sexes.
Sediment ingestion rate	g (dw)/d	0	Not considered based on feeding habits.
Soil ingestion rate	g (dw)/d	0.04	Based on EC (2012), where it is specified as <2% of dry weight food ingestion.
Foraging range	km^2	0.00012 – 0.004	Varies depending food availability; range from EC (2012).
Diet Composition:			
Terrestrial insects	–	0.5	The deer mouse is omnivorous, feeding on seeds of trees, shrubs and grasses, a wide range of invertebrates, and occasionally fungi (EC 2012). Diet composition is consistent with EC (2012), with ground insects (45%), berries/seeds (30%) attributed to fruits and flowers, grasses (15%) attributed to foliage, mushrooms (5%) attributed to foliage and earthworms (5%) attributed to insects.
Fruits and flowers	–	0.3	
Foliage	–	0.2	

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Table J.15 Muskrat receptor characteristics

Parameter	Units	Value	Reference and Discussion
Characteristics			
Body weight	kg	1.0	Average value from EC (2012), with range of 0.5 kg to 2 kg (U.S. EPA 1993).
Water ingestion rate	m^3/d	1.1×10^{-4}	Based on U.S. EPA (1993) allometric equation for mammals (consistent with EC 2012 approach).
Food ingestion rate – dry weight basis	g (dw)/d	82	Based on EC (2012) from a study of captured males and females fed a natural diet – 0.07 kg dry food/kg BW/day.
Food ingestion rate – wet weight basis	g (ww)/d	410	Applies an assumed moisture content of 80% for food to the dry weight food ingestion rate.
Sediment ingestion rate	g (dw)/d	2.7	EC (2012) did not identify an incidental sediment ingestion rate for muskrat. Based on Beyer et al. (1994) value provided for mallard of 3.3% dry weight food ingestion, based on similar feeding habits.
Soil ingestion rate	g (dw)/d	0	Not considered based on feeding habits.
Foraging range	km^2	< 0.001 to 0.008	Based on EC (2012), range is variable depending on food availability.
Diet Composition:			
Aquatic vegetation	–	0.8	Consistent with the dietary properties in EC (2012), with other (fish, small animals/birds, salamanders, earthworms) 5% component attributed to benthic invertebrates.
Benthic invertebrates	–	0.2	

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Table J.16 Osprey receptor characteristics

Parameter	Units	Value	Reference and Discussion
Characteristics:			
Body weight	kg	1.7	According to Cornell Lab of Ornithology (2015), osprey range from 1400 g to 2000 g (1.4 kg to 2 kg) body weight. US EPA (1993) reports the weight as 1.2 to 1.9 kg.
Water ingestion rate	m^3/d	7.4×10^{-5}	Based on U.S. EPA (1993) allometric equation for birds (consistent with EC 2012 approach); distribution defined by range of body weights This is consistent with the relationship of 0.052 g/g-d (equivalent to 8.8×10^{-5} m^3/d at the average body weight) reported by U.S. EPA (1993).
Food ingestion rate – dry weight basis	g (dw)/d	72	Based on U.S. EPA (1993) allometric equation for all birds.
Food ingestion rate – wet weight basis	g (ww)/d	362	Applies an assumed moisture content of 80% for food to the dry weight food ingestion rate. This is consistent with the relationship of 0.21 g/g-d (equivalent to 357 g/d at the average body weight) reported by U.S. EPA (1993).
Sediment ingestion rate	g (dw)/d	1.4	Based on Beyer et al. (1994) for piscivorous avian species (ring-necked duck an blue-winged teal) of 2% of dry weight food ingestion
Soil ingestion rate	g (dw)/d	0	Not considered based on feeding habits.
Foraging range	km^2	1.7 - 10	U.S EPA (1993) reports a foraging radius of between 1.7 to 10 km.
Diet Composition:			
Fish	–	1.0	The Osprey is the only hawk on the continent that eats almost exclusively live fish (Cornell Lab of Ornithology 2015). This is consistent with US EPA (1993) that reports that osprey are almost completely piscivorous.

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Table J.17 Great horned owl receptor characteristics

Parameter	Units	Value	Reference and Discussion
Characteristics:			
Body weight	kg	1.5	According to CWF (1991), great horned owls body weight range from 1 kg to 1.5 kg for males up to 2 kg for females.
Water ingestion rate	m^3/d	7.7×10^{-5}	Based on U.S. EPA (1993) allometric equation for birds; distribution defined by range of body weights (1 kg to 2 kg) provided in CWF (1991).
Food ingestion rate – dry weight basis	g (dw)/d	75	Based on U.S. EPA (1993) allometric equation for all birds; distribution defined by range of body weights (1 kg to 2 kg) provided in CWF (1991).
Food ingestion rate – wet weight basis	g (ww)/d	250	Applies an assumed moisture content of 70% for food to the dry weight food ingestion rate.
Sediment ingestion rate	g (dw)/d	0	Not considered based on feeding habits.
Soil ingestion rate	g (dw)/d	5	Based on Beyer et al. (1994) for average for non-soil/sediment dwelling birds of 6.6% of dry weight food ingestion.
Foraging range	km^2	8 to 10	Based on CWF (1991).Great Horned Owls are found in all forested and semi-forested regions of North, Central, and South America; with no need to make seasonal migrations, these owls are year-round residents of limited hunting ranges of about 8 to 10 km^2 throughout their vast region.
Diet Composition:			
Ptarmigan	–	0.3	Great Horned Owl mainly depend on medium-sized mammals and birds, with rabbits and hares a staple part of the diet (CWF 1991).
Shrew	–	0.2	
Hare	–	0.3	
Mouse	–	0.2	

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Table J.18 Willow ptarmigan receptor characteristics

Parameter	Units	Value	Reference and Discussion
Characteristics:			
Body weight	kg	0.65	Willow ptarmigan range from 450 g to 800 g (0.45 kg to 0.80 kg) body weight (CWF 1994; Cornell Lab of Ornithology 2015).
Water ingestion rate	m^3/d	4.3×10^{-5}	Based on U.S. EPA (1993) allometric equation for birds.
Food ingestion rate – dry weight basis	g (dw)/d	43	Based on U.S. EPA (1993) allometric equation for all birds.
Food ingestion rate – wet weight basis	g (ww)/d	143	Applies an assumed moisture content of 70% for food to the dry weight food ingestion rate.
Sediment ingestion rate	g (dw)/d	0	Not considered based on feeding habits.
Soil ingestion rate	g (dw)/d	4.0	Based on Beyer et al. (1994) for turkey 9.3% of dry weight food ingestion.
Foraging range	km^2	0.067 to 0.079	According to CWF (1994), Willow Ptarmigans inhabit treeline areas, arctic valleys, and coastal tundra where vegetation is relatively lush and tall in summer. They like pond edges, streamside thickets, and marshy tundra, which they sometimes share with waterfowl and shorebirds. In late fall, ptarmigans seek more protected areas, moving down slopes or southward into the taller vegetation of dense shrubs and forested areas. Willow Ptarmigans may move well into the treed zone. The size of a willow ptarmigan's territory depends on availability of food and shelter and varies between breeding and winter seasons (Morland 2011). Foraging range is based on a Scandinavian study for males during the breeding season (Morland 2011).
Diet Composition:			
Fruits and flowers	–	0.35	Ptarmigans are foliage gleaners (Cornell Lab of Ornithology 2015). In summer, they sample leaves, buds, flowers, seeds, and berries and also consume mosses and insects and spiders when these are available; in winter they feed on buds, seeds, and twigs (CWF 1994). Dietary composition and breakdown is based on information for quail from U.S. EPA (1993).
Foliage	–	0.50	
Woody vegetation	–	0.15	

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Table J.19 Masked shrew receptor characteristics

Parameter	Units	Value	Reference and Discussion
Characteristics:			
Body weight	kg	0.004	Average value from EC (2012), with range of 2.5 g to 8 g (0.003 kg to 0.008 kg).
Water ingestion rate	m^3/d	8.3×10^{-7}	Based on U.S. EPA (1993) allometric equation for mammals (consistent with EC 2012 approach).
Food ingestion rate – dry weight basis	g (dw)/d	1.5	Consistent with EC (2012), based on U.S. EPA (1993) allometric equation for rodents.
Food ingestion rate – wet weight basis	g (ww)/d	5	Applies an assumed moisture content of 70% for food to the dry weight food ingestion rate.
Sediment ingestion rate	g (dw)/d	0	Not considered based on feeding habits.
Soil ingestion rate	g (dw)/d	0.036	EC (2012) did not identify an incidental sediment ingestion rate for shrew. Based on Beyer et al. (1994) value provided for meadow vole of 2.4% dry weight food ingestion, based on similar feeding habits.
Foraging range	km^2	0.006	Based on EC (2012).
Diet Composition:			
Terrestrial Insects	–	0.95	Consistent with the dietary properties in EC (2012), with insects and larvae (65%) grouped with slugs, snails, and earthworms (30%) attributed to terrestrial insects and other (amphibians, small mammals, vegetation) (5%) attributed to foliage.
Foliage	–	0.05	

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Table J.20 Barn swallow receptor characteristics

Parameter	Units	Value	Reference and Discussion
Characteristics:			
Body weight	kg	0.0187	Average value from EC (2012), based on Brown and Brown (1999), with range of 18.1 g.to 19.2 g.
Water ingestion rate	m^3/d	4.1×10^{-6}	Based on U.S. EPA (1993) allometric equation for birds (consistent with EC 2012 approach.
Food ingestion rate – dry weight basis	g (dw)/d	4.9	Based on U.S. EPA (1993) allometric equation for passerine birds.
Food ingestion rate – wet weight basis	g (ww)/d	12.3	Applies an assumed moisture content of 60% for food to the dry weight food ingestion rate.
Sediment ingestion rate	g (dw)/d	0	Not considered based on feeding habits
Soil ingestion rate	g (dw)/d	0.45	EC (2012) did not identify any soil ingestion rate. Value is based on Beyer et al. (1994) for turkey of 9.3% of dry weight food ingestion (expected to be conservative).
Foraging range	km^2	2	The barn swallow is migratory. The foraging range is from EC (2012) indicates and it is expected to forage between 0.5 km and 1.2 km linear distance from nest site.
Diet composition:			
Insects	–	1.0	As discussed in EC (2012) barn swallows are almost exclusively insectivorous, hawking insects (e.g., flies, moths, butterflies, dragonflies, and beetles) during flight over open land and water habitats Many of the insects hawked aerially may have had an aquatic life stage. Berries and seeds are only reported as being used occasionally (1%). The main insect groups are Diptera (COSEWIC 2011).

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APPENDIX K

ECOLOGICAL EXPOSURE ASSESSMENT

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K.1 Qualitative Assessment

K.1.1 Soil

The initial screen to identify constituents of potential concern (COPC) in soil for the ecological risk assessment (ERA) was described in detail in Appendix D. The result of the screening process for soils identified that, from consideration of all the soil data at the Giant Mine, antimony, arsenic, copper, lead, manganese, vanadium, and zinc were COPC.

To determine which COPC will be carried through for a more detailed evaluation, a qualitative assessment by comparing the measured concentrations of antimony, arsenic, copper, lead, manganese, vanadium, and zinc in each of the four quadrants of the site selected for assessment to the ecological component of the residential/parkland soil quality guidelines from the Canadian Council of Ministers of the Environment (CCME 2017). Since no specific ecological component value was available for antimony, the ecological component from the Ontario Ministry of the Environment and Climate Change (MOECC; formerly Ontario Ministry of the Environment [MOE]) for residential/parkland/institutional land use was used (MOE 2011); this value is consistent with the overall CCME soil quality guideline for antimony. The MOECC values are based on a similar land use and are derived in a comparable manner and are, therefore, deemed appropriate for use. No appropriate value was found for manganese. If the soil concentrations were below the ecological component of the guideline, the COPC was not considered further. A check was also made to background concentrations, and if the concentration was below background, then the COPC was not considered further. The development of background concentrations is discussed in Appendix C.

Since there is a large dataset of information (much greater than 10 samples), the 95% Upper Confidence Limit of the Mean (95% UCLM) was used in the qualitative assessment to represent a reasonable maximum exposure. The UCLM was obtained using ProUCL. ProUCL is a statistical program that provides 95% UCLM recommendations (based on data distribution, data set size, skewness, and percentage of non-detect observations) on how to obtain an accurate 95% UCLM. ProUCL may suggest more than one 95% UCLM estimate. It is noted that the CCME (2016) suggest that the BCA bootstrap approach from ProUCL can be used for the majority of datasets.

The summary statistics for the four quadrants are provided in the following tables (Table K.1 for Trapper Lake North, Table K.2 for West of Baker Creek, Table K.3 for East of Baker Creek, and Table K.4 for South Baker Creek).

Table K.1 Summary of concentrations of COPC in the soils in Trapper Lake North

COPC	N	N < MDL	Soil Concentration (mg/kg)								
			Min	Max	Avg.	SD	GM	95th Perc.	95% UCLM	Ecological Component [a]	Back
Antimony	61	0	0.94	165	29	31	18	92	36	20	2.2
Arsenic	66	0	35	3600	537	677	305	1475	667	17	94
Copper	58	0	2.46	310	54	67	31	201	92	63	31
Lead	58	9	2.3	420	23	54	12	43	54	300	21
Manganese	61	0	9	6000	781	1074	365	3400	1014	--	165
Vanadium	56	3	2.6	170	51	46	31	143	65	130	75
Zinc	58	0	6.7	250	78	62	57	202	94	200	137

Note: N – Number of samples; MDL – Method Detection Limit; Avg. – Arithmetic Average; GM – Geometric Mean; 95th Perc. – 95th percentile; UCLM – Upper Confidence Limit of Mean.

a – Ecological component of the Canadian Council of Ministers of the Environment (CCME 2017) residential/parkland land use guideline supplemented by the Ontario Ministry of the Environment and Climate Change (MOE 2011) soil quality guideline component if CCME value unavailable. The component values for antimony is from MOE (2011).

COPC in bold are where the 95% UCLM is above the ecological component value or there is no ecological component value.

Table K.2 Summary of concentrations of COPC in the soils in West of Baker Creek

COPC	N	N < MDL	Soil Concentration (mg/kg)								
			Min	Max	Avg.	SD	GM	95th Perc.	95% UCLM	Ecological Component [a]	Back
Antimony	109	4	0.79	1180	125	201	45	486	165	20	2.2
Arsenic	113	0	26	23100	1616	3129	638	5274	2519	17	94
Copper	106	0	4.03	1330	55	131	32	137	56	63	31
Lead	106	10	2.7	615	50	87	23	212	87	300	21
Manganese	109	0	7	4960	533	856	242	2082	807	--	165
Vanadium	80	6	5.0	96	34	21	26	79	38	130	75
Zinc	106	0	7.1	1130	91	127	61	208	100	200	137

Note: N – Number of samples; MDL – Method Detection Limit; Avg. – Arithmetic Average; GM – Geometric Mean; 95th Perc. – 95th percentile; UCLM – Upper Confidence Limit of Mean.

a – Ecological component of the Canadian Council of Ministers of the Environment (CCME 2017) residential/parkland land use guideline supplemented by the Ontario Ministry of the Environment and Climate Change (MOE 2011) soil quality guideline component if CCME value unavailable. The component values for antimony is from the MOE (2011).

COPC in bold are where the 95% UCLM is above the ecological component value or there is no ecological component value.

Table K.3 Summary of concentrations of COPC in the soils in East of Baker Creek

COPC	N	N < MDL	Soil Concentration (mg/kg)								
			Min	Max	Avg.	SD	GM	95th Perc.	95% UCLM	Ecological Component [a]	Back
Antimony	140	2	1.29	10700	230	995	47	491	306	20	2.2
Arsenic	180	0	18.3	87000	2347	6860	876	5618	4575	17	94
Copper	128	0	10.1	2543	136	352	61	385	271	63	31
Lead	123	8	1.7	860	77	115	34	299	122	300	21
Manganese	140	0	11	9500	849	1020	546	2273	1072	--	165
Vanadium	120	2	5	160	51	29	43	111	62	130	75
Zinc	128	0	17	1774	184	217	119	453	267	200	137

Note: N – Number of samples; MDL – Method Detection Limit; Avg. – Arithmetic Average; GM – Geometric Mean; 95th Perc. – 95th percentile; UCLM – Upper Confidence Limit of Mean.
a – Ecological component of the Canadian Council of Ministers of the Environment (CCME 2017) residential/parkland land use guideline supplemented by the Ontario Ministry of the Environment and Climate Change (MOE 2011) soil quality guideline component if CCME value unavailable. The component values for antimony is from the MOE (2011).
COPC in bold are where the 95% UCLM is above the ecological component value or there is no ecological component value.

Table K.4 Summary of concentrations of COPC in the soils in South Baker Creek

COPC	N	N < MDL	Soil Concentration (mg/kg)								
			Min	Max	Avg.	SD	GM	95th Perc.	95% UCLM	Ecological Component [a]	Back
Antimony	142	4	1.23	900	101	119	53	313	120	20	2.2
Arsenic	146	0	29.1	17000	2066	2801	876	7380	3519	17	94
Copper	138	0	8.46	432	77	71	54	202	104	63	31
Lead	128	12	5.0	280	51	53	31	179	62	300	21
Manganese	141	0	36.4	9400	960	1512	458	4600	1159	--	165
Vanadium	108	5	4.4	210	49	39	35	120	57	130	75
Zinc	138	3	7.5	800	119	113	87	323	133	200	137

Note: N – Number of samples; MDL – Method Detection Limit; Avg. – Arithmetic Average; GM – Geometric Mean; 95th Perc. – 95th percentile; UCLM – Upper Confidence Limit of Mean.
a – Ecological component of the Canadian Council of Ministers of the Environment (CCME 2017) residential/parkland land use guideline supplemented by the Ontario Ministry of the Environment and Climate Change (MOE 2011) soil quality guideline component if CCME value unavailable. The component values for antimony is from the MOE (2011).
COPC in bold are where the 95% UCLM is above the ecological component value.

The Federal Contaminated Sites Action Plan guidance manual (FCSAP 2012) supports the use of alternative statistics for assessment of mobile receptors and suggests the use of a maximum concentration as a conservative default for immobile receptors (such as vegetation). A 95% UCLM was used in the qualitative assessment as each of the quadrants is of sufficient size to support a population of receptors including vegetation and small mammals, and there is a significant amount of data available in each of the quadrants. In Trapper Lake North, there are approximately 60 samples; for the other quadrants, there are over 100 samples available. As seen from these tables, arsenic and antimony exceed the ecological component value in each of the quadrants. Manganese is also highlighted in each of the quadrants due to a lack of an appropriate comparison value. Copper is selected in all quadrants except West of Baker Creek. Zinc was only identified in one quadrant, East of Baker Creek. Lead and vanadium were not identified as exceeding the ecological component in any of the quadrants. In most of the quadrants vanadium and zinc are close, or even below, background.

Based on the qualitative analysis on the soils, concentrations of lead and vanadium are below guidelines and, thus, do not represent a risk from an ERA perspective. Arsenic, antimony, copper, manganese, and zinc are considered in the quantitative analysis.

K.1.2 Surface Water

The initial screen to identify COPC in surface water for the ERA was described in detail in Appendix D and summarized in Table K.5. The ecological surface water COPC screen was completed to identify COPC in both Baker Creek and Yellowknife Bay for aquatic biota (i.e., for the ERA).

The results showed that in Yellowknife Bay, the COPC that were carried forward include antimony, arsenic, barium, potassium, and strontium. Although the arsenic concentrations in Back Bay/Yellowknife Bay are below the CCME water quality for the protection of aquatic life, it has been added to the COPC list as it is the major contaminant from the Giant Mine. In Baker Creek, antimony, arsenic, barium, cadmium, chloride, cobalt, copper, cyanide, iron, potassium, strontium, and sulphate were selected as COPC.

Table K.5 Summary of initial list of constituents of potential concern for the ecological risk assessment in the aquatic environment

Surface Water/Sediment	
Yellowknife Bay	**Baker Creek**
Antimony Arsenic Barium Chromium (*sed) Copper (*sed) Potassium Strontium	Antimony Arsenic Barium Cadmium Chloride Chromium (*sed) Cobalt Copper Cyanide Iron Lead (*sed) Mercury (*sed) Potassium Strontium Sulphate Zinc (*sed)

Note: Arsenic in Yellowknife Bay was measured below the guidelines for protection of aquatic life but was retained due to community concerns; *sed – identified based on the sediment screen only.

Additional screening steps were carried out as described below to finalize the COPC to be quantitatively evaluated in the ERA.

Barium, Potassium, and Strontium

While there were no guidelines available for barium, potassium, and strontium, other toxicity values were available and were used to determine whether these three COPC should be considered further. For barium, the British Columbia Ministry of Environment (BCMOE 2017) has a working water quality guideline of 1 mg/L which is considered to be appropriate to use for this situation. The maximum measured concentration of barium in Baker Creek was 0.09 mg/L and in Yellowknife Bay was 0.05 mg/L which are below the working water quality guideline of 1 mg/L and thus barium was not considered further.

For potassium, a site-specific water quality objective of 41 mg/L was developed for potassium for the EKATI diamond mine (Rescan 2012), following the same species sensitivity distribution (SSD) approach that the CCME uses to develop surface water quality guidelines. As such, this value was considered appropriate at this stage of the screening process. The maximum measured concentration of potassium in Baker Creek was 14.1 mg/L and in Yellowknife Bay was 1.3 mg/L, which are below the water quality objective of 41 mg/L, and, thus, potassium was not considered further.

Similarly, for strontium a value of 10.7 mg/L from McPherson et al. (2014), which was based on an SSD curve for chronic exposure, was considered appropriate to use at this stage of the screening process. The maximum measured concentration of strontium in Baker Creek was 4.85 mg/L and in Yellowknife Bay was 0.14 mg/L, which are below the value of 10.7 mg/L, and, thus, strontium was not considered further.

Baker Creek - Cadmium, Cobalt and Cyanide

An additional review of the surface water data in Baker Creek was carried out for cadmium, cobalt, and cyanide as more than 78% of the measurements were below detection limits. A comparison was completed of concentrations of these COPC upstream of Baker Creek (Reach 8 to 11 considered to be representative of the baseline condition entering the site) and the rest of Baker Creek which have inputs from the effluent treatment plant as well as runoff from the site. Student t-tests were conducted to determine whether the data sets were different. The results of the t-tests indicated that the concentrations of cadmium, cobalt and cyanide in the upper reaches of Baker Creek are the same as those in the lower reaches and thus seems not to be influenced from the portions of the site where the remediation activities will be undertaken and therefore these COPC were dropped from further consideration in surface water.

Baker Creek - Copper

Copper was identified as a COPC since the 95th percentile concentration was below the average background copper concentration from Yellowknife River and Yellowknife Bay. Since there is an upstream input to Baker Creek, baseline concentrations were developed based on measured data from SNP 43-11 which is upstream of the site workings. This upstream input may have been historically influenced by activities at the Giant Mine; however, it is considered to now represent the baseline conditions entering Baker Creek on the Giant Mine. The baseline copper concentration has been derived as 0.007 mg/L based on the 95% UCLM of 21 samples at SNP 43-11. The 95% UCLM concentration for copper of the 289 samples collected in Baker Creek downstream of the baseline station is 0.006 mg/L which is below this baseline value and thus copper in surface water is not considered further.

Baker Creek - Iron

A comparison was completed of the concentrations of iron upstream of Baker Creek (Reach 8 to 11 are considered to be representative of the baseline condition entering the site) and the rest of Baker Creek that have inputs from the effluent treatment plant as well as runoff from the site. A Student's t-test was conducted to determine whether the data sets were different. The results of the t-tests indicated that the concentrations of iron in the upper reaches of Baker Creek are the same as those in the lower reaches and, thus, is not to be influenced from the portions of the site where the remediation activities will be undertaken; therefore, iron was dropped from further consideration in surface water.

Sulphate

When the effluent is flowing within Baker Creek, the concentrations of sulphate range from approximately 200 mg/L to 1200 mg/L. These concentrations are above the applicable BCMOE water quality guideline and, thus, sulphate is identified as a COPC in Baker Creek under current conditions. When the effluent is not flowing within Baker Creek, the sulphate concentration ranges between 3 mg/L and 12 mg/L, which are below the B.C. water quality guideline; thus, sulphate will not be considered as a COPC in Baker Creek in the future scenario when the effluent from the water treatment plant is relocated to the vicinity of Reach 0 in Yellowknife Bay. Sulphate levels entering Yellowknife Bay from the location of the new effluent treatment plant are considered in the future scenario.

Chloride

When the effluent is flowing within Baker Creek, the concentrations of chloride range from approximately 69 mg/L to 496 mg/L. These concentrations are above the applicable CCME water quality guideline and, thus, chloride is identified as a COPC in Baker Creek under current conditions. When the effluent is not flowing within Baker Creek, the chloride concentration ranges between 2 mg/L and 4.3 mg/L, which are below the CCME water quality guideline; thus, chloride will not be considered as a COPC in Baker Creek in the future scenario when the effluent from the water treatment plant is relocated to the vicinity of Reach 0 in Yellowknife Bay. Chloride levels entering Yellowknife Bay from the location of the new effluent treatment plant are considered in the future scenario.

K.1.3 Sediment

Mercury

The sediment screen in Appendix D indicated that the 95% UCLM concentrations in sediments in Baker Creek exceeded the interim sediment quality guideline (ISQG) from the CCME; however, the average mercury concentration of 0.19 mg/kg is close to the ISQG of 0.17 mg/kg. Mercury was not selected as a COPC from the surface water screen since the concentrations in Baker Creek are below aquatic protection guidelines. It should be noted that mercury has not been used in the Giant Mine process since 1948, and mercury concentrations at the Giant Mine are within background concentrations. Additionally, concentrations of mercury in fish in Yellowknife Bay are similar to background concentrations, indicating that mercury is not biomagnifying in the aquatic environment. Nonetheless, mercury is considered to be a COPC in the sediment in Baker Creek.

K.1.4 Summary

A qualitative assessment was carried out for the concentrations of the COPC in the terrestrial and aquatic environments. This qualitative assessment involved the comparison of concentrations to ecological guidelines and/or background. The final list of COPC for the Giant Mine ERA is provided in Table K.6.

Table K.6 Summary of final list of constituents of potential concern for the ecological risk assessment

Soil	Surface Water/Sediment	
ERA	**Yellowknife Bay – ERA**	**Baker Creek - ERA**
Antimony Arsenic Copper Manganese Zinc	Antimony Arsenic Chromium (*sed) Copper (*sed) Chloride (future only) Sulphate (future only)	Antimony Arsenic Cadmium (*sed) Chloride Chromium (*sed) Copper (*sed) Lead (*sed) Mercury (*sed) Sulphate Zinc (*sed)

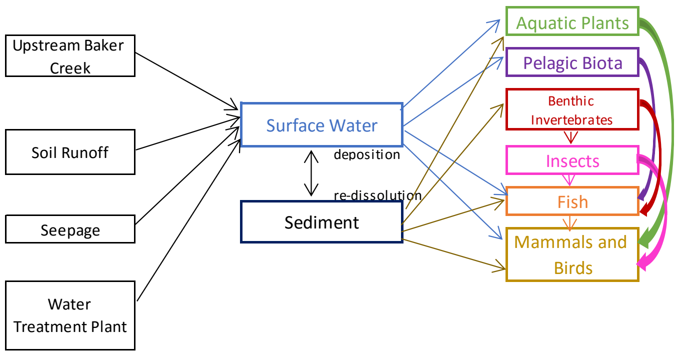
Note: Arsenic in Yellowknife Bay was measured below the guidelines for protection of aquatic life but was retained due to community concerns; *sed – identified based on the sediment screen only.

K.2 Conceptual Site Model

A conceptual site model (CSM) was developed that shows the relationships between the contaminants, fate and transport processes, receptors, and pathways (aquatic environment and terrestrial environment in Figure K.1 and Figure K.2, respectively).

This is an integration of the information on contaminants, receptors, pathways, and site conditions.

Figure K.1 Box diagram of conceptual site model for the ecological risk assessment – aquatic environment

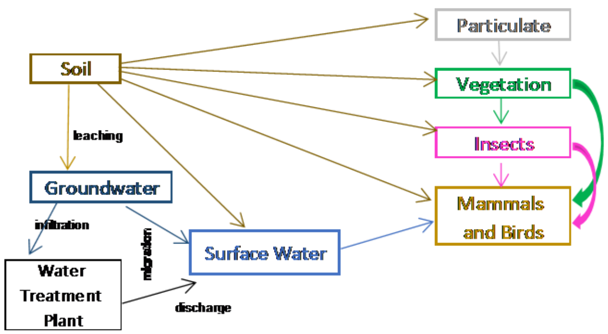


Exposure Pathway	Water Column Organisms	Benthic Invertebrates	Fish	Herbivorous Birds and Mammals[(a)]	Insectivorous Birds and Mammals[(b)]	Piscivorous Birds and Mammals[(c)]
Ingestion (sw)	•	•	•	✓	✓	✓
Dermal contact / uptake (sw)	✓	•	✓	○	○	○
Ingestion (aquatic plants)	--	--	•	✓	--	--
Ingestion (pelagic biota)	--	--	•	--	--	--
Ingestion (benthic invert)	--	--	•	✓	--	✓
Ingestion (insects)	--	--	--	--	✓	--
Ingestion (fish)	--	--	•	--	--	✓
Ingestion (mammal/bird)	--	--	--	--	--	✓
Ingestion (sediment)	--	•	•	✓		✓
Dermal contact / uptake (sed)	--	✓	✓	○	○	○

a. Muskrat, mallard
b. Bat, Barn Swallow (also have soil ingestion)
c. Mink, Osprey, Horned Grebe, Merganser

✓ : Potential Pathway of Exposure (included in assessment)
• : Implicitly included in other pathways
○ : Potential pathway of exposure but expected to be negligible; not considered further in the RA
-- : Not a potential exposure pathway for this receptor/receptor not included in assessment

Figure K.2 Box diagram of conceptual site model for the ecological risk assessment – terrestrial environment



Exposure Pathway	Terrestrial Vegetation [a]	Herbivorous Birds and Mammals [b]	Insectivorous Birds and Mammals [c]	Omnivorous Mammals [d]	Carnivorous Birds and Mammals [e]
Incidental ingestion (soil)	–	✓	✓	✓	✓
Dermal contact / uptake (soil)	✓	○	○	○	○
Inhalation (dust)	–	○	○	○	○
Ingestion (vegetation)	–	✓	–	✓	–
Ingestion (insects)	–	–	✓	✓	–
Ingestion (mammal/bird)	–	–	–	✓	✓
Ingestion (sw)	–	✓	✓	✓	✓
Ingestion (gw)	–	–	–	–	–
Dermal contact / uptake (gw)	–	–	–	–	–

✓ : Potential Pathway of Exposure (included in assessment)
• : Implicitly included in other pathways
○ : Potential pathway of exposure but expected to be negligible; not considered further in the RA
– : Not a potential exposure pathway for this receptor/receptor not included in assessment

a. Vegetation community (surrogate for invertebrates)
b. Deer Mouse, Snowshoe Hare, Willow Ptarmigan
c. Bat, Shrew, Barn Swallow
d. Fox
e. Lynx, Peregrine Falcon, Great Horned Owl

K.3 Site-Specific Transfer Factors

The concentrations of COPC in biota including plants, aquatic biota, and small mammal were estimated by assuming that the concentration in the biota could be predicted from the concentration in soil, water, or sediment (as appropriate). This is a simplistic approach that amalgamates the many factors that affect contaminant uptake into a single value. These factors can be called different names, such as Concentration Ratio (CR), Bioaccumulation Factor (BAF), or Bioconcentration Factor (BCF); for this assessment the generic term Transfer Factor (TF) is used.

As there are many factors that affect the uptake of a contaminant, site-specific information is preferred. There is site-specific information available on some media (e.g., fish); however, some data gaps were identified. To support the risk assessment, information was collected on soil, sediment, water, vegetation, and small mammals from the Giant Mine site (Golder 2016a). These samples were co-located (i.e., soil and small mammals were collected from the same area) to facilitate the development of TFs. The memo discussing this program is provided as Attachment 1 of Appendix B.

The available data were summarized and are shown in the following sections. Generally, two types of uptake relationships were considered:

- A linear relationship where the ratio between the concentration in the biota and the media is provided (i.e., ratio of the concentration in terrestrial plant to the ratio in a co-located soil sample).
- The data were also ln-transformed and a log-linear relationship developed.

Derivation of the site-specific TFs is detailed in the following sections.

K.3.1 Goodness of Fit

The selection of which TF should be selected for the assessment used a visual evaluation of the results in conjunction with a statistical evaluation of the predictions. There are several statistical tests available, each with strengths and weaknesses that can be used to judge the appropriateness of the predicted concentrations compared to measured data. Two statistical tests were employed to assess the goodness of fit between model predictions and measured data: the R2 statistic and fractional bias test. The use of two statistical tests helps to address the disadvantages identified in each of the tests.

The coefficient of determination (or R2 statistic) of a dataset reflects how well the observed values are replicated by the predicted values and uses linear regression to assess this relationship. R2 values are between 0 and 1, with a value of 1 indicating perfect replication of the observed values by the model. However, the R2 statistic does not provide a statistical hypothesis test of the measure of the goodness of fit between the model predictions and observed data. The R2 statistic was calculated using the Excel function (RSQ).

The fractional bias test (U.S. EPA 1992) calculates the averages of observed (OB) and predicted (PR) values, using Equation K-1:

$$FB=2\times((PR\text{-}OB)/(PR+OB)) \qquad \text{(K-1)}$$

The fractional bias was selected as a measure of the performance in this evaluation because it has two desirable features. First, the fractional bias is symmetrical and bounded; values for the fractional bias range between –2.0 (extreme underprediction) and +2.0 (extreme overprediction). Second, the fractional bias is a dimensionless number which is convenient for comparing the results from studies involving different concentration levels. Values of the fractional bias that are equal to +0.67 are equivalent to overprediction by a factor of two, while values that are equal to –0.67 are equivalent to underprediction by a factor of two. Model predictions with a fractional bias of 0 (zero) are relatively free from bias. However, a disadvantage of the fractional bias test is that if the model both over and under predicts during the calibration period, the fractional bias value can approach zero (indicating perfect fit) when in fact the fit is not perfect.

The R2 and fractional bias values determined using the measured biota concentration and the predicted concentrations for the same location. In some cases due to a lack of data, the R2 value is not calculated. Test values are less reliable in situations for COPC with concentrations close to background or detection limits, and therefore, these statistical tests are less valuable in those circumstances.

K.3.2 Aquatic Vegetation

For aquatic plants, there can be uptake from sediment (via roots) as well as directly from the water column. Currently, it is expected that these are all generally in equilibrium and, thus, site-specific information was used to derive sediment to aquatic plant TFs. As conditions in the future will change, it was also useful to summarize water to aquatic plant TFs.

In the aquatic environment, TFs are required for antimony and arsenic.

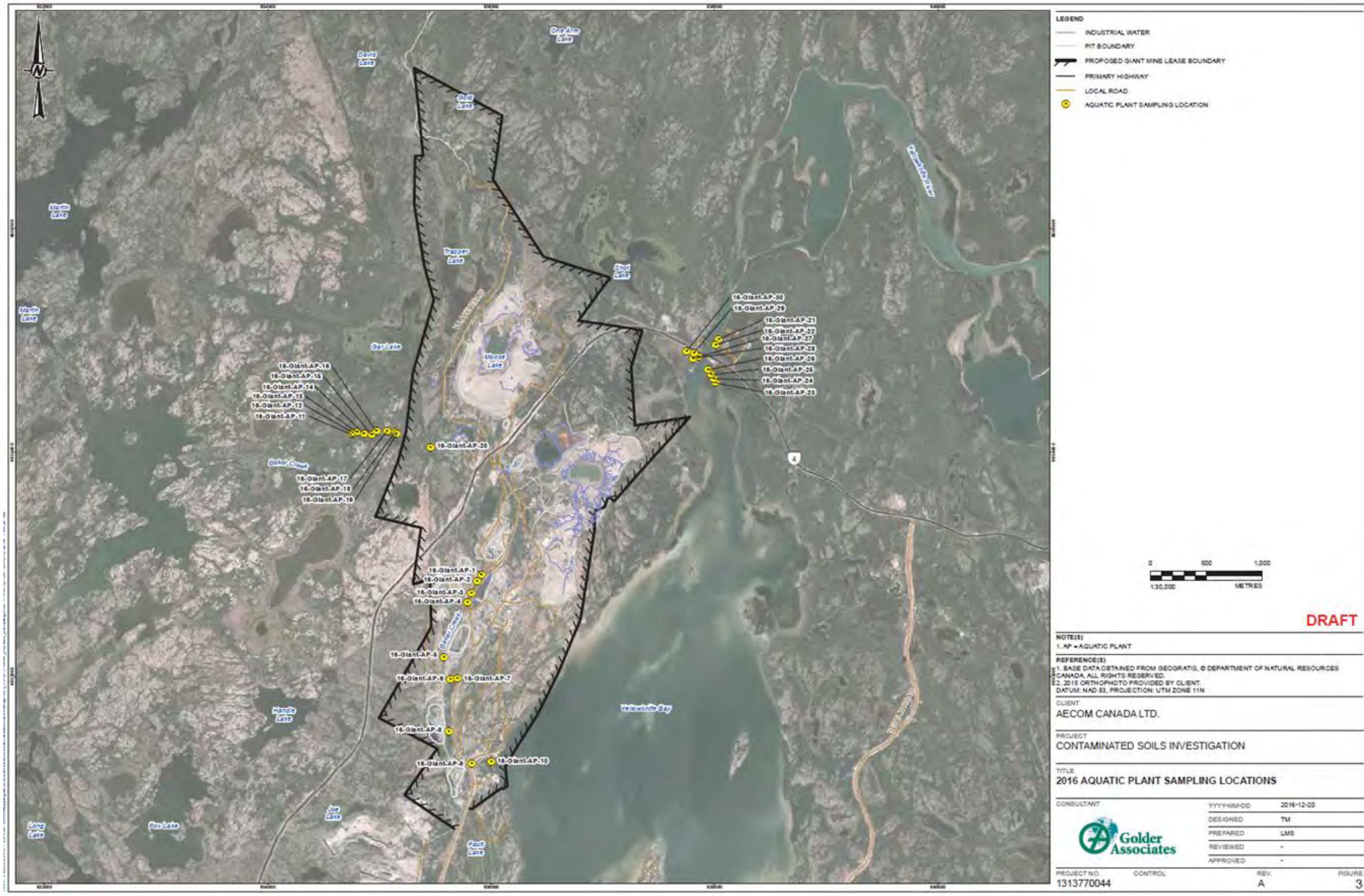
K.3.2.1 TFs from Sediment

As described by Golder (2016a, 2016b) in September 2016, sediment and aquatic plant sampling was conducted at 10 locations (co-located samples) in 3 areas: lower Baker Creek (LBC), upper Baker Creek (UBC), and the Yellowknife River (YKR) (Figure K.3). Aquatic plants and water sedge (*Carex aquatilis*) were collected. Only healthy plant samples were collected (i.e., no visible signs of disease or yellowing).

The results of the analysis were presented by Golder (2016a) and are shown in Figure K.4 for antimony where the data are shown on a linear scale and log-scale. To develop the site-specific TF, all data were combined (Figure K.5). A log-linear equation was selected as the best representation of the relationship (lower fractional bias).

The information for arsenic is presented in Figure K.6 and Figure K.7; similarly, the log-linear relationship was selected (lower fractional bias).

Figure K.3 Locations of aquatic plants and sediments collected for site-specific transfer factors



Note: From Golder (2016a); see Attachment 1 of Appendix B for complete memo.

Figure K.4 Measured aquatic plant and sediment data - antimony

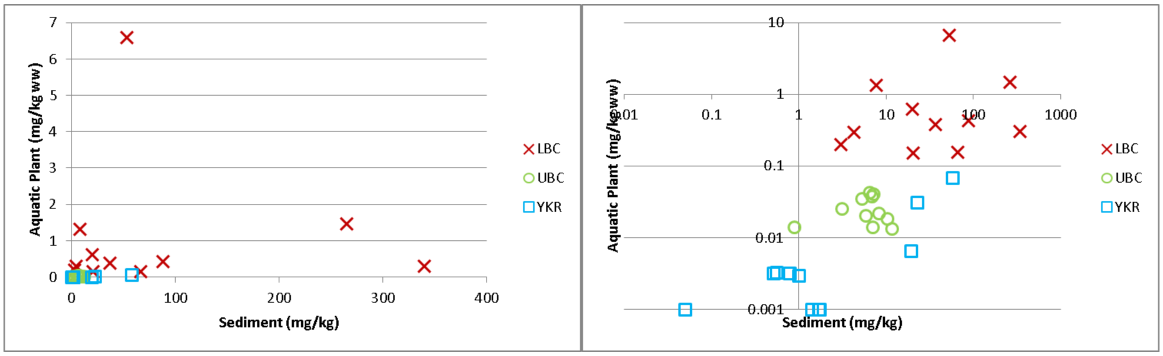


Figure K.5 Site-specific transfer factor for aquatic plants and sediment - antimony

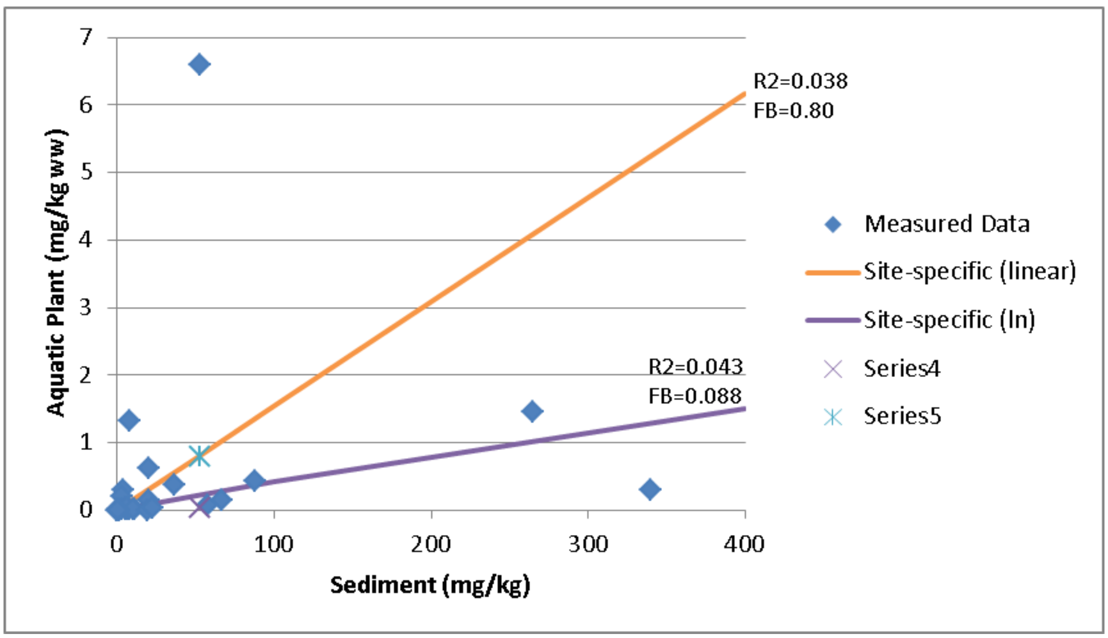


Figure K.6 Measured aquatic plant and sediment data - arsenic

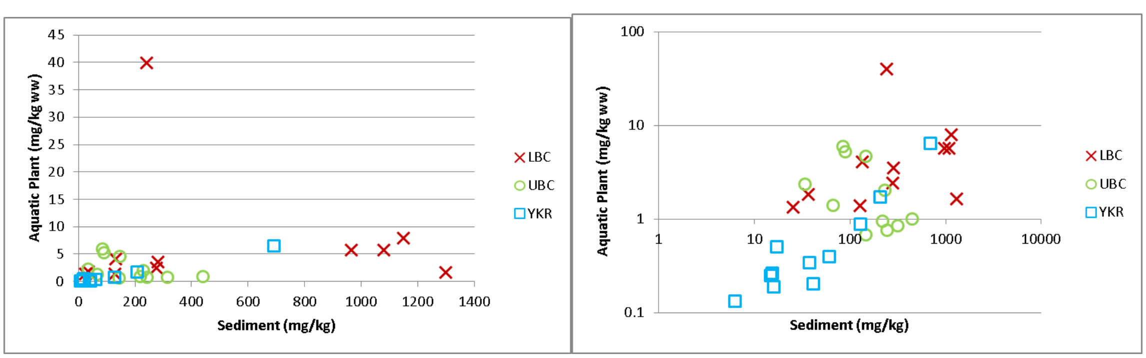
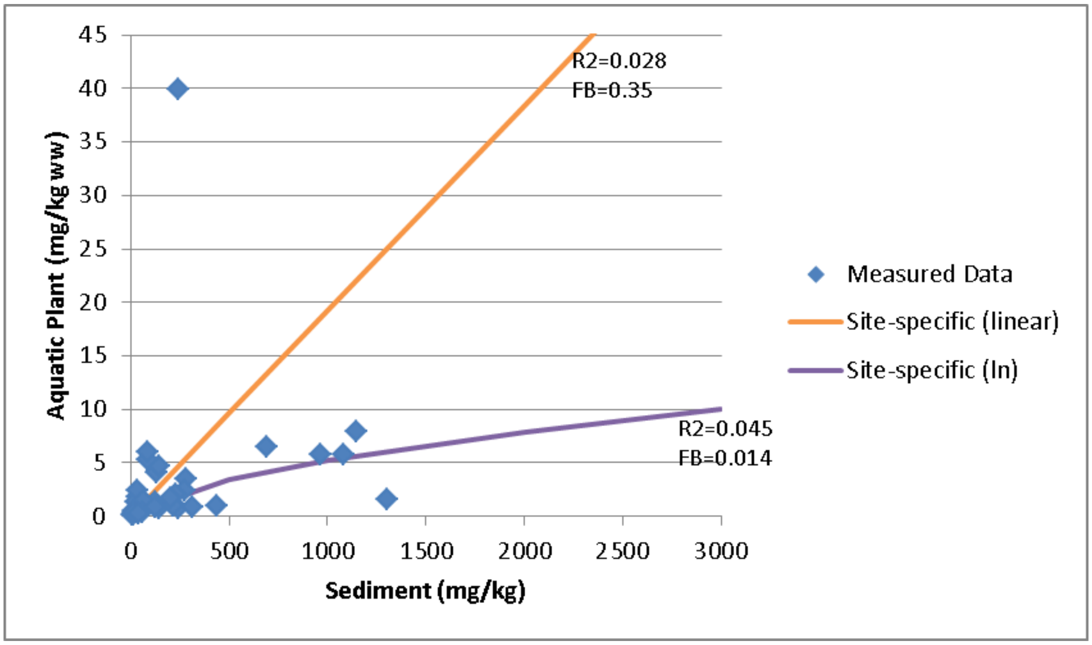


Figure K.7 Site-specific transfer factor for aquatic plants and sediment - arsenic



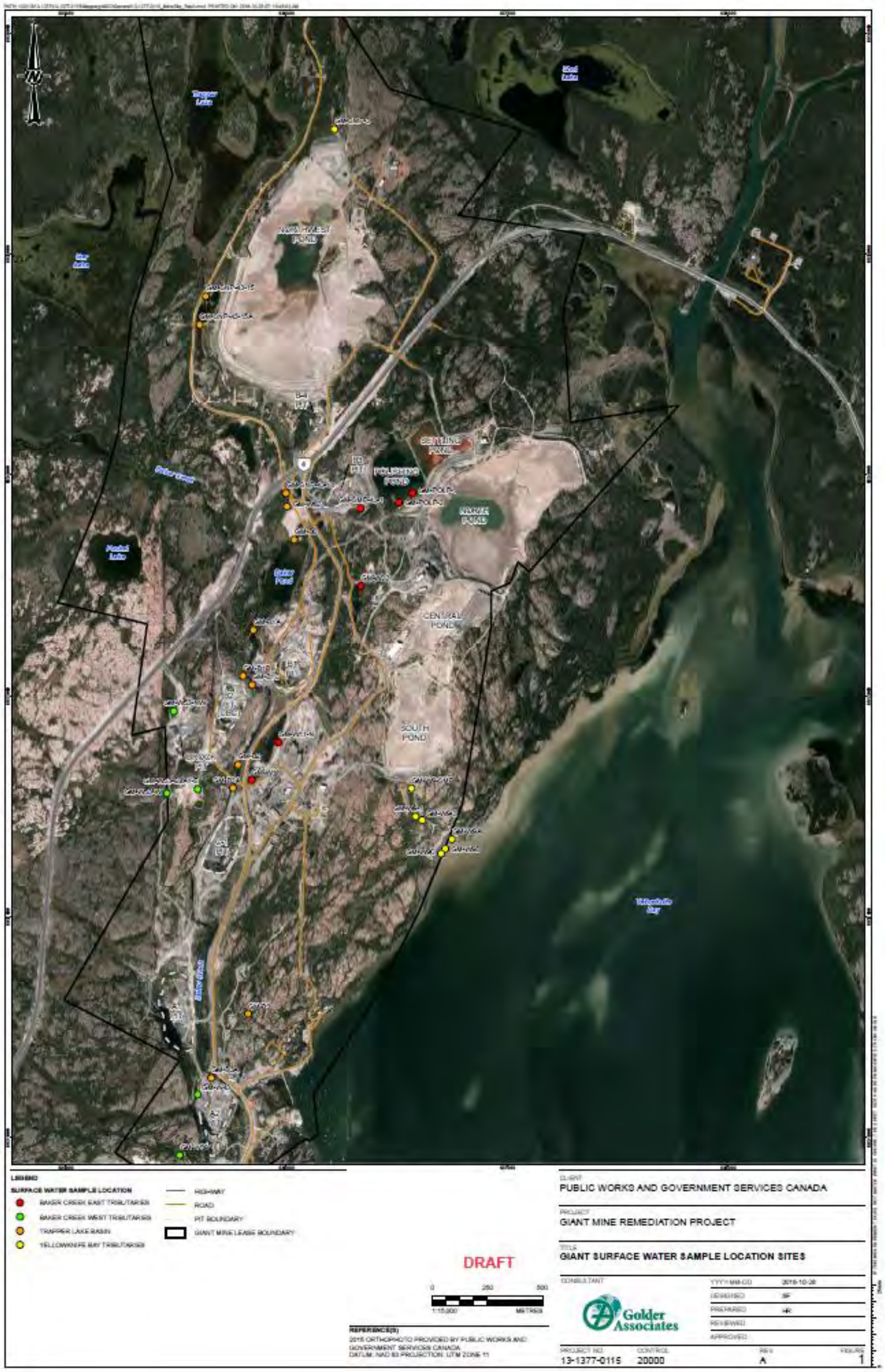
K.3.2.2 TFs from Water

A field investigation at the site was undertaken from August 25th to 30th, 2016, which included sampling for water quality and aquatic plant concentrations (Contango 2016). The locations of the samples are shown in (Figure K.8). Several emergent macrophytes (vascular plants that are rooted underwater but emerge out of the water) were observed, and the study focused on *Carex aquatilis* (commonly known as water sedge) and *Typha latifolia* (commonly known as broadleaf cattail). It was found that arsenic concentrations in water sedge were higher than cattails); however, there were no correlations found between plant uptake of arsenic and water or soil concentrations (Contango 2016). Aquatic moss were also analyzed and found to have much higher concentrations; however, this species is not considered to be relevant from the ecological risk assessment perspective (not consumed by a large degree by the selected receptors) and was, therefore, not considered further.

Figure K.9 shows the relationship between water and aquatic plants (shown on a linear scale and log-scale) for antimony. Figure K.10 shows the site-specific transfer factor for all data combined over an appropriate range of concentrations for the assessment. Although goodness of fit statistics are provided, some of the plants were below detection limiting the usefulness of the statistical test. A linear factor was selected for the assessment. For comparison purposes a value of 1000 L/kg ww from literature (PNNL

2003) was plotted, but the concentrations cannot be seen as the estimated concentrations are too high.

Figure K.8 Locations of aquatic plants and water samples



Note: From Contango (2016).

Figure K.9 Measured aquatic plant and water data - antimony

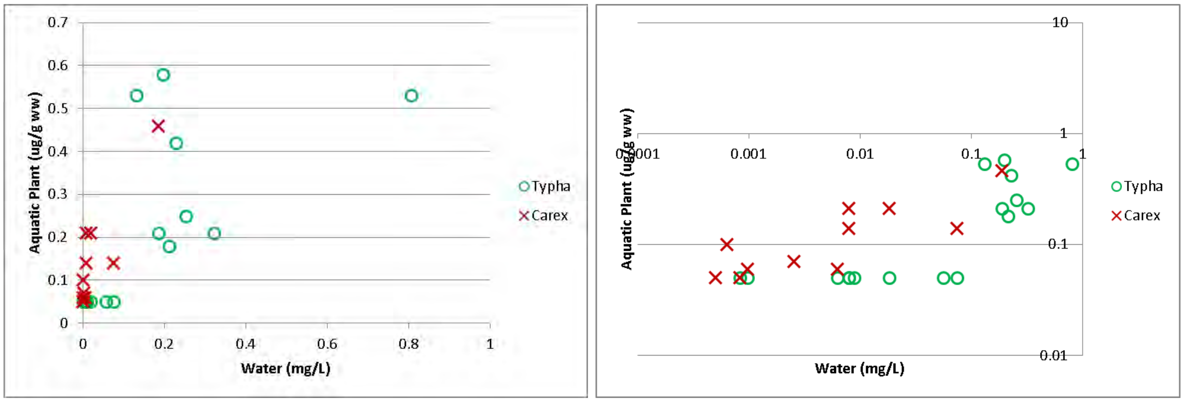


Figure K.10 Site-specific transfer factor for aquatic plants and water - antimony

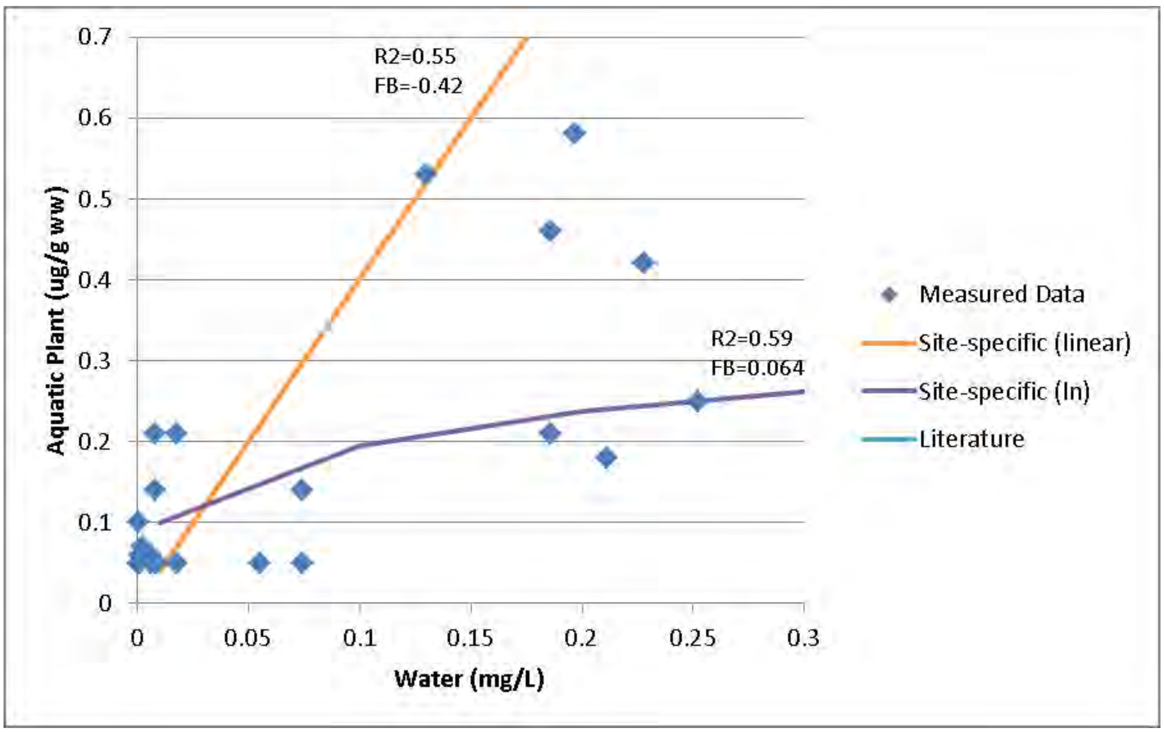


Figure K.11 shows the relationship between water and aquatic plants (shown on a linear scale and log-scale) for arsenic. Some of the water concentrations were quite high, much higher than typical. Due to the fluctuations in water, a longer time record would be appropriate for this analysis. Figure K.12 shows the site-specific transfer factor for all data combined over an appropriate range of concentrations for the assessment. Although the relationship between water and aquatic plants is weak, a linear factor was selected for the assessment. For comparison purposes a value of 300 L/kg ww from literature (PNNL 2003) is also shown.

Figure K.11 Measured aquatic plant and water data - arsenic

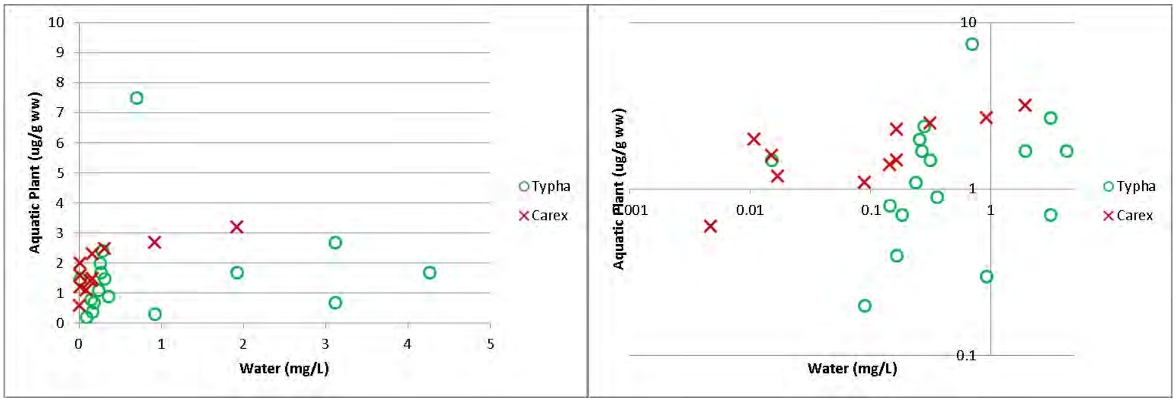
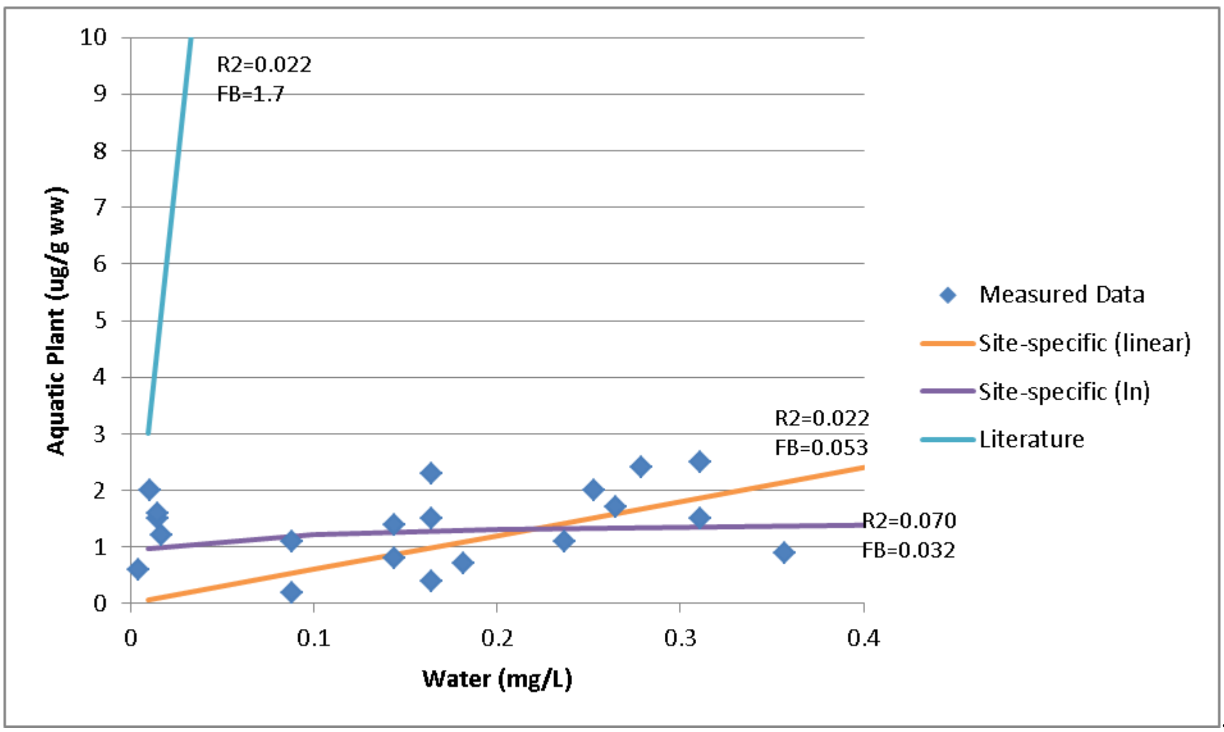


Figure K.12 Site-specific transfer factor for aquatic plants and water - arsenic



K.3.2.3 Summary

The relationships derived from the site-specific aquatic vegetation data are as follows. For establishing current EPCs, the relationship derived for sediment was used for future conditions, where the water and sediment may not have reached an equilibrium state, the EPCs are derived using the maximum of the transfer from sediment or water.

Antimony: $C_{aqveg} = \exp(0.92*\ln(C_{sed})-5.1)$
$C_{aqveg} = C_{wat} * 4$

Arsenic: $C_{aqveg} = \exp(0.6*\ln(C_{sed})-2.5)$
$C_{aqveg} = C_{wat} * 6$

Where:

C_{aqveg} = Aquatic vegetation COPC concentration (mg/kg (ww))
C_{sed} = Sediment COPC concentration (mg/kg (dw))
C_{wat} = Water COPC concentration (mg/L)

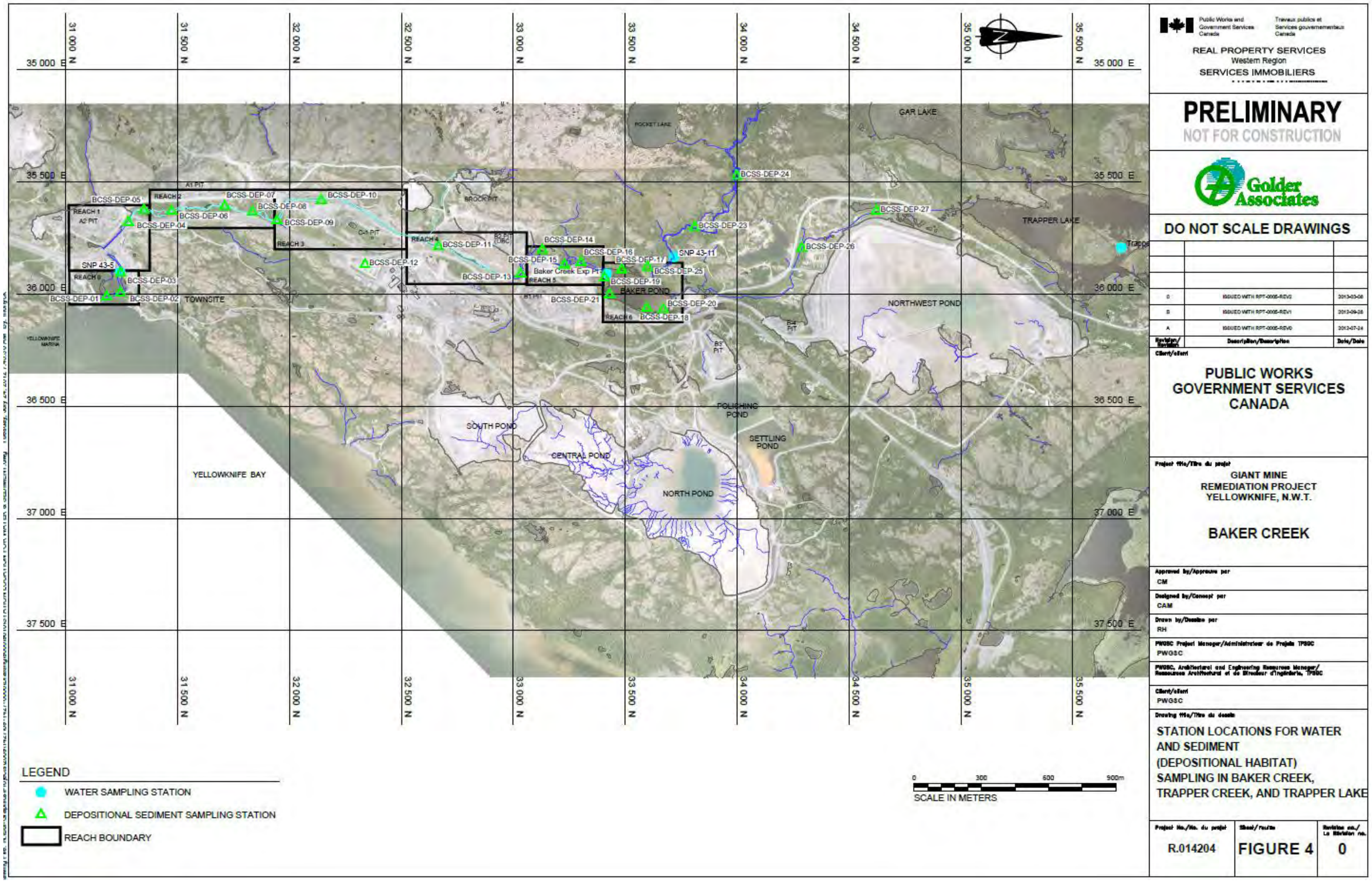
K.3.3 Benthic Invertebrates and Aquatic Insects

The concentration in the tissues of benthic invertebrates was taken to be related to sediment concentration. In the aquatic environment, TFs are required for antimony and arsenic.

K.3.3.1 TFs from Sediment

In 2011, Golder conducted a field study in Baker Creek that included sediment and benthic invertebrates from depositional and erosional habitat stations (Golder 2013). The benthic tissue data were collected to provide a measure of the bioavailability of arsenic and other contaminants to the invertebrate community in Baker Creek. Surficial sediment samples (approximately 5 cm) were collected from the depositional habitat areas; therefore, this dataset was used to determine site-specific transfer factors. One composite sediment sample was collected for at each of the 29 depositional locations. The locations are shown in Figure K.13.

Figure K.13 Locations of benthic invertebrate and sediments used to develop site-specific transfer factors



Note: From Golder (2013).

Figure K.14 shows the relationship between sediment and benthic invertebrates (shown on a linear scale and log-scale) for antimony. Figure K.15 shows the site-specific transfer factor for all data combined over an appropriate range of concentrations for the assessment. A linear factor was selected. For comparison purposes, a value from literature is also shown. Haus et al. (2007) investigated concentrations of various metals, including antimony, in sediments and macroinvertebrates (amphipods and isopods) from several sites in Germany, including ponds, streams, and rivers. The value of 0.0113 is the arithmetic mean of the BSAFs and is reported on a wet weight basis. The site-specific linear value was used in the assessment; this will provide a cautious estimate of the benthic invertebrates.

Figure K.14 Measured benthic invertebrate and sediment data - antimony

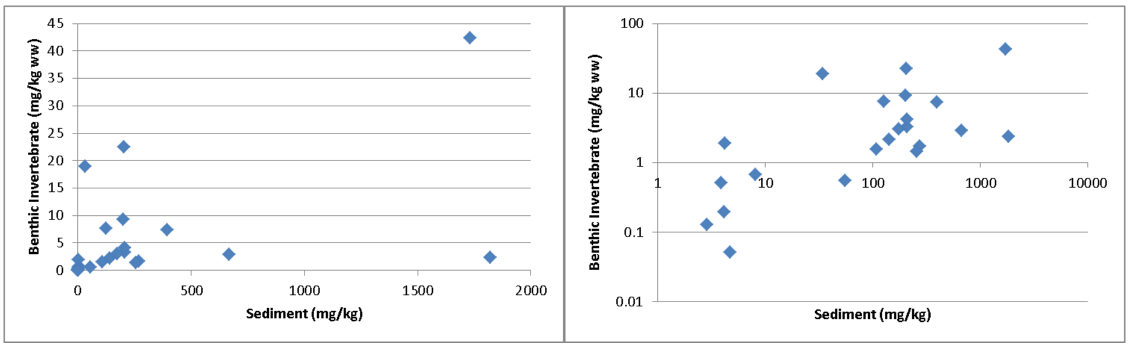


Figure K.15 Site-specific transfer factor for benthic invertebrate and sediment - antimony

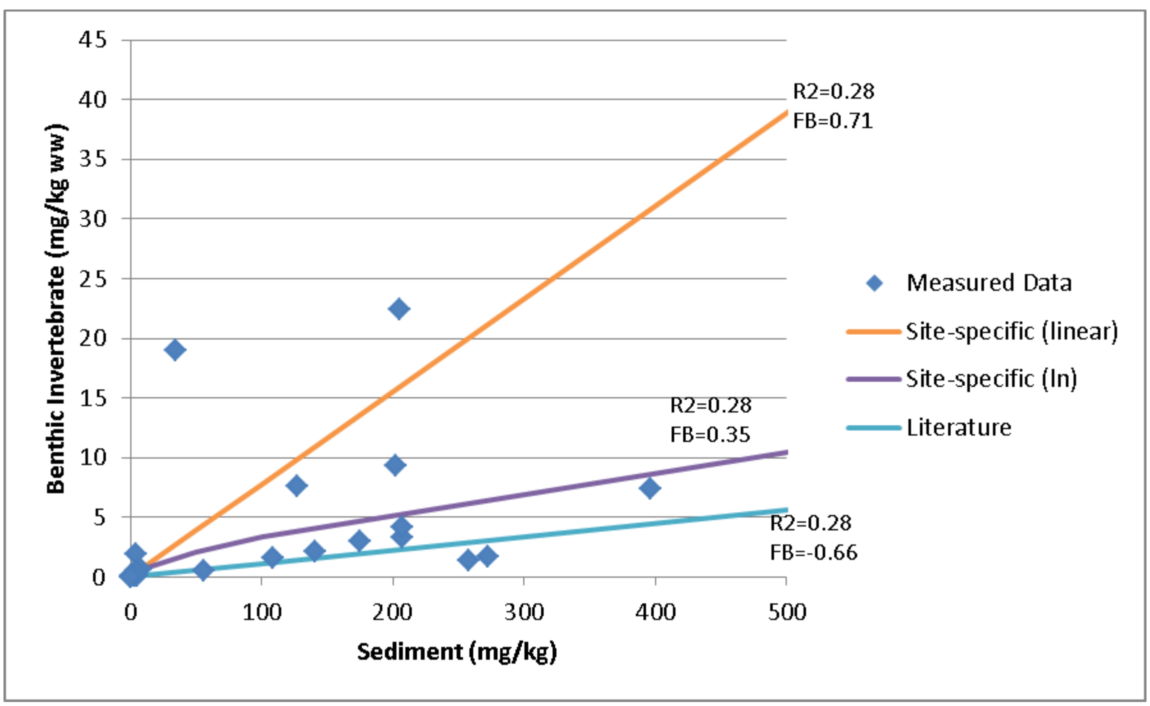


Figure K.16 shows the relationship between sediment and benthic invertebrates (shown on a linear scale and log-scale) for arsenic. Figure K.17 shows the site-specific transfer factor for all data combined over an appropriate range of concentrations for the assessment. For comparison purposes, a value from literature (ORNL 1998) is also shown. As discussed in the ORNL document, the median BSAF for arsenic (non-depurated) is recommended. This value is 0.127 and is provided on a dry weight basis; a 70% moisture content was assumed. The site-specific linear value was used in the assessment.

Figure K.16 Measured benthic invertebrate and sediment data – arsenic

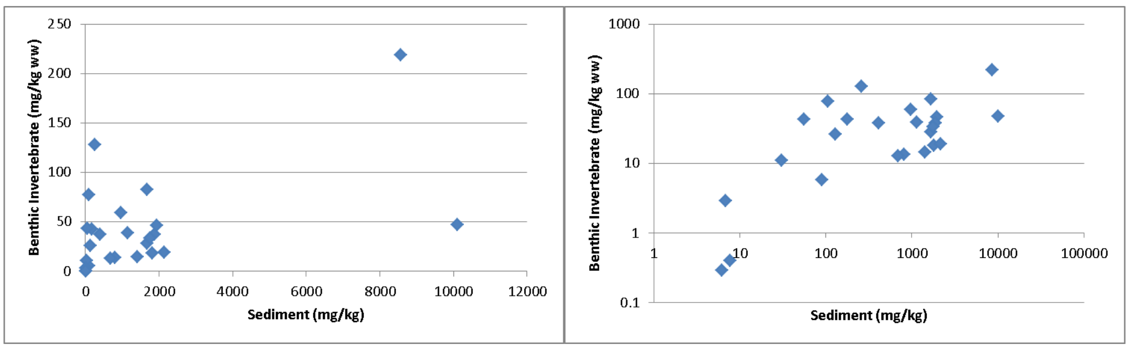
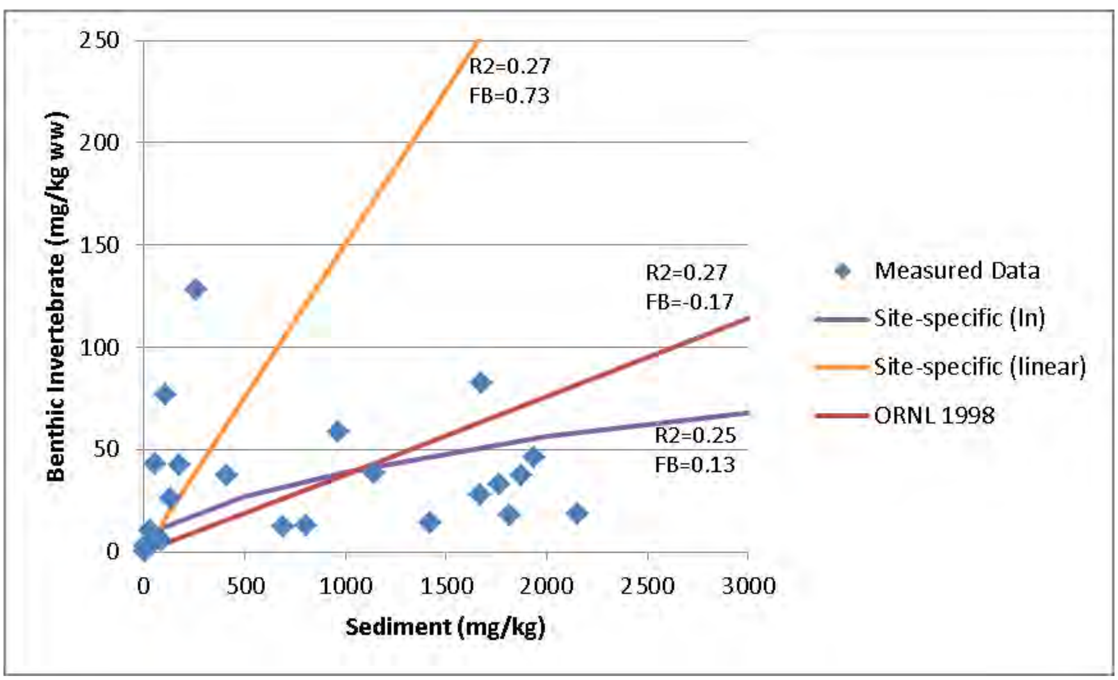


Figure K.17 Site-specific transfer factor for benthic invertebrate and sediment - arsenic



K.3.3.2 Summary

The site-specific relationship between benthic invertebrate concentrations and sediment levels is detailed below.

Antimony: $C_{bi} = C_{sed} * 0.078$
Arsenic: $C_{bi} = C_{sed} * 0.15$

Where:
C_{bi} = Benthic invertebrate COPC concentration (mg/kg (ww))
C_{sed} = Sediment COPC concentration (mg/kg (dw))

Benthic invertebrates comprise the larvae stage of many emergent aquatic flying insects. A paper that examined 39 papers on the change of concentrations (Kraus et al. 2014) found that metals were predominantly lost during metamorphosis. Based on Kraus et al. (2014), it is expected that arsenic is approximately 10x lower in the adult compared to the larvae. Although no specific information on antimony was presented in the paper, it is not unreasonable to assume that antimony would behave similarly, as arsenic and antimony are close chemical analogues. Therefore, for this assessment, the concentration of arsenic and antimony in emergent aquatic insects were set to 0.1 of benthic invertebrates.

K.3.4 Fish

Fish are directly exposed to water and indirectly to water through food as well as sediment through food. Currently, it is expected that these (water, sediment, food for fish) are all generally in equilibrium, and, thus, site-specific information was used to derive sediment to fish TFs. As conditions in the future will change, it was also useful to summarize water to fish TFs.

In the aquatic environment, TFs are required for antimony and arsenic.

K.3.4.1 TFs from Sediment

As part of the 2011 study, Golder collected fish samples for analysis (Golder 2013). Fish were sampled from select reaches in Baker Creek and, where possible, in the Yellowknife River reference area. Three small-bodied fish (arctic grayling, slimy sculpin, and ninespine stickleback) were targeted for whole-body analysis. Large-bodied fish were also sampled but for the purposes of the ecological risk assessment only the whole-body fish data from the small-bodied fish were considered. Arctic grayling are noted to be a migrant fish species that enters Baker Creek in the spring to spawn. Slimy sculpin are resident, benthic fish that live in direct contact with sediment. Ninespine stickleback are omnivorous feeders and are thought to reside in Baker Creek between spring and fall.

Table K.7 shows the measured data for sediment and fish as well as the estimated TF. The average value for the exposure stations (Baker Creek) were used in the assessment.

Table K.7 Sediment and fish data used to derive site-specific transfer factor

Location	Sediment (mg/kg dw)	Fish		TF (kg dw / kg ww)
		Type	Concentration (mg/kg ww)	
Antimony				
Background	0.44	Slimy sculpin	0.0052	0.012
		Ninespine stickleback	0.0088	0.020
Reach 0	171	Ninespine stickleback	0.058	$3.3x10^{-4}$
		Slimy sculpin	0.17	0.0010
Reach 1	188	Arctic grayling	0.55	0.0029
			Average of Exposure Locations	*0.0014*
Arsenic				
Background	6.4	Slimy sculpin	0.070	0.011
		Ninespine stickleback	0.43	0.067
Reach 0	1339	Ninespine stickleback	1.02	$7.6x10^{-4}$
		Slimy sculpin	2.9	0.0021
Reach 1	1410	Arctic grayling	12.3	0.0087
			Average of Exposure Locations	*0.0039*

Note: Sediment and fish data from Golder (2013).

K.3.4.2 TFs from Water

A TF for estimating fish concentrations from water was also required. To estimate this TF, the measured data in Back Bay was used (for whole-body fish and water) as shown in Table K.8. The sediment in Back Bay, however, still contributes to the exposure; thus, the TFs were reduced by a factor of 40. This factor was based on adjusting the TF for arsenic to be consistent with other information sources. For example, a BCF of 14 L/kg for freshwater fish is provided by Oregon Department of Environmental Quality (Oregon DEQ 2011), while BAFs of 11 for sculpin in Kam Lake and 70.6 for sculpin in Grace Lake, NWT were reported in by the U.S. EPA (2003). This is an attempt to isolate the exposure to water and dietary items that would be directly linked to water.

Table K.8 Water and fish data used to derive site-specific transfer factor

COPC	Water (mg/L)	Comment	Fish (mg/kg ww)	Comment	TF * (L/kg)
Antimony	0.0002	Mean of Back Bay and North Yellowknife Bay (N=111, 94<DL).	0.027	Mean of Back Bay and North Yellowknife Bay (N=41).	2.8
Arsenic	0.004	95% UCLM of Back Bay and North Yellowknife Bay (N=117).	1.5	95% UCLM of Back Bay and North Yellowknife Bay (N=41).	19

Note: * TF calculated as the ratio of fish to water, adjusted by a factor of 40 to account for limited pathways.

K.3.4.3 Summary

The site-specific relationship between whole body fish concentrations and COPC levels in sediment and water are as shown below. Both current and future fish EPCs were taken to be the maximum of transfer from sediment or water.

Antimony: $C_{fish} = C_{sed} * 0.0014$

$C_{fish} = C_{wat} * 2.8$

Arsenic: $C_{fish} = C_{sed} * 0.0039$

$C_{fish} = C_{wat} * 19$

Where:

C_{fish} = Whole body fish COPC concentration (mg/kg (ww))

C_{sed} = Sediment COPC concentration (mg/kg (dw))

C_{wat} = Water COPC concentration (mg/L)

K.3.5 Terrestrial Vegetation and Insects

Terrestrial plants are exposed to COPC in soil. The uptake depends on the characteristics of the plant and the soil; therefore, site-specific information is valuable.

In the terrestrial environment, TFs are required for antimony, arsenic, copper, manganese, and zinc.

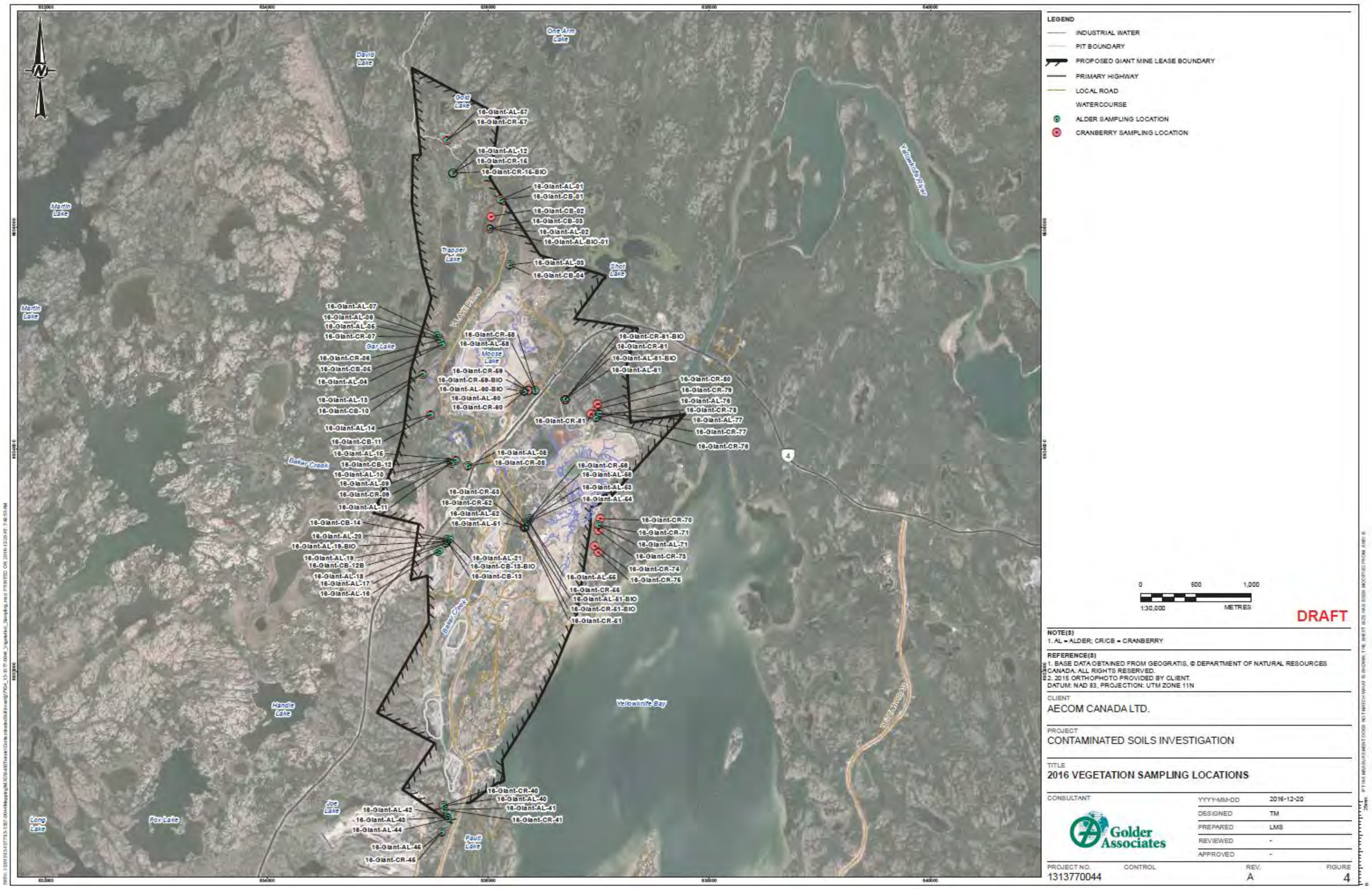
K.3.5.1 TFs from Soil

As described by Golder (2016a), in September 2016 soil and terrestrial vegetation sampling was conducted at the Giant Mine site. Leaves of cranberry (*Vaccinium vitis-idaea*) and alder (*Alnus* sp.) were collected to represent terrestrial forbs and shrubs. The locations of the samples are shown in Figure K.18. Only healthy plant samples were collected (i.e., no visible signs of disease or yellowing). In total, 51 vegetation samples were collected and sent for analysis. The soil sampling program targeted surficial samples (top 15cm).

Figure K.19 shows the relationship between soil and terrestrial plants (shown on a linear scale and log-scale) for antimony. Figure K.20 shows the site-specific transfer factor for all data combined over an appropriate range of concentrations for the assessment. For comparison purposes, a function from literature is also shown. The literature value is from Eco-SSL (U.S. EPA 2007) as is expressed as a log-linear function ($\ln(Cp) = 0.938 * \ln(Cs) - 3.233$); the result as a dry weight concentration was converted to a wet weight concentration using a 57% moisture content based on the measured data.

The uptake by terrestrial vegetation will be represented by the site-specific log-linear equation in the assessment. This relationship was selected based on the visual examination of the data in Figure K.19 and the lower fractional bias.

Figure K.18 Locations of terrestrial plants and soil collected for site-specific transfer factors



Note: From by Golder (2016a); see Attachment 1 of Appendix B for complete memo.

Figure K.19 Measured terrestrial plant and soil data - antimony

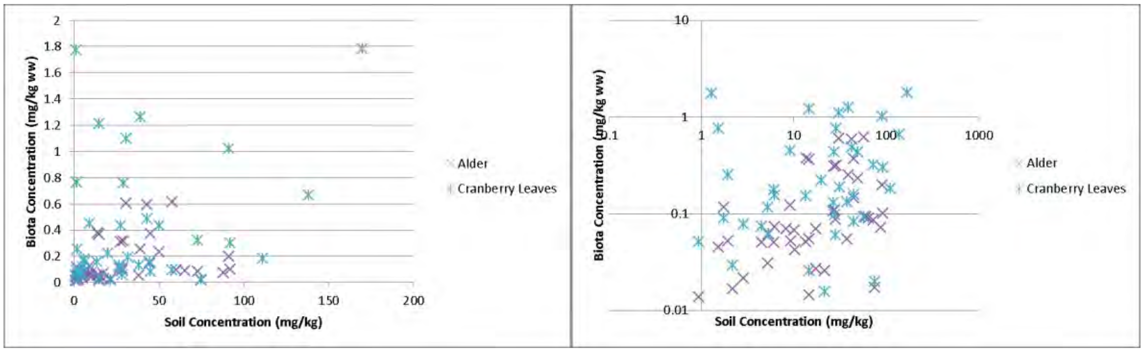


Figure K.20 Site-specific transfer factor for terrestrial plants and soil - antimony

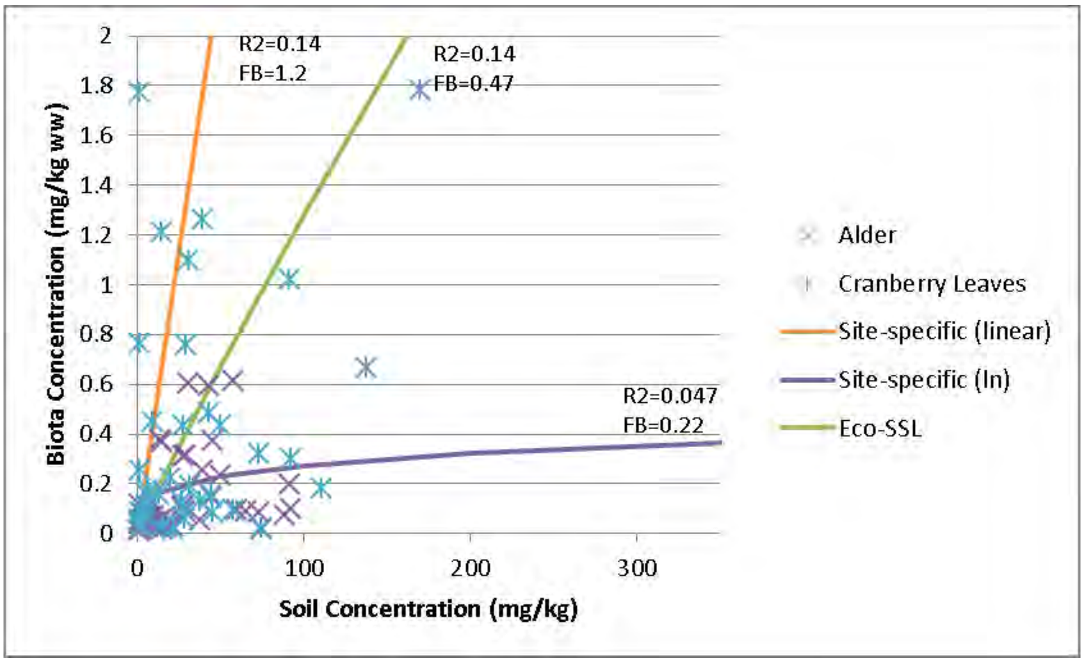


Figure K.21 shows the relationship between soil and terrestrial plants (shown on a linear scale and log-scale) for arsenic. Figure K.22 shows the site-specific transfer factor for all data combined over an appropriate range of concentrations for the assessment. For comparison purposes, a function from literature is also shown. The literature value is from Eco-SSL (U.S. EPA 2007) as is expressed as a linear function (TF=0.03752); the result as a dry weight concentration was converted to a wet weight concentration using a 57% moisture content based on the measured data. The uptake by terrestrial vegetation will be represented by the site-specific log-linear equation in the assessment.

Figure K.21 Measured terrestrial plant and soil data - arsenic

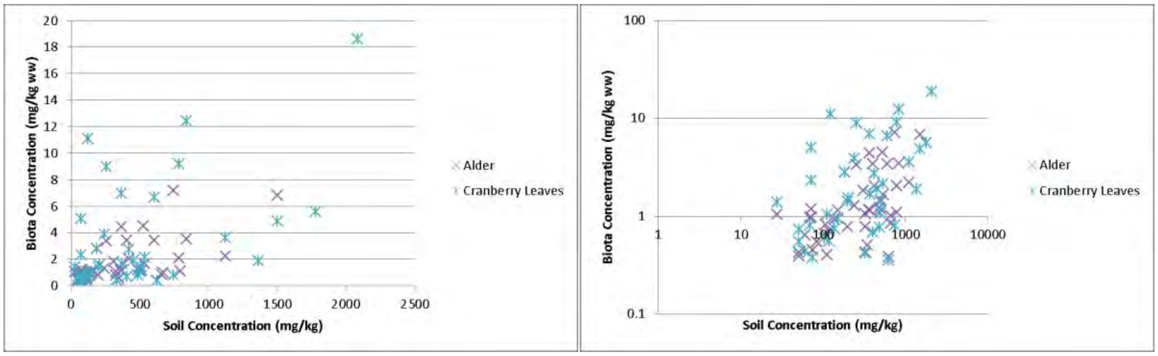


Figure K.22 Site-specific transfer factor for terrestrial plants and soil - arsenic

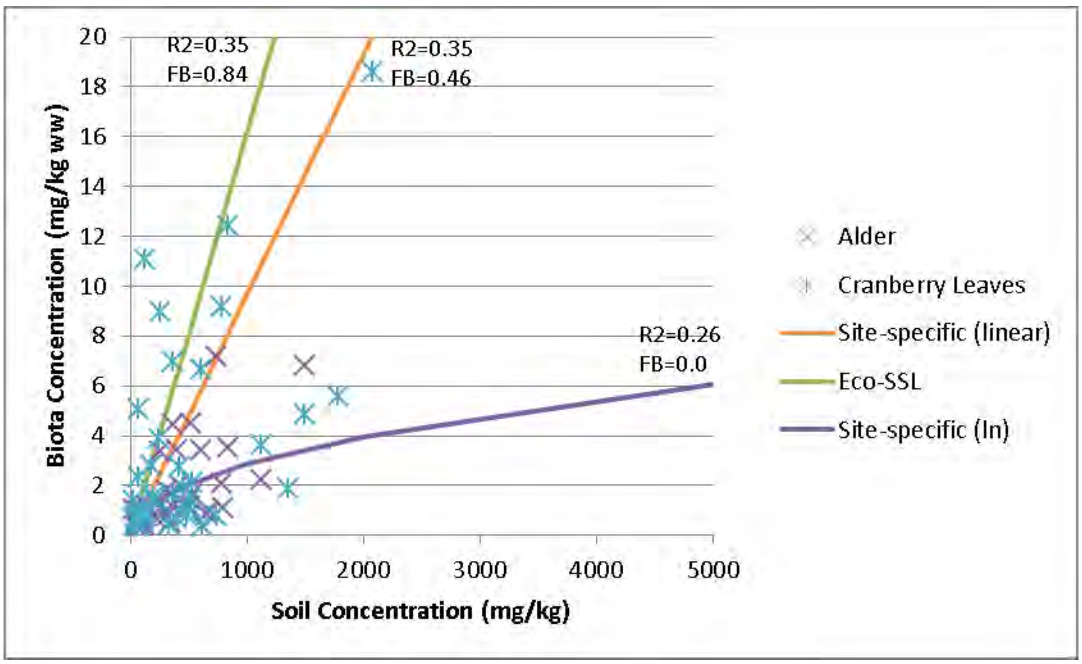


Figure K.23 shows the relationship between soil and terrestrial plants (shown on a linear scale and log-scale) for copper. Figure K.24 shows the site-specific transfer factor for all data combined over an appropriate range of concentrations for the assessment. For comparison purposes, a function from literature is also shown. The literature value is from Eco-SSL (U.S. EPA 2007) as is expressed as a log-linear function ($\ln(Cp) = 0.394 * \ln(Cs) + 0.668$); the result as a dry weight concentration was converted to a wet weight concentration using a 57% moisture content based on the measured data. Based on the data shown in Figure K.23 there does not appear to be any relationship between copper levels in soil and terrestrial vegetation.

Figure K.23 Measured terrestrial plant and soil data - copper

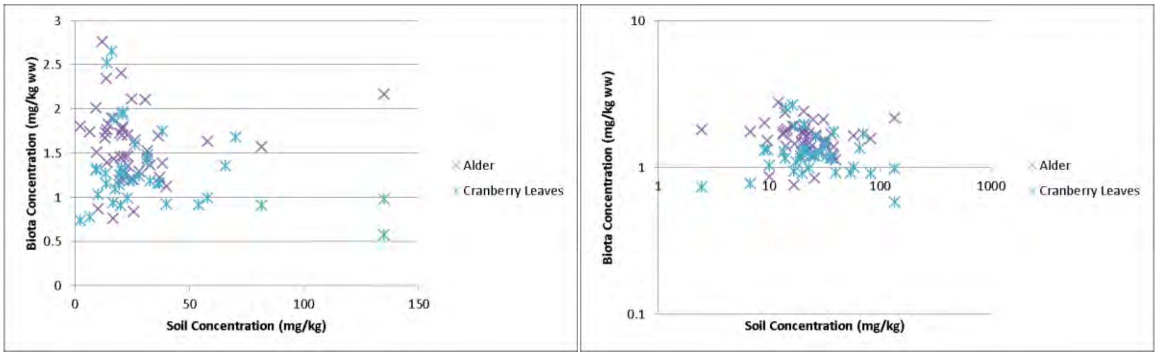


Figure K.24 Site-specific transfer factor for terrestrial plants and soil - copper

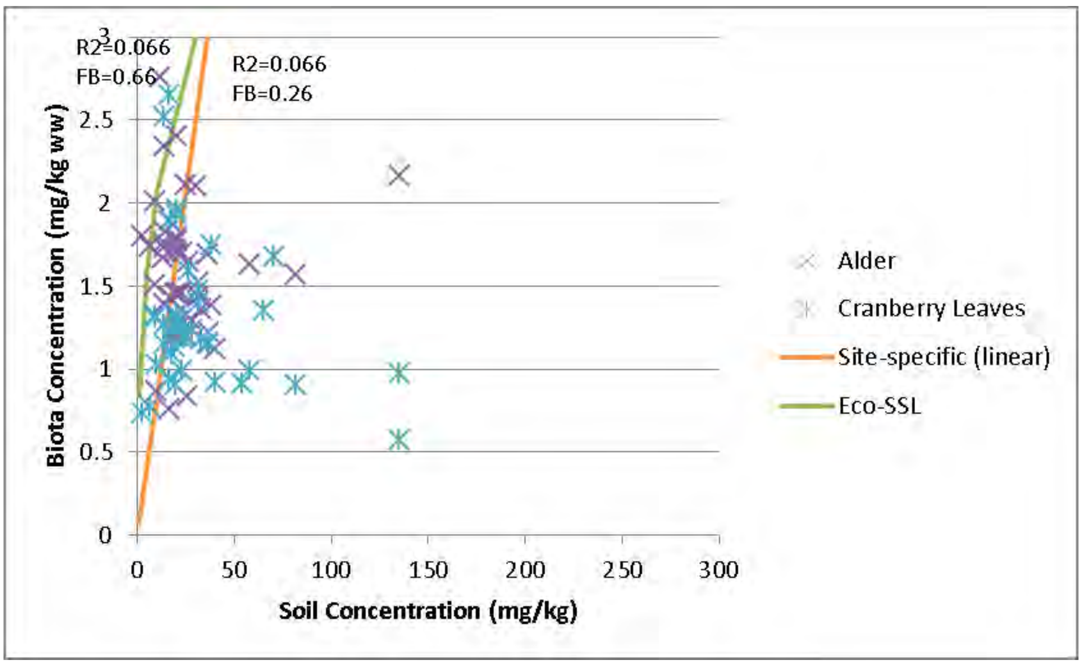


Figure K.25 shows the relationship between soil and terrestrial plants (shown on a linear scale and log-scale) for manganese. Figure K.26 shows the site-specific transfer factor for all data combined over an appropriate range of concentrations for the assessment. For comparison purposes a function from literature is also shown. The literature value is from Eco-SSL (U.S. EPA 2007) as is expressed as a linear function (TF=0.079); the result as a dry weight concentration was converted to a wet weight concentration using a 57% moisture content based on the measured data. The uptake by terrestrial vegetation will be represented by the site-specific linear equation in the assessment.

Figure K.25 Measured terrestrial plant and soil data - manganese

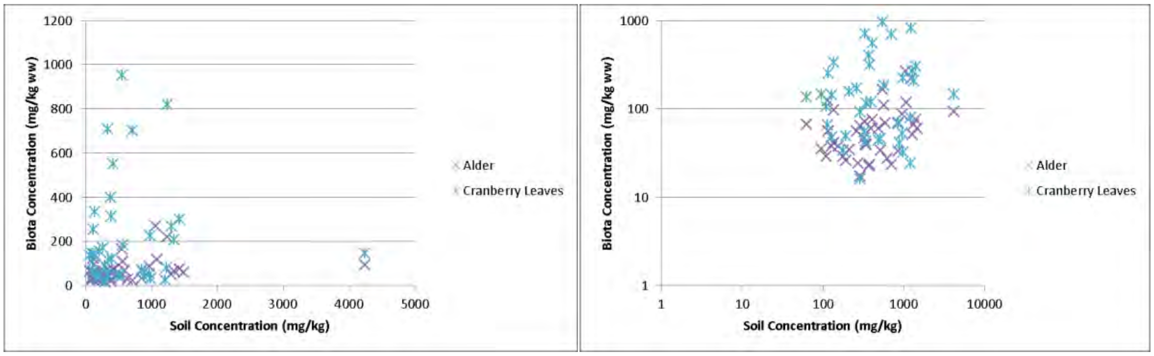


Figure K.26 Site-specific transfer factor for terrestrial plants and soil - manganese

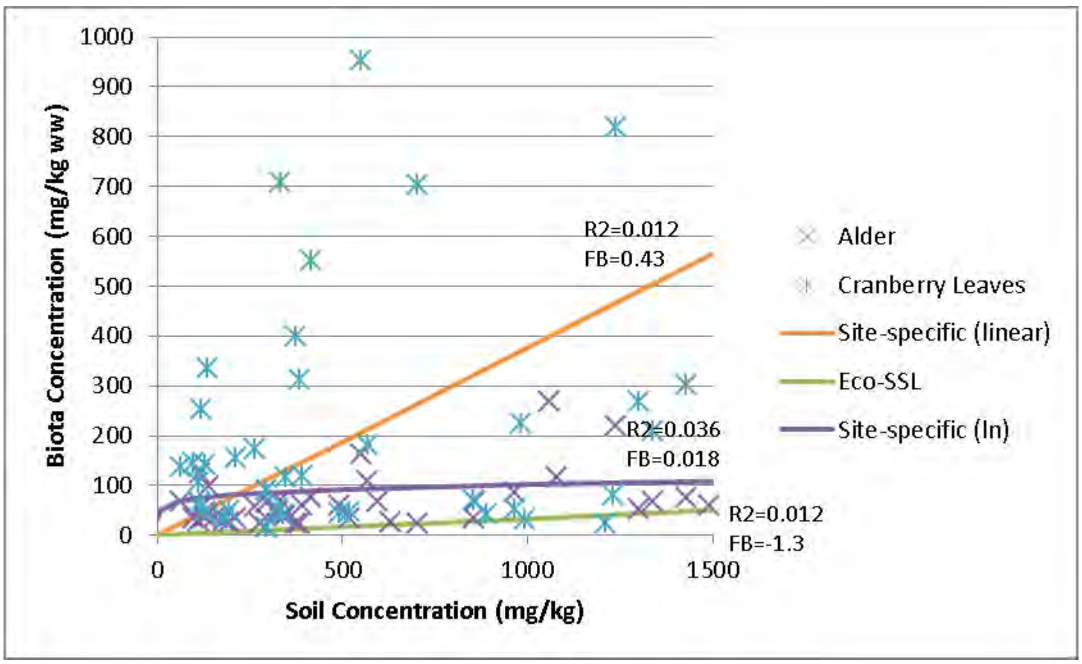


Figure K.27 shows the relationship between soil and terrestrial plants (shown on a linear scale and log-scale) for zinc. Figure K.28 shows the site-specific transfer factor for all data combined over an appropriate range of concentrations for the assessment. For comparison purposes, a function from literature is also shown. The literature value is from Eco-SSL (U.S. EPA 2007) as is expressed as a log-linear function (ln(Cp) = 0.554 * ln(Cs) + 1.575); the result as a dry weight concentration was converted to a wet weight concentration using a 57% moisture content based on the measured data. The uptake by terrestrial vegetation will be represented by the site-specific log-linear equation in the assessment.

Figure K.27 Measured terrestrial plant and soil data - zinc

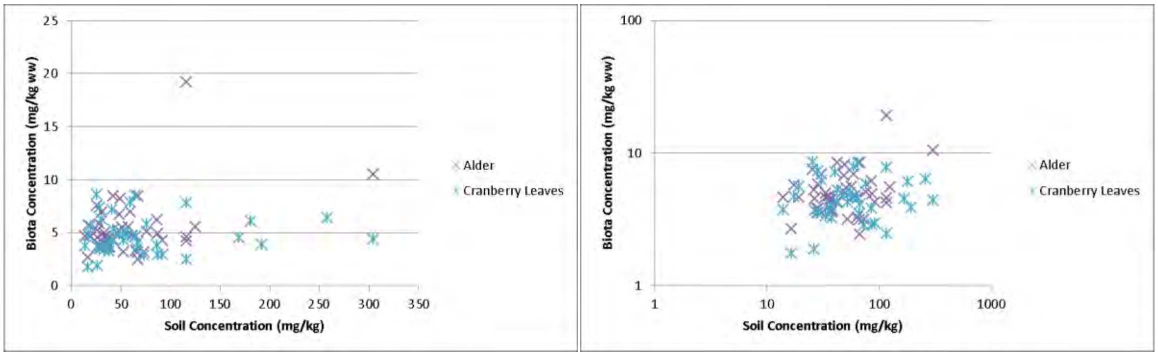
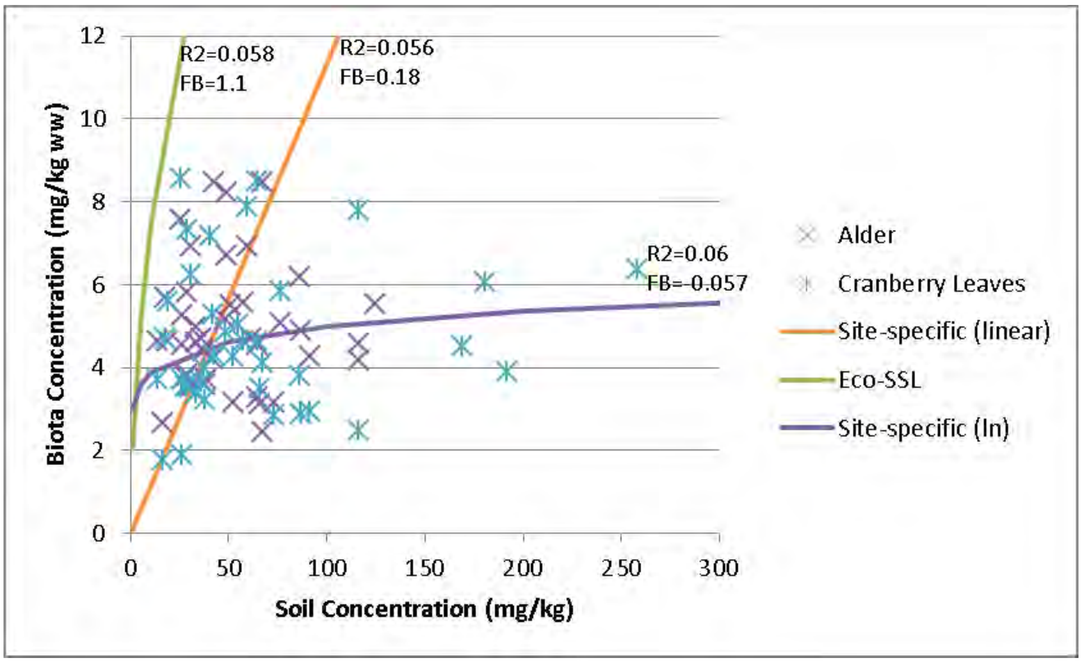


Figure K.28 Site-specific transfer factor for terrestrial plants and soil - zinc



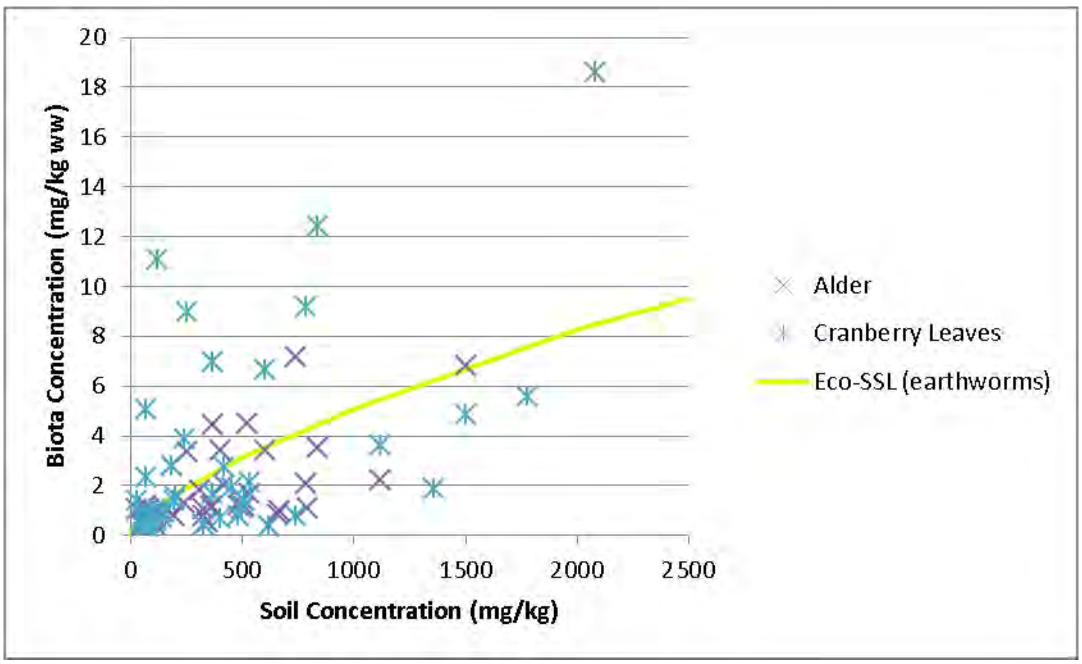
K.3.5.2 TF for Insects

Insects and invertebrates are an important component of the ecosystem; however, these are not well represented by traditional bioaccumulation factors. These factors are typically based on studies that examined earthworms. Due to the bedrock outcroppings and climatic conditions, earthworms are not present in this location. For this assessment, therefore, terrestrial insects (e.g., grasshoppers, bees, beetles, butterflies as well as spiders) were taken to be the same concentration as vegetation.

No specific literature information was found to validate this assumption for all the COPC. Hernout et al. (2013) did present information on some metals, which suggest that insects (on a dry weight basis) could be roughly equal to soil concentration (copper and zinc); however, the transfer of other metals (lead) was much lower. Differences in uptake and accumulation patterns in invertebrates are complex and can be further complicated for essential elements such as copper and zinc. For arsenic, Vermeulen et al. (2009) showed that insects such as beetles and woodlice have much lower concentrations than earthworms at the same location. Although information is available from this paper for insects such as beetles, the range of arsenic concentrations included is much less than at the Giant Mine, and as the relationship is non-linear, extrapolation is difficult.

A comparison is provided of the arsenic concentrations in vegetation and the earthworm bioaccumulation factor from literature (U.S. EPA 2007) is provided in Figure K.29. This figure shows that it is expected that the vegetation would be a reasonable basis for estimating insects. No information on insects was found for antimony.

Figure K.29 Comparison of terrestrial plants data to literature transfer factor - arsenic



K.3.5.3 Summary

The site-specific relationship between vegetation concentrations and COPC levels in soil are as shown below. Both current and future vegetation EPCs were based on these TFs.

Antimony: $C_{fol} = \exp(0.24*\ln(C_{soil})-2.4)$

Arsenic: $C_{fol} = \exp(0.47*\ln(C_{soil})-2.2)$

Copper: no relationship found, used current measured data
Manganese: $C_{fol} = C_{soil} * 0.38$
Zinc: $C_{fol} = \exp(0.11*\ln(C_{soil})-1.1)$

Where:
C_{fol} = Foliage COPC concentration (mg/kg (ww))
C_{soil} = Soil COPC concentration (mg/kg (dw))

The exposure assessment used derived TFs for foliage and then assumed concentrations for woody vegetation and fruits/flowers were the same as foliage, except in the rare cases where site-specific measurements were available. This was only the case for arsenic in wood vegetation and fruits/flowers in the East of Baker Creek quadrant. In these, the arsenic concentration in the future was calculated directly from the ratio of vegetation to soil, multiplied by the future soil concentration.

In the absence of any measured data, terrestrial insect concentrations were assumed to be the same as foliage.

K.3.6 Small Mammals (Shrew and Mouse)

Small mammals are exposed to soil by direct contact and ingestion and indirectly through food. Site-specific information was used to derive transfer factors.

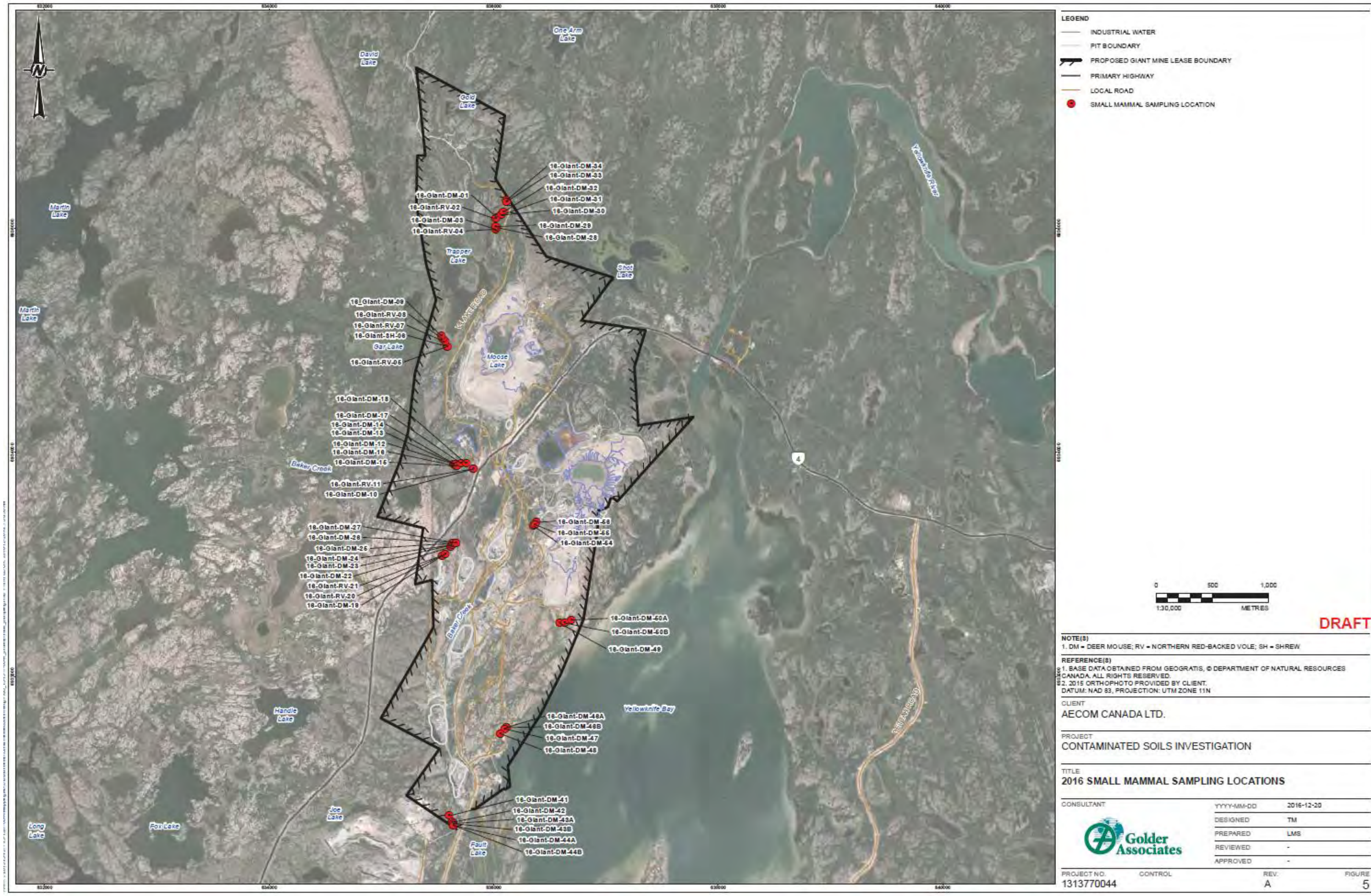
In the terrestrial environment, TFs are required for antimony, arsenic, copper, manganese, and zinc.

K.3.6.1 TFs from Soil

As described by Golder (2016a), in September 2016 small mammal sampling was conducted at the Giant Mine site. Mouse traps were set on 8 transects, where each transect consisted of 12 stations and where stations were made up of clusters of 2 or 3 traps. Each transect consisted of 25 traps and the traps were moved as mice were caught. The locations are shown on Figure K.30. Three small mammal species were caught, including deer mouse (*Peromyscus maniculatus*), northern red-backed vole (*Myodes rutilus*), and an unidentified shrew species (*Sorex* sp.). At stations where small mammals were caught, the field crew collected co-located soil and vegetation samples.

Figure K.31 shows the relationship between soil and small mammals (shown on a linear scale and log-scale) for antimony. One red-backed vole sample (16-Giant-RV-21) is outside the range of the other data; it also has high concentrations of other COPC. Golder did not note anything out of the ordinary about the red vole sample; it was one of the largest mammal sample collected (22.25 g) (Golder 2017a). Figure K.32 shows the site-specific transfer factor for all data combined over an appropriate range of concentrations for the assessment. No literature values were found. The uptake by small mammals will be represented by the site-specific log-linear equation in the assessment.

Figure K.30 Locations of small mammal and soil collected for site-specific transfer factors



Note: From Golder (2016a); see Attachment 1 of Appendix B for complete memo.

Figure K.31 Measured small mammal and soil data - antimony

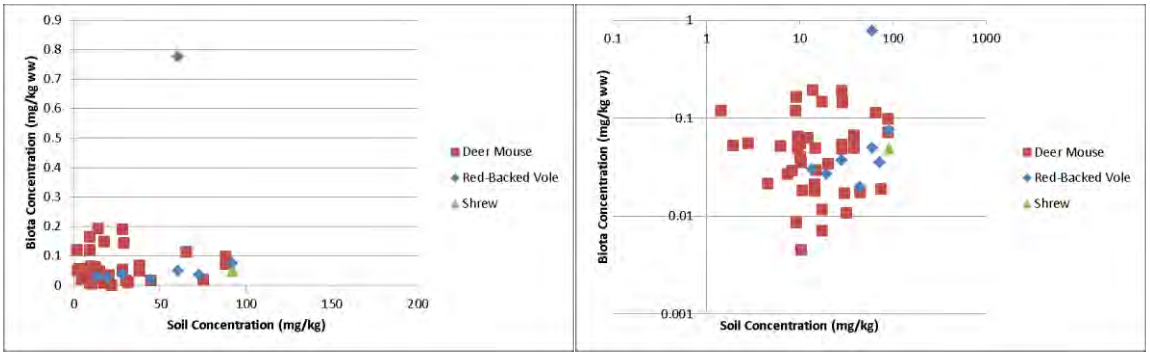


Figure K.32 Site-specific transfer factor for small mammals and soil - antimony

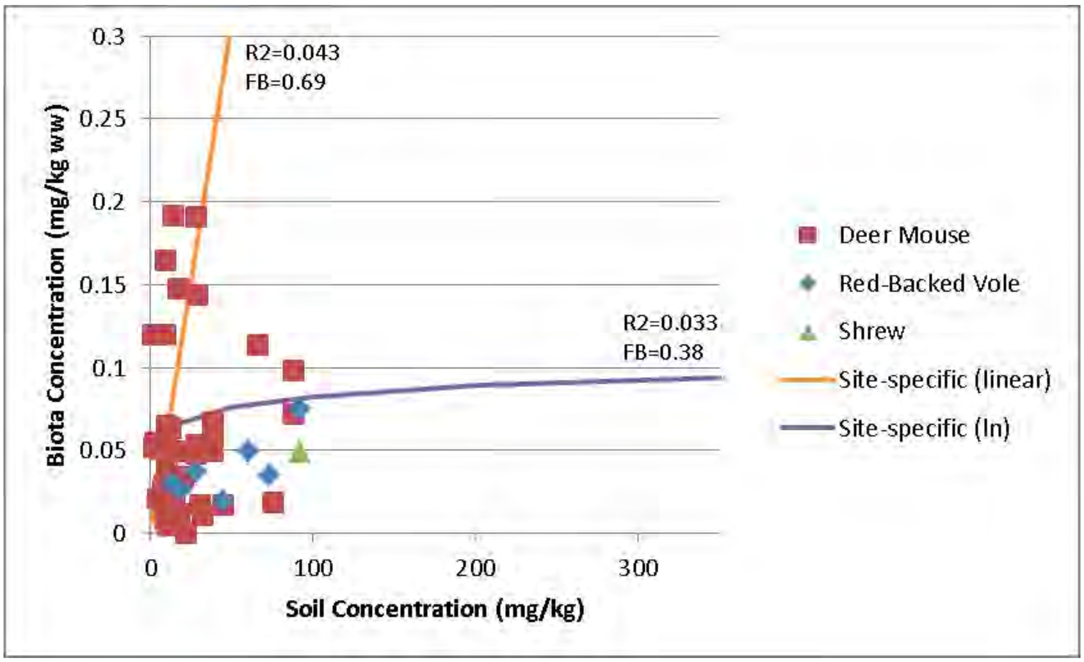


Figure K.33 shows the relationship between soil and small mammals (shown on a linear scale and log-scale) for arsenic. Figure K.34 shows the site-specific transfer factor for all data combined over an appropriate range of concentrations for the assessment. For comparison purposes, a function from literature is also shown. The literature value is from Eco-SSL (U.S. EPA 2007) as is expressed as a log-linear function (ln(Cm) = 0.8188 * ln(Cs) – 4.8471); the result as a dry weight concentration was converted to a wet weight concentration using a 71% moisture content based on the measured data. The uptake by small mammals will be represented by the site-specific log-linear equation in the assessment.

Figure K.33 Measured small mammal and soil data - arsenic

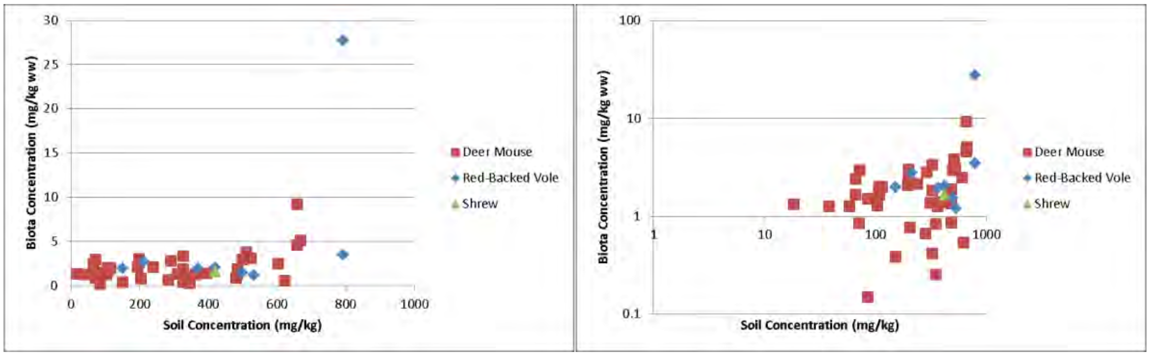


Figure K.34 Site-specific transfer factor for small mammals and soil - arsenic

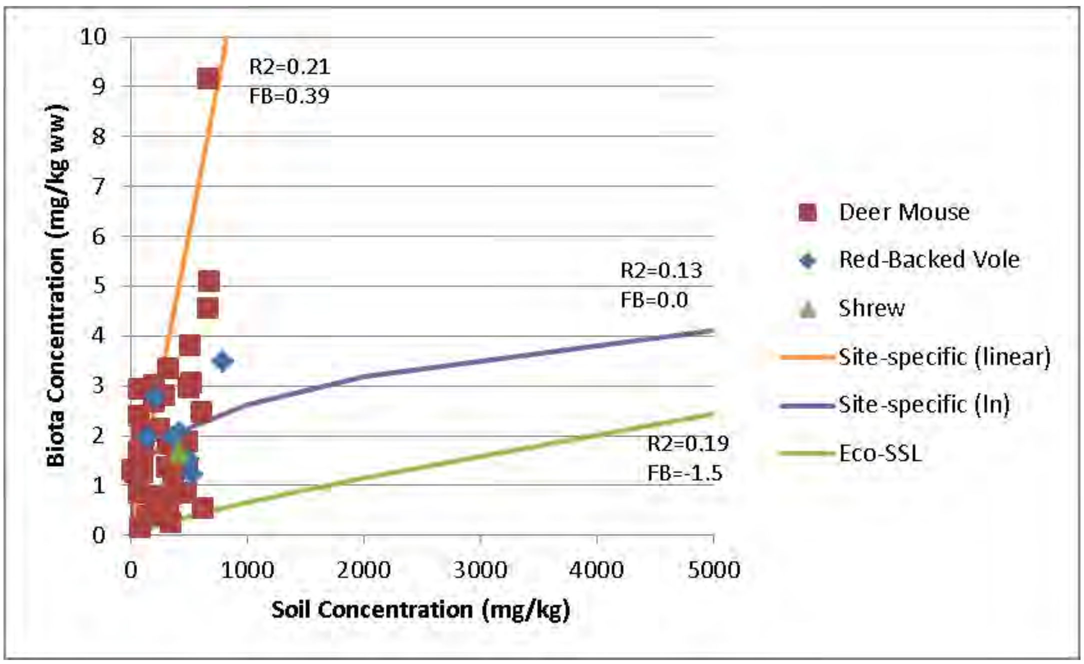


Figure K.35 shows the relationship between soil and small mammals (shown on a linear scale and log-scale) for copper. Figure K.36 shows the site-specific transfer factor for all data combined over an appropriate range of concentrations for the assessment. For comparison purposes, a function from literature is also shown. The literature value is from Eco-SSL (U.S. EPA 2007) as is expressed as a log-linear function ($\ln(Cm) = 0.1444 * \ln(Cs) + 2.042$); the result as a dry weight concentration was converted to a wet weight concentration using a 71% moisture content based on the measured data. The uptake by small mammals will be represented by the site-specific log-linear equation in the assessment.

Figure K.35 Measured small mammal and soil data - copper

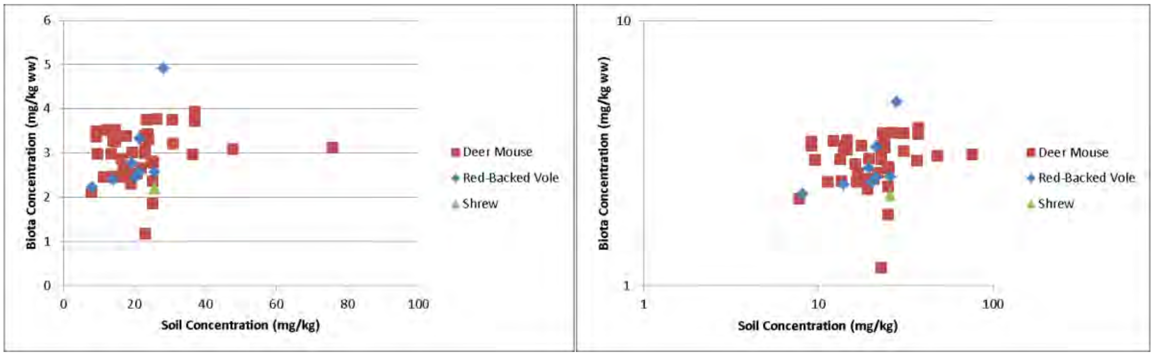


Figure K.36 Site-Specific transfer factor for small mammals and soil - copper

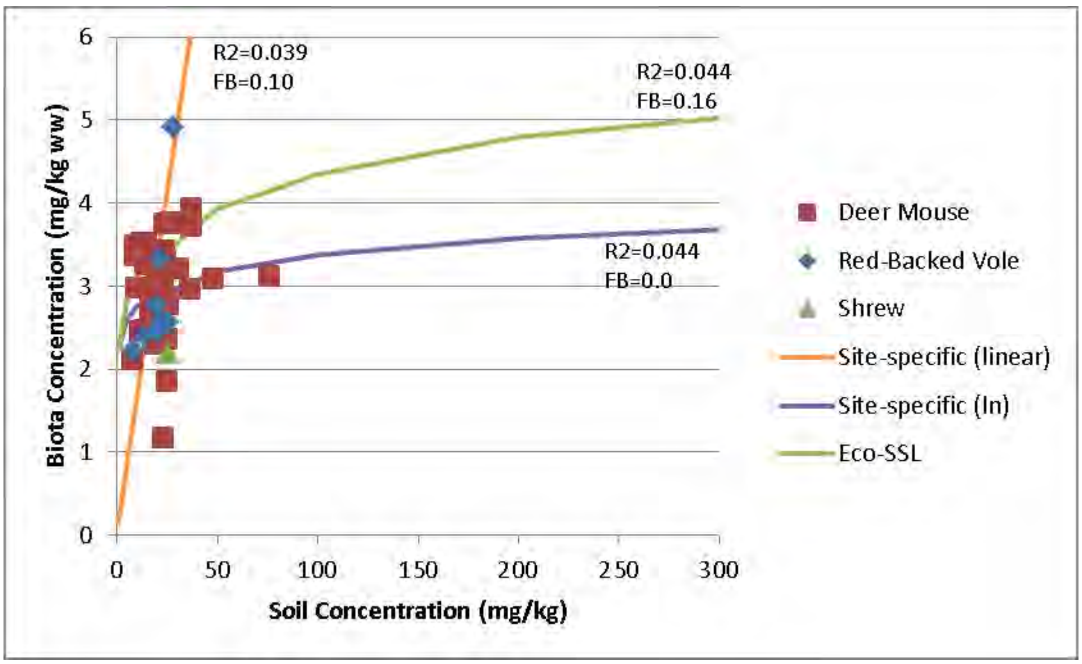


Figure K.37 shows the relationship between soil and small mammals (shown on a linear scale and log-scale) for manganese. Figure K.38 shows the site-specific transfer factor for all data combined over an appropriate range of concentrations for the assessment. For comparison purposes, a function from literature is also shown. The literature value is from Eco-SSL (U.S. EPA 2007) as is expressed as a linear function (Cm = 0.0205 * Cs); the result as a dry weight concentration was converted to a wet weight concentration using a 71% moisture content based on the measured data. The uptake by small mammals will be represented by the site-specific linear equation in the assessment.

Figure K.37 Measured small mammal and soil data - manganese

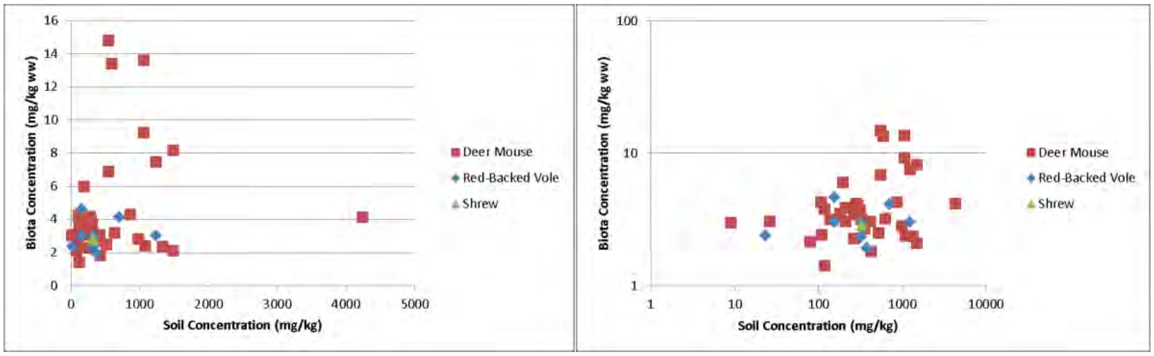


Figure K.38 Site-specific transfer factor for small mammals and soil - manganese

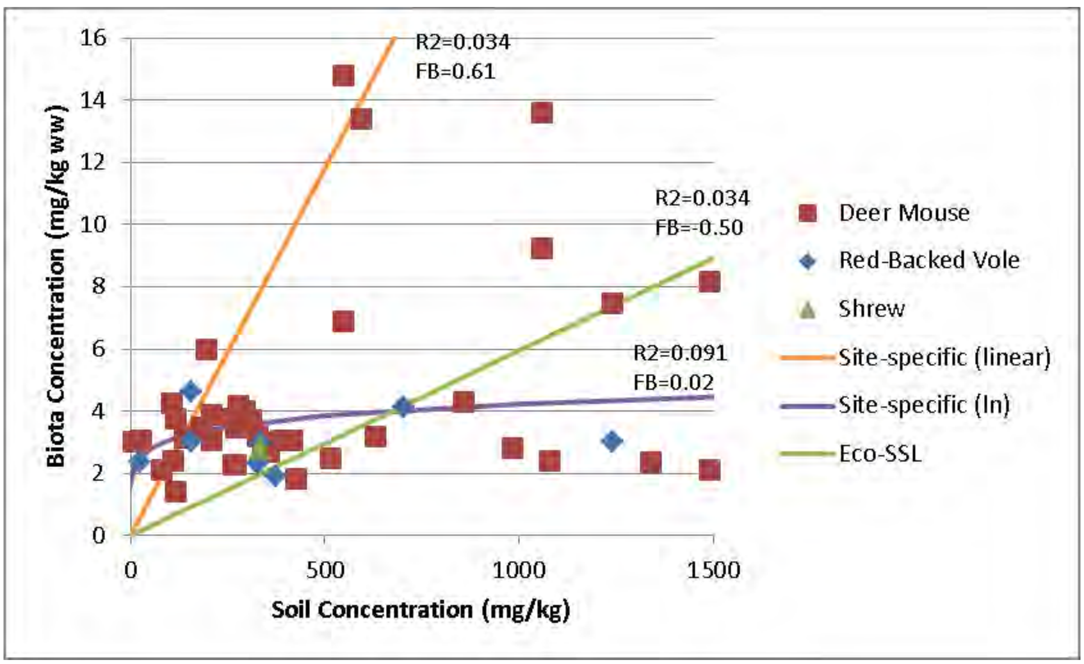


Figure K.39 shows the relationship between soil and small mammals (shown on a linear scale and log-scale) for zinc. Figure K.40 shows the site-specific transfer factor for all data combined over an appropriate range of concentrations for the assessment. For comparison purposes, a function from literature is also shown. The literature value is from Eco-SSL (U.S. EPA 2007) as is expressed as a log-linear function ($\ln(Cm) = 0.0706 * \ln(Cs) + 4.3632$); the result as a dry weight concentration was converted to a wet weight concentration using a 71% moisture content based on the measured data. As can be seen from the data (Figure K.39), there is no clear relationship between soil concentration and small mammals for zinc, since the Eco-SSL information provided a reasonable approximation of the concentrations at the site this relationship was used.

Figure K.39 Measured small mammal and soil data - zinc

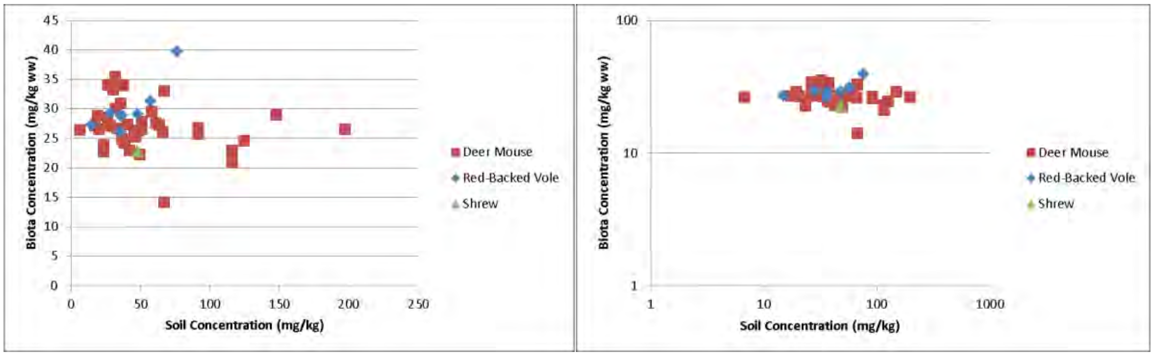
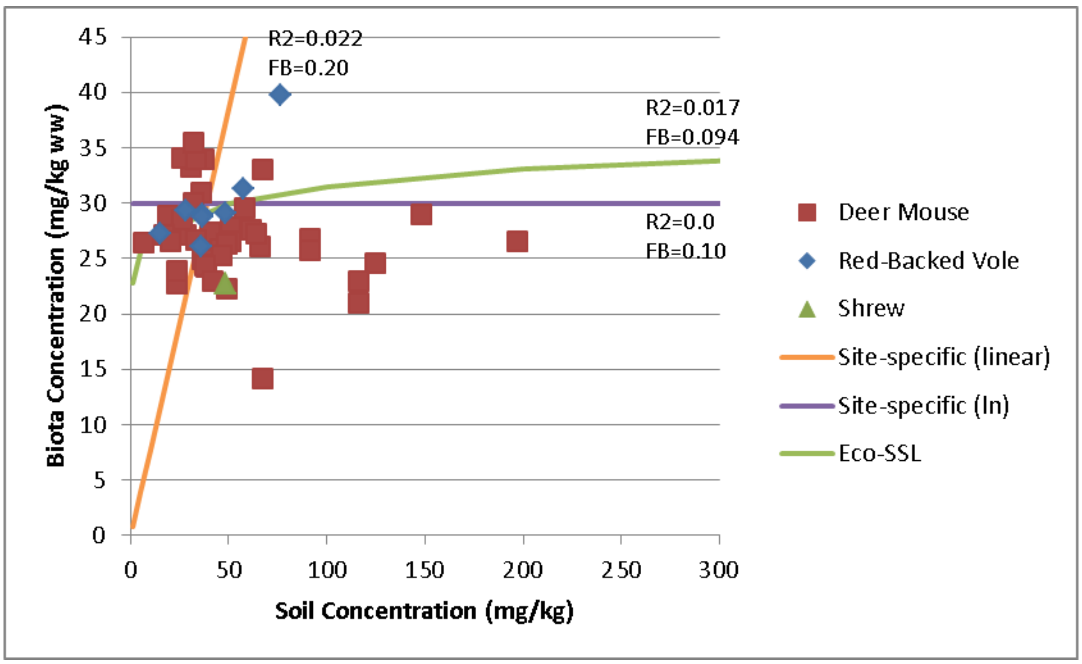


Figure K.40 Site-specific transfer factor for small mammals and soil - zinc



K.3.6.2 Summary

The site-specific relationship between small mammals and COPC levels in soil are as shown below. Both current and future vegetation EPCs were based on these TFs.

Antimony: $C_{sm} = \exp(0.11*\ln(C_{soil})-3)$

Arsenic: $C_{m} = \exp(0.28*\ln(C_{soil})-0.97)$

Copper: $C_{sm} = \exp(0.088*\ln(C_{soil})-0.81)$

Manganese: $C_{sm} = C_{soil} * 0.0205 * (1-0.71)$

Zinc: $C_{sm} = \exp(0.0706*\ln(C_{soil})+4.3632) * (1-0.71)$

Where:

C_{sm} = Small mammal (shrew and mouse) COPC concentration (mg/kg (ww))

C_{soil} = Soil COPC concentration (mg/kg (dw))

K.4 Current EPCs

The EPCs selected to represent current conditions are presented in Table K.9 and Table K.10 for use with the aquatic and terrestrial receptors, respectively. Some EPCs are based directly on measured data, while others are calculated using site-specific transfer factors (discussed in Section K.3) that were developed using measured data.

Available site data and details on the data handling are provided in Appendix B. The datasets used to derive EPCs directly are discussed further in Section K.4.1 and Section K.4.2.

For the purposes of determining EPCs, the U.S. EPA (2002) recommends the 95% UCLM as a reasonable estimate of the concentration that receptors will likely be exposed to over time. For the ERA, a 95th percentile was used as the EPC in instances where there were insufficient data available. The approach for developing the EPCs at the various ERA receptor locations are as follows:

- If a sufficient number of samples are available (i.e., 10 or more samples) the 95% UCLM was selected as the EPC which is considered to be a reasonable estimate of what the receptor will be exposed to over time.
- If there are insufficient numbers of samples (i.e., less than 10), the 95th percentile was selected as the EPC.

The 95% UCLM was calculated using ProUCL, which is a statistical program that provides 95% UCLM recommendations (based on data distribution, data set size, skewness, and percentage of non-detect observations) on how to obtain an accurate 95% UCLM. ProUCL may suggest more than one 95% UCLM estimate; in these cases, the highest appropriate 95% UCLM was selected. It is noted that the CCME (2016) suggests that the BCA bootstrap approach from ProUCL can be used for the majority of datasets; the selection of the highest 95% UCLM that may be greater than the BCA bootstrap recommendation is, therefore, a conservative approach.

Table K.9 Current EPCs for aquatic receptors

Media	Location	Units	Antimony	Arsenic	Chloride	Sulphate	Comment
Surface Water	Back Bay	mg/L	$3.5x10^{-4}$	$2.6x10^{-3}$	3.4	10.7	95% UCLM of available data.
Surface Water	Back Bay/Baker Creek	mg/L	0.11	0.14	NA	NA	Average of the EPCs for Back Bay and the lower reaches of Baker Creek.
Surface Water	Baker Creek Reach 0	mg/L	0.12	0.12	516	1,511	95% UCLM of available data.
Surface Water	Baker Creek Reach 1-3	mg/L	0.22	0.32	NA	NA	95th percentile of available data (n < 10).
Surface Water	Baker Creek Reach 4-5	mg/L	0.26	0.28	NA	NA	95% UCLM of available data.
Surface Water	Baker Creek Reach 6	mg/L	0.29	0.39	364	970	95% UCLM of available data.
Surface Water	Baker Creek Lower Reach (0-6)	mg/L	0.22	0.28	NA	NA	Average of the EPCs for Reach 0-6.
Surface Water	Baseline – Baker Creek Reach 7-11	mg/L	$2.5x10^{-3}$	0.05	4.1	28	95% UCLM of available data.
Surface Water	Background – Prosperous/Yellowknife Bay Locations	mg/L	$2.0x10^{-4}$	$5.6x10^{-4}$	5.4	16	95% UCLM of available data (except 95th percentile for antimony, where n < 10).
Sediment	Back Bay	mg/kg dw	39	955	NA	NA	95% UCLM of available data for the Giant Townsite (nearshore) and offshore sediments.
Sediment	Back Bay/ Baker Creek	mg/kg dw	191	1,501	NA	NA	Average of the EPCs for Back Bay and the lower reaches of Baker Creek.
Sediment	Baker Creek Reach 0	mg/kg dw	325	1,555	NA	NA	95% UCLM of available data.
Sediment	Baker Creek Reach 1-3	mg/kg dw	189	2,114	NA	NA	95% UCLM of available data.
Sediment	Baker Creek Reach 4-5	mg/kg dw	471	2,803	NA	NA	95% UCLM of available data.
Sediment	Baker Creek Reach 6	mg/kg dw	385	1,716	NA	NA	95th percentile of available data (n < 10).
Sediment	Baker Creek Lower Reach (0-6)	mg/kg dw	343	2,047	NA	NA	Average of the EPCs for Reach 0-6.
Sediment	Baseline – Baker Creek Reach 7-11	mg/kg dw	5.0	183	NA	NA	95% UCLM of available data.
Sediment	Background – All Locations	mg/kg dw	1.2	23	NA	NA	95% UCLM of available data.
Sediment	Background – South Yellowknife Bay	mg/kg dw	1.1	40	NA	NA	95th percentile of available data (n < 10).
Aquatic Vegetation	Back Bay	mg/kg ww	0.18	5.0	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Aquatic Vegetation	Baker Creek Reach 0	mg/kg ww	1.2	6.7	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Aquatic Vegetation	Baker Creek Reach 1-3	mg/kg ww	0.76	8.1	NA	NA	Calculated from sediment using transfer factors discussed in K.3.

Media	Location	Units	Antimony	Arsenic	Chloride	Sulphate	Comment
Aquatic Vegetation	Baker Creek Reach 4-5	mg/kg ww	1.8	9.6	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Aquatic Vegetation	Baker Creek Reach 6	mg/kg ww	1.5	7.2	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Aquatic Vegetation	Baker Creek Lower Reach (0-6)	mg/kg ww	1.3	8.0	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Aquatic Vegetation	Baseline – Baker Creek Reach 7-11	mg/kg ww	0.03	1.9	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Aquatic Vegetation	Background – South Yellowknife Bay	mg/kg ww	6.7×10^{-3}	0.75	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Back Bay	mg/kg ww	3.0	143	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Baker Creek Reach 0	mg/kg ww	25	233	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Baker Creek Reach 1-3	mg/kg ww	15	317	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Baker Creek Reach 4-5	mg/kg ww	37	420	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Baker Creek Reach 6	mg/kg ww	30	257	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Baker Creek Lower Reach (0-6)	mg/kg ww	27	307	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Baseline – Baker Creek Reach 7-11	mg/kg ww	0.39	27	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Background – South Yellowknife Bay	mg/kg ww	0.09	6.0	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Emergent Aquatic Insects	Back Bay	mg/kg ww	0.30	14	NA	NA	Assumed to be 1/10 concentration of benthic invertebrates, see K.3for details.
Emergent Aquatic Insects	Baker Creek Lower Reach (0-6)	mg/kg ww	2.7	31	NA	NA	Assumed to be 1/10 concentration of benthic invertebrates, see K.3for details.
Emergent Aquatic Insects	Baseline – Baker Creek Reach 7-11	mg/kg ww	0.04	2.7	NA	NA	Assumed to be 1/10 concentration of benthic invertebrates, see K.3for details.
Emergent Aquatic Insects	Background – South Yellowknife Bay	mg/kg ww	8.6×10^{-3}	0.60	NA	NA	Assumed to be 1/10 concentration of benthic invertebrates, see K.3for details.
Fish	Background – South Yellowknife Bay	mg/kg ww	1.5×10^{-3}	0.16	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.

Media	Location	Units	Antimony	Arsenic	Chloride	Sulphate	Comment
Fish	Baseline – Baker Creek Reach 7-11	mg/kg ww	$7.0x10^{-3}$	0.97	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Fish	Back Bay	mg/kg ww	0.05	3.7	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Fish	Back Bay/Baker Creek	mg/kg ww	0.31	5.9	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Fish	Baker Creek Lower Reach (0-6)	mg/kg ww	0.62	8.0	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Mouse	Background	mg/kg ww	0.05	1.4	0.06	1.4	Calculated from soil using transfer factors discussed in K.3.
Mouse	Giant Townsite	mg/kg ww	0.08	2.6	0.08	2.6	Calculated from soil using transfer factors discussed in K.3.
Mouse	Site Average	mg/kg ww	0.09	3.5	0.09	3.5	Calculated from soil using transfer factors discussed in K.3.

Notes: NA – EPC not calculated.
95% UCLM – 95% upper confidence limit of the mean.

Table K.10 Current EPCs for terrestrial receptors

Media	Location	Units	Antimony	Arsenic	Copper	Manganese	Zinc	Comment
Soil	Background	mg/kg dw	2.2	94	31	165	137	95% UCLM of available background Greenstone Belt data for antimony, arsenic, and zinc, 95% UCLM of regional background for copper and manganese due to lack of greenstone belt data.
Soil	Trapper Lake North	mg/kg dw	36	667	92	1,014	94	95% UCLM of available data.
Soil	West of Baker Creek	mg/kg dw	165	2,519	56	807	100	95% UCLM of available data.
Soil	East of Baker Creek	mg/kg dw	306	4,575	271	1,072	267	95% UCLM of available data.
Soil	South Baker Creek	mg/kg dw	120	3,519	104	1,159	133	95% UCLM of available data.
Soil	Giant Townsite	mg/kg dw	76	991	105	1,179	196	95% UCLM of available data.
Soil	Site Average	mg/kg dw	162	2,766	130	969	134	95% UCLM of available data.
Surface Water	Baker Creek Reach 0	mg/L	0.12	0.12	6.1×10^{-3}	0.05	8.8×10^{-3}	95% UCLM of available data.
Surface Water	Baker Creek Reach 1-3	mg/L	0.22	0.32	0.01	0.32	0.15	95^{th} percentile of available data (n < 10).
Surface Water	Baker Creek Reach 4-5	mg/L	0.26	0.28	7.2×10^{-3}	0.19	0.02	95% UCLM of available data.
Surface Water	Baker Creek Reach 6	mg/L	0.29	0.39	9.4×10^{-3}	0.04	4.8×10^{-3}	95% UCLM of available data.
Surface Water	Baker Creek Lower Reach (0-6)	mg/L	0.22	0.28	8.2×10^{-3}	0.15	0.04	Average of the EPCs for Reach 0-6.
Surface Water	Baseline - Baker Creek Reach 7-11	mg/L	2.5×10^{-3}	0.05	1.8×10^{-3}	0.17	3.7×10^{-3}	95% UCLM of available data.
Surface Water	Trapper Lake	mg/L	0.02	0.17	9.9×10^{-4}	0.03	6.1×10^{-3}	95% UCLM of available data (except 95^{th} percentile for antimony, where n < 10).
Foliage	Background	mg/kg ww	0.11	0.94	1.5	63	0.57	Calculated from soil using transfer factors discussed in K.3 except copper where measured data was used.
Foliage	Trapper Lake North	mg/kg ww	0.21	2.4	1.5	385	0.55	Calculated from soil using transfer factors discussed in K.3 except copper where measured data was used.

Media	Location	Units	Antimony	Arsenic	Copper	Manganese	Zinc	Comment
Foliage	West of Baker Creek	mg/kg ww	0.31	4.4	1.5	307	0.55	Calculated from soil using transfer factors discussed in K.3 except copper where measured data was used.
Foliage	East of Baker Creek	mg/kg ww	0.36	5.8	1.5	407	0.62	Calculated from soil using transfer factors discussed in K.3 except copper where measured data was used.
Foliage	South Baker Creek	mg/kg ww	0.29	5.1	1.5	440	0.57	Calculated from soil using transfer factors discussed in K.3 except copper where measured data was used.
Foliage	Giant Townsite	mg/kg ww	0.26	2.8	1.5	448	0.59	Calculated from soil using transfer factors discussed in K.3 except copper where measured data was used.
Foliage	Site Average	mg/kg ww	0.31	4.6	1.5	368	0.57	Calculated from soil using transfer factors discussed in K.3 except copper where measured data was used.
Woody Vegetation	Background	mg/kg ww	0.11	0.94	1.5	63	0.57	Set equal to foliage.
Woody Vegetation	Trapper Lake North	mg/kg ww	0.21	2.4	1.5	385	0.55	Set equal to foliage.
Woody Vegetation	West of Baker Creek	mg/kg ww	0.31	4.4	1.5	307	0.55	Set equal to foliage.
Woody Vegetation	East of Baker Creek	mg/kg ww	0.36	22	1.5	407	0.62	Set equal to foliage except arsenic, where the 95% UCLM of measured data was used.
Woody Vegetation	South Baker Creek	mg/kg ww	0.29	5.1	1.5	440	0.57	Set equal to foliage.
Woody Vegetation	Giant Townsite	mg/kg ww	0.26	2.8	1.5	448	0.59	Set equal to foliage.
Woody Vegetation	Site Average	mg/kg ww	0.31	4.6	1.5	368	0.57	Set equal to foliage.
Fruits and Flowers	Background	mg/kg ww	0.11	0.94	1.5	63	0.57	Set equal to foliage.
Fruits and Flowers	Trapper Lake North	mg/kg ww	0.21	2.4	1.5	385	0.55	Set equal to foliage.
Fruits and Flowers	West of Baker Creek	mg/kg ww	0.31	4.4	1.5	307	0.55	Set equal to foliage.
Fruits and Flowers	East of Baker Creek	mg/kg ww	0.36	49	1.5	407	0.62	Set equal to foliage except arsenic, where the 95% UCLM of measured data was used.
Fruits and Flowers	South Baker Creek	mg/kg ww	0.29	5.1	1.5	440	0.57	Set equal to foliage.
Fruits and Flowers	Giant Townsite	mg/kg ww	0.26	2.8	1.5	448	0.59	Set equal to foliage.

Media	Location	Units	Antimony	Arsenic	Copper	Manganese	Zinc	Comment
Fruits and Flowers	Site Average	mg/kg ww	0.31	4.6	1.5	368	0.57	Set equal to foliage.
Terrestrial Insects	Background	mg/kg ww	0.11	0.94	1.5	63	0.57	Set equal to foliage.
Terrestrial Insects	Trapper Lake North	mg/kg ww	0.21	2.4	1.5	385	0.55	Set equal to foliage.
Terrestrial Insects	West of Baker Creek	mg/kg ww	0.31	4.4	1.5	307	0.55	Set equal to foliage.
Terrestrial Insects	East of Baker Creek	mg/kg ww	0.36	5.8	1.5	407	0.62	Set equal to foliage.
Terrestrial Insects	South Baker Creek	mg/kg ww	0.29	5.1	1.5	440	0.57	Set equal to foliage.
Terrestrial Insects	Giant Townsite	mg/kg ww	0.26	2.8	1.5	448	0.59	Set equal to foliage.
Terrestrial Insects	Site Average	mg/kg ww	0.31	4.6	1.5	368	0.57	Set equal to foliage.
Shrew	Background	mg/kg ww	0.05	1.4	0.60	0.98	32	Calculated from soil using transfer factors discussed in K.3.
Shrew	Site Average	mg/kg ww	0.09	3.5	0.68	5.8	32	Calculated from soil using transfer factors discussed in K.3.
Shrew	Giant Townsite	mg/kg ww	0.08	2.6	0.67	7.0	33	Calculated from soil using transfer factors discussed in K.3.
Mouse	Background	mg/kg ww	0.05	1.4	0.60	0.98	32	Calculated from soil using transfer factors discussed in K.3.
Mouse	Site Average	mg/kg ww	0.09	3.5	0.68	5.8	32	Calculated from soil using transfer factors discussed in K.3.
Mouse	Giant Townsite	mg/kg ww	0.08	2.6	0.67	7.0	33	Calculated from soil using transfer factors discussed in K.3.
Moose	Background	mg/kg ww	$1.6x10^{-3}$	0.01	0.90	0.22	0.01	Derived from the voluntary sampling program.
Moose	Giant Mine	mg/kg ww	$1.4x10^{-3}$	0.40	1.2	0.23	0.01	Derived from the voluntary sampling program.
Caribou	Background	mg/kg ww	$1.0x10^{-3}$	0.02	3.3	0.44	23	Derived from the voluntary sampling program.
Caribou	Giant Mine	mg/kg ww	$1.0x10^{-3}$	0.02	3.3	0.44	23	Assumed the same as Background.

Notes: 95% UCLM – 95% upper confidence limit of the mean.

K.4.1 Aquatic Environment

As shown in Table K.9, with the exception of EPCs for surface water and sediment, all other EPCs for aquatic media were developed using the site-specific transfer factors discussed in Section K.3. The following sections present the available measured data that went into developing the current surface water and sediment EPCs for the ERA.

K.4.1.1 Lower Baker Creek (Reach 0 to 6)

Lower Baker Creek surface water sample locations are shown in Figure K.41 and summary statistics for each of the Baker Creek areas considered in the ERA are shown in Table K.11. Surface water EPCs were developed for both aquatic and terrestrial COPC as surface water is an evaluated pathway for both aquatic and terrestrial receptors. As can be seen, there is very good coverage of lower Baker Creek and this dataset is considered to be adequate for use in the ERA.

Figure K.41 Surface water sampling locations in lower Baker Creek

Table K.11 Surface water summary statistics for Baker Creek locations

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95th %	95% UCLM
Baker Creek Reach 0										
Antimony	mg/L	250	4	$1.7x10^{-4}$	1.4	0.08	0.14	0.01	0.33	0.12
Arsenic	mg/L	249	1	$3.5x10^{-4}$	0.29	0.10	0.08	0.04	0.24	0.12
Chloride	mg/L	12	0	1.9	356	85	150	9.4	355	516
Copper	mg/L	250	6	$5.0x10^{-4}$	0.10	$5.5x10^{-3}$	$6.9x10^{-3}$	$4.0x10^{-3}$	0.01	$6.1x10^{-3}$
Manganese	mg/L	250	65	$1.0x10^{-3}$	0.86	0.03	0.08	0.01	0.08	0.05
Sulphate	mg/L	12	0	3.2	1,040	248	440	21	1,035	1,511
Zinc	mg/L	250	156	$1.5x10^{-3}$	1.5	$3.4x10^{-3}$	0.10	$3.4x10^{-3}$	0.01	$8.8x10^{-3}$
Baker Creek Reach 1-3										
Antimony	mg/L	8	2	0.02	0.22	0.13	0.09	0.09	0.22	NA
Arsenic	mg/L	8	0	0.09	0.33	0.20	0.09	0.18	0.32	NA
Chloride	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/L	8	2	$4.4x10^{-3}$	0.01	$7.5x10^{-3}$	$2.2x10^{-3}$	$7.2x10^{-3}$	0.01	NA
Manganese	mg/L	8	0	0.02	0.41	0.10	0.13	0.06	0.32	NA
Sulphate	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/L	8	2	$5.5x10^{-3}$	0.15	0.05	0.06	0.02	0.15	NA
Baker Creek Reach 4-5										
Antimony	mg/L	11	0	0.02	0.25	0.15	0.08	0.11	0.24	0.26
Arsenic	mg/L	11	0	0.08	0.36	0.22	0.09	0.20	0.34	0.28
Chloride	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/L	11	0	$4.5x10^{-3}$	$8.4x10^{-3}$	$6.4x10^{-3}$	$1.6x10^{-3}$	$6.2x10^{-3}$	$8.4x10^{-3}$	$7.2x10^{-3}$
Manganese	mg/L	11	0	0.01	0.40	0.08	0.12	0.04	0.29	0.19
Sulphate	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/L	11	0	$5.8x10^{-3}$	0.03	0.01	$6.2x10^{-3}$	$1.0x10^{-2}$	0.02	0.02
Baker Creek Reach 6										
Antimony	mg/L	21	0	0.01	0.41	0.24	0.11	0.19	0.37	0.29
Arsenic	mg/L	21	0	0.08	0.94	0.31	0.19	0.27	0.69	0.39
Chloride	mg/L	16	0	69	496	310	122	280	479	364
Copper	mg/L	21	0	$3.5x10^{-3}$	0.01	$8.5x10^{-3}$	$2.4x10^{-3}$	$8.1x10^{-3}$	0.01	$9.4x10^{-3}$
Manganese	mg/L	21	0	0.01	0.17	0.04	0.03	0.03	0.05	0.04
Sulphate	mg/L	16	0	200	1,200	836	306	762	1,155	970
Zinc	mg/L	21	15	$1.5x10^{-3}$	$7.6x10^{-3}$	$3.3x10^{-3}$	$1.6x10^{-3}$	$3.0x10^{-3}$	$5.6x10^{-3}$	$4.8x10^{-3}$

Note: N – number of samples; MDL – method detection limit; Min - minimum; Max – maximum; StDev – standard deviation; GeoMean – geometric mean; 95th % – 95th percentile; 95% UCLM – 95th percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated due to lack of data.

Sediment sample locations are shown in Figure K.42, and summary statistics for each of the Baker Creek areas considered in the ERA are shown in Table K.12. Sediment EPCs were only generated for aquatic COPC, as sediment ingestion is not a pathway considered for terrestrial receptors. Chloride and sulphate are conservative parameters and are assumed to not undergo transfer to sediment and are, therefore, not included in the table. Sediment EPCs were generated to support the assessment of benthic invertebrates as well as for the food chain model. For the ERA, the surficial sediment samples were included in the assessment, specifically the samples collected from the 0-10 cm horizon (note: if samples were collected from both 0-5 cm and 5-10 cm, only the upper layer was used). As can be seen, with at least eight samples from each evaluated segment, there is good coverage of lower Baker Creek, and this dataset is considered to be adequate for use in the ERA.

Figure K.42 Sediment sampling locations in lower Baker Creek

Table K.12 Sediment summary statistics for lower Baker Creek locations

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95th %	95% UCLM
Baker Creek Reach 0										
Antimony	mg/kg dw	24	0	0.99	630	188	194	69	593	325
Arsenic	mg/kg dw	24	0	17	3,830	1,218	963	681	2,810	1,555
Cadmium	mg/kg dw	24	1	0.05	2.50	0.75	0.53	0.56	1.39	0.94
Chromium	mg/kg dw	24	0	10	51	39	12	36	51	43
Copper	mg/kg dw	24	0	9	2660	624	840	233	2511	1078
Lead	mg/kg dw	24	0	5	254	71	62	43	164	92
Mercury	mg/kg dw	24	3	0.006	0.37	0.15	0.10	0.10	0.34	0.18
Zinc	mg/kg dw	24	0	19	590	205	129	162	374	250
Baker Creek Reach 1-3										
Antimony	mg/kg dw	10	0	7.5	340	125	111	73	284	189
Arsenic	mg/kg dw	11	0	93	4,790	1,373	1,355	828	3,650	2,114
Cadmium	mg/kg dw	11	0	0.1	2.8	1.0	0.8	0.7	2.2	1.4
Chromium	mg/kg dw	11	0	29	53	44	6.4	43	51	47
Copper	mg/kg dw	11	0	34	311	166	107	126	294	225
Lead	mg/kg dw	11	0	10	467	108	132	54	314	253
Mercury	mg/kg dw	11	0	0.010	0.43	0.12	0.12	0.07	0.31	0.19
Zinc	mg/kg dw	11	0	58	604	224	159	178	457	311
Baker Creek Reach 4-5										
Antimony	mg/kg dw	11	0	1.0	745	136	221	30	505	471
Arsenic	mg/kg dw	11	0	12	4,170	864	1,306	224	3,270	2,803
Cadmium	mg/kg dw	11	0	0.1	8.5	1.1	2.5	0.3	4.7	4.3
Chromium	mg/kg dw	11	0	27	55	42	9.4	41	53	47
Copper	mg/kg dw	11	0	23	1950	350	596	110	1438	1044
Lead	mg/kg dw	11	0	7	1420	149	422	24	742	1415
Mercury	mg/kg dw	11	0	0.01	0.84	0.14	0.25	0.04	0.59	0.42
Zinc	mg/kg dw	11	0	52	1510	242	429	123	930	806
Baker Creek Reach 6										
Antimony	mg/kg dw	8	0	56	411	182	138	139	385	NA
Arsenic	mg/kg dw	8	0	267	1,870	853	575	686	1,716	NA
Cadmium	mg/kg dw	8	1	0.1	2.2	0.8	0.7	0.5	1.9	NA
Chromium	mg/kg dw	7	0	24	57	41	12	39	54	NA
Copper	mg/kg dw	8	0	60	1170	567	409	407	1142	NA
Lead	mg/kg dw	8	0	10	264	106	108	55	253	NA
Mercury	mg/kg dw	8	1	0.03	0.26	0.09	0.09	0.06	0.23	NA
Zinc	mg/kg dw	8	0	54	554	226	186	165	508	NA

Note: N – number of samples; MDL – method detection limit; Min - minimum; Max – maximum; StDev – standard deviation; GeoMean – geometric mean; 95th % – 95th percentile; 95% UCLM – 95th percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

K.4.1.2 Back Bay and North Yellowknife Bay

Back Bay surface water sample locations are shown in Figure K.43 and summary statistics for Back Bay are shown in Table K.13. With 48 samples, there is very good coverage of Back Bay and this dataset is considered to be adequate for use in the ERA.

North Yellowknife Bay was included as a compartment in the water quality and sediment quality modelling. The summary statistics for North Yellowknife Bay are provided in Table K.14 and Figure K.44 shows the sample locations. The dataset provides a reasonable basis for characterizing the conditions in the area for modelling purposes.

Back Bay sediment sample locations are shown in Figure K.43, and summary statistics for the available data are shown in Table K.15. As can be seen, with 27 samples, there is reasonable coverage of Back Bay, and this dataset is considered to be adequate for use in the ERA.

North Yellowknife Bay was included as a compartment in the water quality and sediment quality modelling. The summary statistics for North Yellowknife Bay are provided in Table K.16, and Figure K.44 shows the sample locations. The dataset provides a reasonable basis for characterizing the conditions in the area for modelling purposes.

For the assessment of benthic invertebrates, a larger area was considered, and Table K.17 provides the summary statistics for North Yellowknife Bay and Back Bay combined. As discussed previously, for the ERA, only surficial sediment samples (0-10 cm) were included in the assessment.

Figure K.43 Surface water and sediment sampling locations in Back Bay

Table K.13 Surface water summary statistics for Back Bay locations

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95th %	95% UCLM
Antimony	mg/L	48	42	$2.5x10^{-5}$	$1.2x10^{-3}$	$2.5x10^{-4}$	$1.9x10^{-4}$	$2.1x10^{-4}$	$6.5x10^{-4}$	$3.5x10^{-4}$
Arsenic	mg/L	48	0	$3.1x10^{-4}$	$6.5x10^{-3}$	$1.9x10^{-3}$	$1.2x10^{-3}$	$1.5x10^{-3}$	$3.6x10^{-3}$	$2.6x10^{-3}$
Chloride	mg/L	48	0	1.7	5.7	3.1	1.2	2.9	5.3	3.4
Copper	mg/L	48	25	$5.0x10^{-4}$	$1.6x10^{-3}$	$8.1x10^{-4}$	$3.5x10^{-4}$	$7.4x10^{-4}$	$1.3x10^{-3}$	$1.1x10^{-3}$
Manganese	mg/L	48	30	$1.0x10^{-3}$	$4.0x10^{-3}$	$2.3x10^{-3}$	$7.5x10^{-4}$	$2.2x10^{-3}$	$3.3x10^{-3}$	$2.6x10^{-3}$
Sulphate	mg/L	48	0	3.1	18	7.8	4.6	6.5	16	11
Zinc	mg/L	48	34	$1.5x10^{-3}$	0.01	$3.8x10^{-3}$	$3.2x10^{-3}$	$2.9x10^{-3}$	0.01	$5.2x10^{-3}$

Note: N – number of samples; MDL – method detection limit; Min – minimum; Max – maximum; StDev – standard deviation; GeoMean - geometric mean; 95th % – 95th percentile; 95% UCLM – 95th percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

Table K.14 Surface water summary statistics for North Yellowknife Bay locations

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95th %	95% UCLM
Antimony	mg/L	63	52	$2.5x10^{-5}$	$6.8x10^{-4}$	$2.3x10^{-4}$	$1.3x10^{-4}$	$2.0x10^{-4}$	$5.8x10^{-4}$	$2.3x10^{-4}$
Arsenic	mg/L	69	0	$3.1x10^{-4}$	$7.5x10^{-3}$	$1.9x10^{-3}$	$1.2x10^{-3}$	$1.5x10^{-3}$	$4.1x10^{-3}$	$2.3x10^{-3}$
Chloride	mg/L	63	0	1.7	7.9	3.3	1.5	3.19	5.9	3.7
Sulphate	mg/L	63	0	2.8	22	8.5	5.5	7.0	18	11.5

Note: N – number of samples; MDL – method detection limit; Min – minimum; Max - maximum; StDev – standard deviation; GeoMean - geometric mean; 95th % – 95th percentile; 95% UCLM – 95th percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

Table K.15 Sediment summary statistics for Back Bay locations

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95th %	95% UCLM
Antimony	mg/kg dw	27	0	0.80	106	35	26	23	69	49
Arsenic	mg/kg dw	27	0	18	1,980	950	515	658	1,834	1,119

Note: N – number of samples; MDL – method detection limit; Min - minimum; Max – maximum; StDev – standard deviation; GeoMean – geometric mean; 95th % – 95th percentile; 95% UCLM – 95th percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

Table K.16 Sediment summary statistics for North Yellowknife Bay locations

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95th %	95% UCLM
Antimony	mg/kg dw	23	0	9	56	17	12	14	37	28
Arsenic	mg/kg dw	23	0	152	1200	619	252	557	979	709

Note: N – number of samples; MDL – method detection limit; Min – minimum; Max - maximum; StDev – standard deviation; GeoMean – geometric mean; 95th % – 95th percentile; 95% UCLM – 95th percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

Figure K.44 Surface water and sediment sampling locations in North Yellowknife Bay

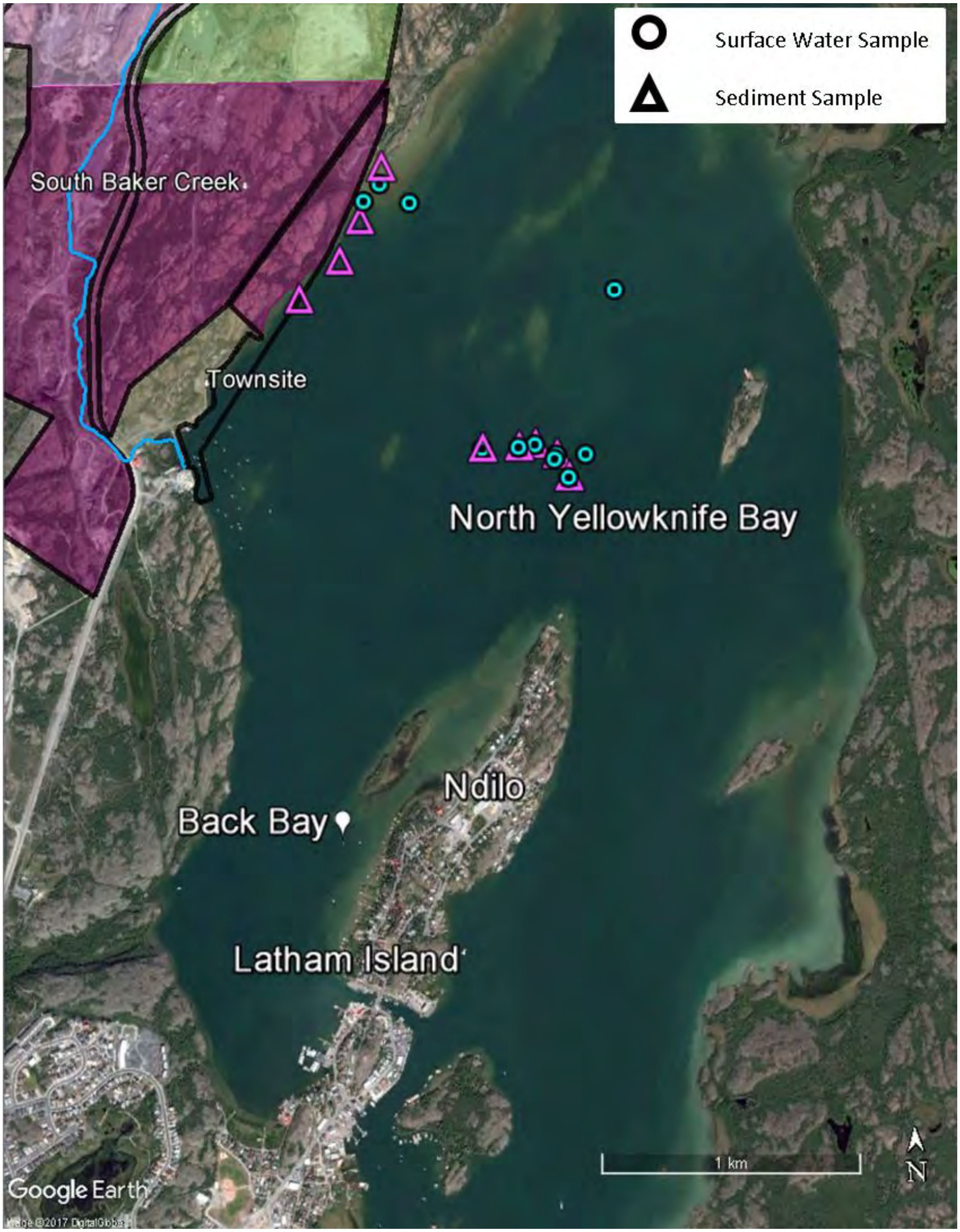


Table K.17 Sediment summary statistics for North Yellowknife Bay and Back Bay locations

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95th %	95% UCLM
Antimony	mg/kg dw	50	0	0.8	106	27	22	18	64	40
Arsenic	mg/kg dw	50	0	18	1980	798	444	610	1723	1071
Chromium	mg/kg dw	50	0	23	52	42	9	41	51	44
Copper	mg/kg dw	50	0	21	231	83	58	66	206	97

Note: N – number of samples; MDL – method detection limit; Min – minimum; Max – maximum; StDev – standard deviation; GeoMean – geometric mean; 95th % – 95th percentile; 95% UCLM – 95th percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

K.4.1.3 Trapper Lake

Surface water EPCs were developed for Trapper Lake for use as a drinking water source for terrestrial receptors on the Trapper Lake North quadrant of the Giant Mine. This pairing was made as Trapper Lake is the closest waterbody to the Trapper Lake North quadrant of the Giant Mine. Summary statistics for Trapper Lake surface water data are shown in Table K.18 and sample locations are shown in Figure K.45.

Figure K.45 Surface water sampling locations in Trapper Lake

Table K.18 Surface water summary statistics for Trapper Lake

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95th %	95% UCLM
Antimony	mg/L	9	1	$4.5x10^{-3}$	0.03	$9.1x10^{-3}$	$7.9x10^{-3}$	$7.6x10^{-3}$	0.02	N/A
Arsenic	mg/L	14	0	0.08	0.24	0.15	0.04	0.14	0.21	0.17
Copper	mg/L	14	7	$2.5x10^{-4}$	0.01	$1.4x10^{-3}$	$2.5x10^{-3}$	$7.4x10^{-4}$	$4.5x10^{-3}$	$9.9x10^{-4}$
Manganese	mg/L	9	0	0.01	0.03	0.02	$7.9x10^{-3}$	0.02	0.03	N/A
Zinc	mg/L	14	9	$2.0x10^{-3}$	0.15	0.01	0.04	$4.0x10^{-3}$	0.06	$6.1x10^{-3}$

Note: N – number of samples; MDL – method detection limit; Min – minimum; Max - maximum; StDev – standard deviation; GeoMean – geometric mean; 95th % – 95th percentile; 95% UCLM – 95th percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

K.4.1.4 Background and Baseline Locations

The upper reaches of Baker Creek (Reach 7-11) were used in the ERA to be representative of baseline conditions in Baker Creek. Upper Baker Creek surface water summary statistics are shown in Table K.19, and additional discussion is provided in Appendix C. As can be seen, with 48 samples, there is very good coverage of upper Baker Creek, and this dataset is considered to be adequate for representing baseline Baker Creek conditions in the ERA.

While the upper reaches of Baker Creek are appropriate to represent baseline conditions in Baker Creek, background water quality in the area was also used for Back Bay. Summary statistics on this dataset is provided in Table K.20, and additional information is provided in Appendix C.

Table K.19 Surface water summary statistics for upper Baker Creek (Reach 7-11)

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95th %	95% UCLM
Antimony	mg/L	28	1	$7.0x10^{-4}$	0.30	0.01	0.06	$1.5x10^{-3}$	$5.0x10^{-3}$	$2.5x10^{-3}$
Arsenic	mg/L	30	0	0.02	0.10	0.04	0.02	0.04	0.08	0.05
Chloride	mg/L	24	0	2.5	6.6	3.7	1.1	3.5	5.1	4.1
Copper	mg/L	30	9	$2.5x10^{-4}$	$6.8x10^{-3}$	$1.2x10^{-3}$	$1.3x10^{-3}$	$7.4x10^{-4}$	$2.9x10^{-3}$	$1.8x10^{-3}$
Manganese	mg/L	28	0	$2.9x10^{-3}$	1.3	0.10	0.24	0.04	0.31	0.17
Sulphate	mg/L	24	0	2.2	72	13	17	7.4	47	28
Zinc	mg/L	30	19	$1.4x10^{-3}$	$7.9x10^{-3}$	$2.5x10^{-3}$	$1.5x10^{-3}$	$2.2x10^{-3}$	$4.6x10^{-3}$	$3.7x10^{-3}$

Note: N – number of samples; MDL – method detection limit; Min – minimum; Max – maximum; StDev – standard deviation; GeoMean – geometric mean; 95th % – 95th percentile; 95% UCLM – 95th percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

Table K.20 Surface water summary statistics for Prosperous Lake, Yellowknife Bay and Yellowknife River locations

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95^{th} %	95% UCLM
Antimony	mg/L	19	18	2.5×10^{-5}	2.0×10^{-4}	1.6×10^{-4}	6.8×10^{-5}	1.4×10^{-4}	2.0×10^{-4}	NA
Arsenic	mg/L	19	1	2.0×10^{-4}	0.0012	4.8×10^{-4}	2.1×10^{-4}	4.4×10^{-4}	8.0×10^{-4}	5.6×10^{-4}
Chloride	mg/L	19	0	1.6	6.4	3.5	1.9	3.01	6.2	5.4
Copper	mg/L	19	8	0.001	0.002	0.001	4.0×10^{-4}	8.1×10^{-4}	0.001	0.0011
Manganese	mg/L	19	12	0.001	0.0093	0.0024	0.0019	0.0020	0.0048	0.0035
Sulphate	mg/L	20	0	2.7	21	8.9	7.8	6.1	20	16
Zinc	mg/L	19	17	0.0015	0.011	0.0026	0.0022	0.0022	0.0061	0.0046

Note: N – number of samples; MDL – method detection limit; Min – minimum; Max – maximum; StDev – standard deviation; GeoMean - geometric mean; 95^{th} % – 95^{th} percentile; 95% UCLM – 95^{th} percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

Similar to for surface water, measured sediment levels in the upper reaches of Baker Creek were taken to be representative of baseline conditions in Baker Creek. Summary statistics on this dataset are shown in Table K.21, and additional information is provided in Appendix C.

Background sediment levels applicable to the Back Bay area were derived based on measured levels from South Yellowknife Bay (near Horseshoe Island); summary statistics for this dataset are provided in Table K.22, and additional information is provided in Appendix C. Due to the limited number of samples (N=5), the average was used as the appropriate statistic for comparison to the data from Back Bay and North Yellowknife Bay.

A third background/baseline sediment EPC was developed for use with ecological receptors that can be present in both river and lake systems and may range across these environments. For these EPCs, sediment data from South Yellowknife Bay (near Horseshoe Island) was combined with measurements from Yellowknife River; summary statistics for this dataset are shown in Table K.23 and discussed further in Appendix C.

Table K.21 Sediment summary statistics for upper Baker Creek (Reach 7-11)

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95th %	95% UCLM
Antimony	mg/kg dw	27	0	0.36	12	4.1	3.0	3.0	9.6	5.1
Arsenic	mg/kg dw	27	0	16	440	152	96	119	294	183
Cadmium	mg/kg dw	27	12	0.03	0.25	0.11	0.07	0.09	0.24	0.13
Chromium	mg/kg dw	28	0	21	135	33	23	30	69	41
Copper	mg/kg dw	27	0	9.0	25	15	5	14	22	17
Lead	mg/kg dw	27	1	2.5	11	5.9	2.0	5.6	9.2	6.7
Mercury	mg/kg dw	27	2	0.01	0.13	0.03	0.03	0.03	0.08	0.05
Zinc	mg/kg dw	36	0	0	486	49	77	25	79	42

Note: N – number of samples; MDL – method detection limit; Min – minimum; Max – maximum; StDev – standard deviation; GeoMean – geometric mean; 95th % – 95th percentile; 95% UCLM – 95th percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

Table K.22 Sediment summary statistics for South Yellowknife Bay

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95th %	95% UCLM
Antimony	mg/kg dw	5	0	0.95	1.1	1.0	0.05	1.0	1.1	NA
Arsenic	mg/kg dw	5	0	20	43	27	9.1	26	40	NA
Chromium	mg/kg dw	5	0	46	50	48	1.6	48	50	NA
Copper	mg/kg dw	5	0	38	44	40	2.1	40	43	NA

Note: N – number of samples; MDL – method detection limit; Min - minimum; Max – maximum; StDev – standard deviation; GeoMean – geometric mean; 95th % – 95th percentile; 95% UCLM – 95th percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

Table K.23 Sediment summary statistics for all background locations

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95th %	95% UCLM
Antimony	mg/kg dw	11	0	0.11	1.1	0.70	0.40	0.53	1.1	1.2
Arsenic	mg/kg dw	11	0	2.5	43	16	13	12	35	23

Note: N – number of samples; MDL – method detection limit; Min – minimum; Max - maximum; StDev – standard deviation; GeoMean – geometric mean; 95th % – 95th percentile; 95% UCLM – 95th percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

K.4.2 Terrestrial Environment

As shown in Table K.10, with the exception of EPCs for soil, some terrestrial vegetation, and some wildlife, all other EPCs for terrestrial media were developed using the site-specific transfer factors discussed in Section K.3. The following sections present the available measured data that went into developing the EPCs for the ERA.

K.4.2.1 Giant Site

In developing EPCs for the Giant Mine, it was conservatively assumed that the entire site consists of accessible soil covered land. While it is known that there are portions of the site that are bare bedrock with soil in crevices, without further information, this could not be accounted for in the assessment. Only surficial soil samples (0-10 cm) were considered in generating the summary statistics.

Trapper Lake North

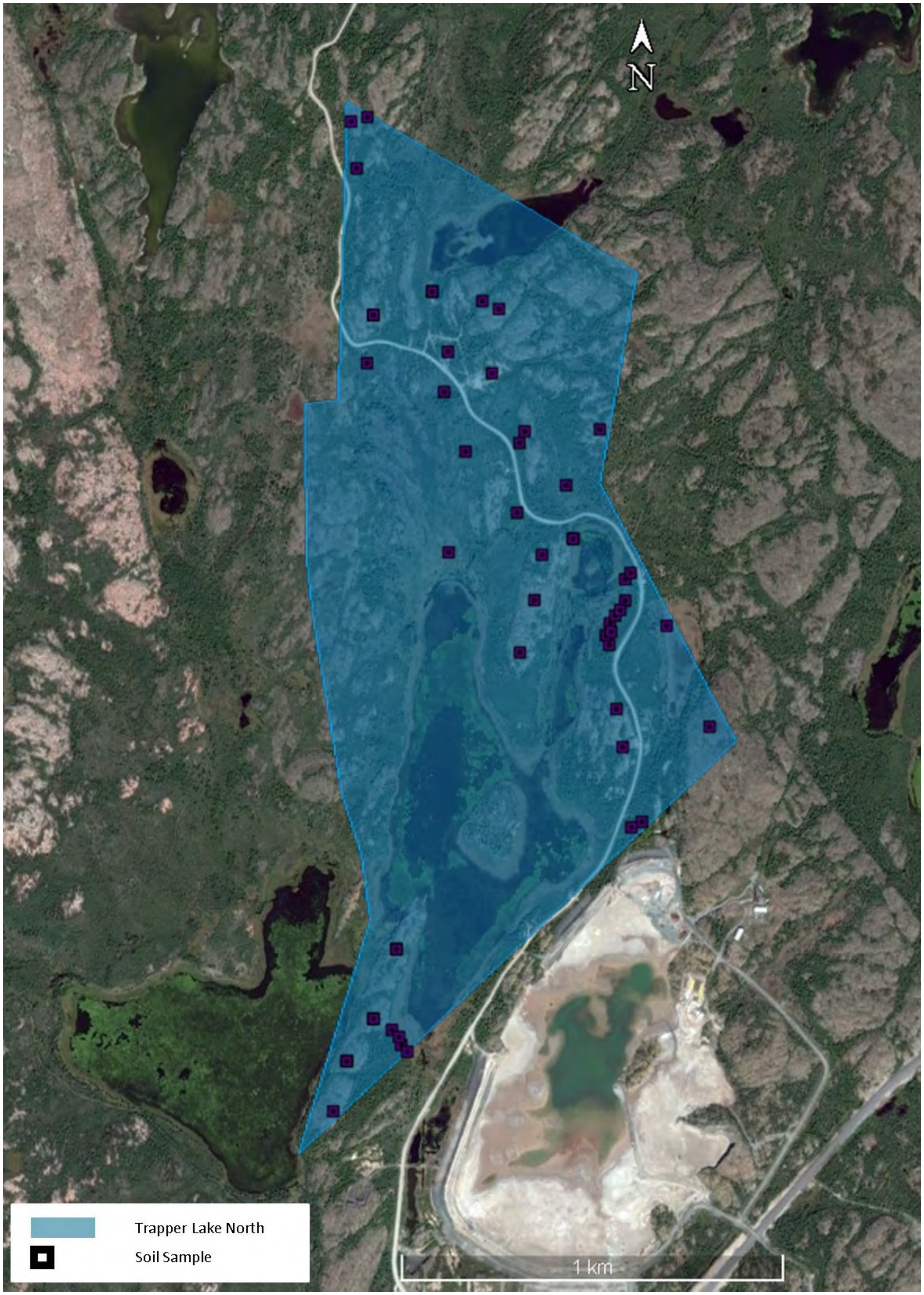
Trapper Lake North soil sample locations are shown in Figure K.46 and summary statistics for the dataset are shown in Table K.24. As can be seen with over 58 samples from this quadrant, the dataset is considered to be adequate for use in the ERA.

Table K.24 Soil summary statistics for Trapper Lake North

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95th %	95% UCLM
Antimony	mg/kg dw	61	0	0.94	165	29	31	18	92	36
Arsenic	mg/kg dw	66	0	35	3,600	537	677	305	1,475	667
Copper	mg/kg dw	58	0	2.5	310	54	67	31	201	92
Manganese	mg/kg dw	61	0	9.0	6,000	781	1,074	365	3,400	1,014
Zinc	mg/kg dw	58	0	6.7	250	78	62	57	202	94

Note: N – number of samples; MDL – method detection limit; Min – minimum; Max – maximum; StDev – standard deviation; GeoMean – geometric mean; 95th % – 95th percentile; 95% UCLM – 95th percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

Figure K.46 Soil sampling locations in Trapper Lake North



West of Baker Creek

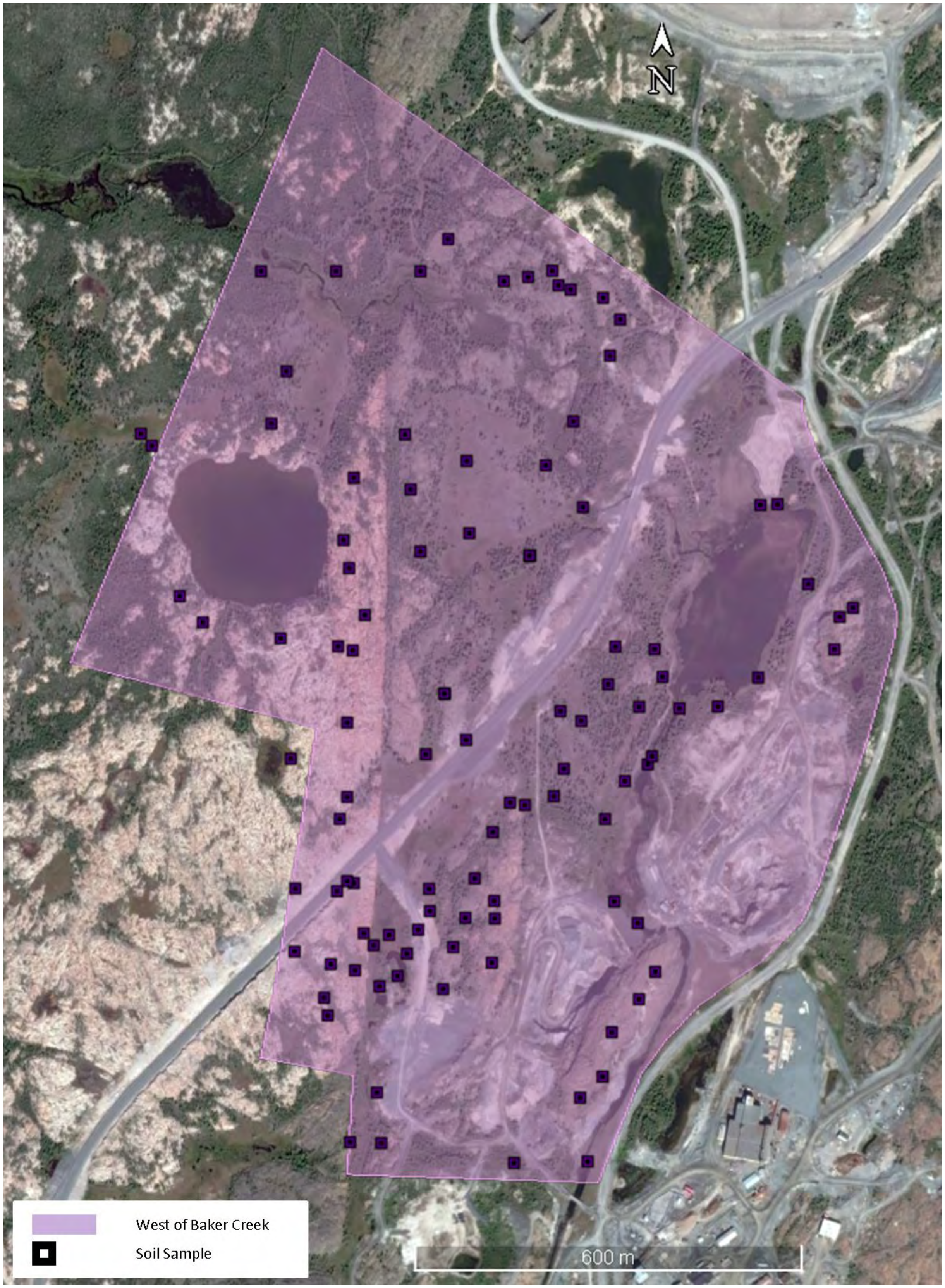
West of Baker Creek soil sample locations are shown in Figure K.47, and summary statistics for the dataset are shown in Table K.25. As can be seen with over 106 samples from this quadrant, the dataset is considered to be adequate for use in the ERA.

Table K.25 Soil summary statistics for West of Baker Creek

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95^{th} %	95% UCLM
Antimony	mg/kg dw	109	4	0.79	1,180	125	201	45	486	165
Arsenic	mg/kg dw	113	0	26	2.3×10^4	1,616	3,129	638	5,274	2,519
Copper	mg/kg dw	106	0	4.0	1,330	55	131	32	137	56
Manganese	mg/kg dw	109	0	7.0	4,960	533	856	242	2,082	807
Zinc	mg/kg dw	106	0	7.1	1,130	91	127	61	208	100

Note: N – number of samples; MDL – method detection limit; Min - minimum; Max – maximum; StDev – standard deviation; GeoMean – geometric mean; 95^{th} % – 95^{th} percentile; 95% UCLM – 95^{th} percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

Figure K.47 Soil sampling locations in West of Baker Creek



East of Baker Creek

East of Baker Creek soil sample locations are shown in Figure K.48, and summary statistics for the dataset are shown in Table K.26. As can be seen with over 128 samples from this quadrant, the dataset is considered to be adequate for use in the ERA. In addition to soil, measured arsenic levels in fruits/flowers and woody vegetation were used directly in developing EPCs; locations of these samples are shown in Figure K.49, and summary statistics for these media are shown in Table K.27.

Table K.26 Soil summary statistics for East of Baker Creek

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95^{th} %	95% UCLM
Antimony	mg/kg dw	140	2	1.3	1.1×10^4	230	995	47	491	306
Arsenic	mg/kg dw	180	0	18	8.7×10^4	2,347	6,860	876	5,618	4,575
Copper	mg/kg dw	128	0	10	2,543	136	352	61	385	271
Manganese	mg/kg dw	140	0	11	9,500	849	1,020	546	2,273	1,072
Zinc	mg/kg dw	128	0	17	1,774	184	217	119	453	267

Note: N – number of samples; MDL – method detection limit; Min – minimum; Max – maximum; StDev – standard deviation; GeoMean – geometric mean; 95^{th} % – 95^{th} percentile; 95% UCLM – 95^{th} percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

Table K.27 Fruits/Flowers and Woody Vegetation summary statistics for East of Baker Creek

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95^{th} %	95% UCLM
Fruits and Flowers										
Arsenic	mg/kg dw	11	0.0	3.8	85	33	29	21	82	49
Woody Vegetation										
Arsenic	mg/kg dw	10	0.0	0.81	37	7.7	12	3.1	30	22

Note: N – number of samples; MDL – method detection limit; Min – minimum; Max - maximum; StDev – standard deviation; GeoMean – geometric mean; 95^{th} % – 95^{th} percentile; 95% UCLM – 95^{th} percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

Figure K.48 Soil sampling locations in East of Baker Creek

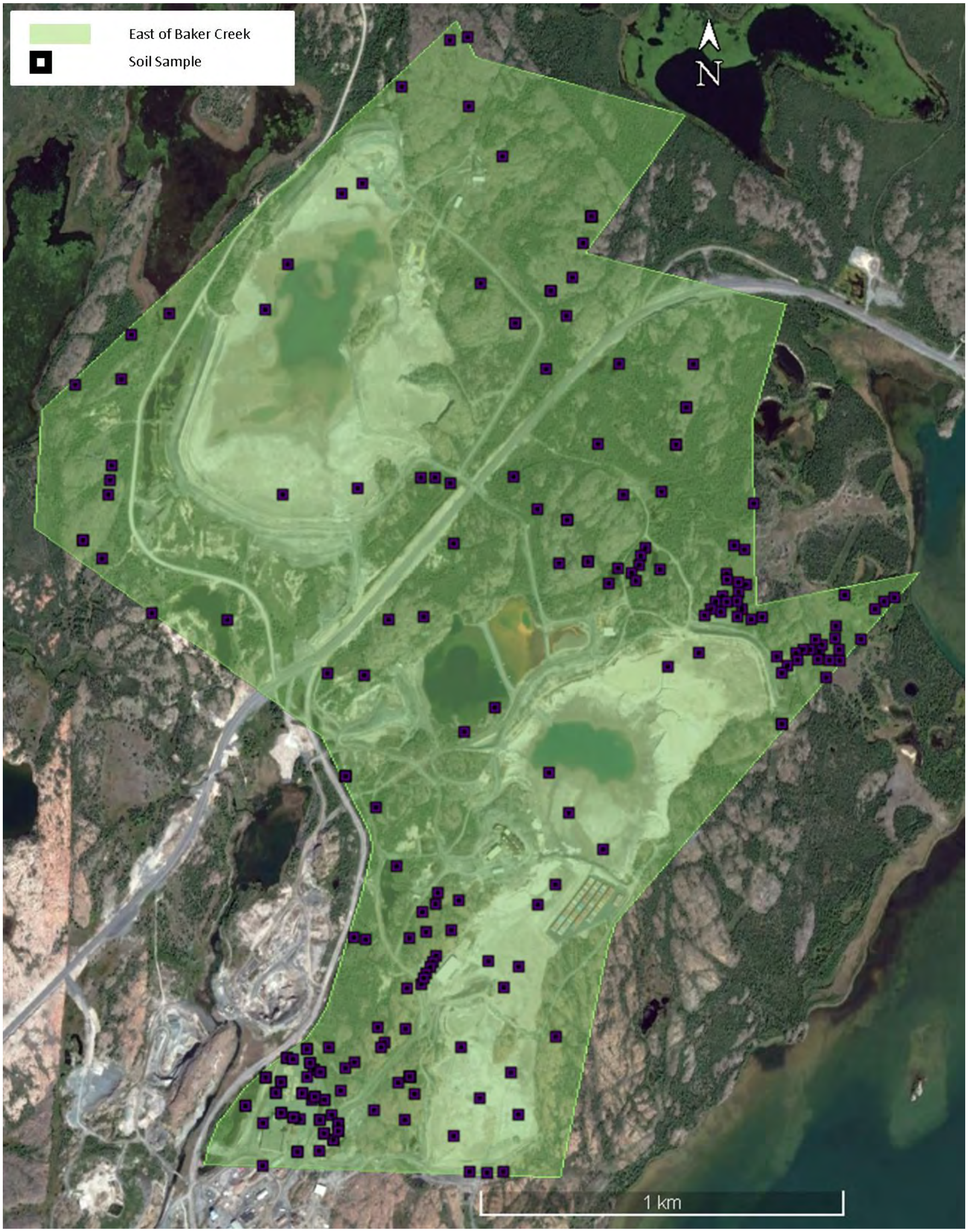


Figure K.49 Fruits/flowers and woody vegetation sampling locations in East of Baker Creek

South Baker Creek

South Baker Creek soil sample locations are shown in Figure K.50, and summary statistics for the dataset are shown in Table K.28. As can be seen with over 138 samples from this quadrant, the dataset is considered to be adequate for use in the ERA.

Table K.28 Soil summary statistics for South Baker Creek

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95th %	95% UCLM
Antimony	mg/kg dw	142	4	1.2	900	101	119	53	313	120
Arsenic	mg/kg dw	146	0	29	1.7×10^4	2,066	2,801	876	7,380	3,519
Copper	mg/kg dw	138	0	8.5	432	77	71	54	202	104
Manganese	mg/kg dw	141	0	36	9,400	960	1,512	458	4,600	1,159
Zinc	mg/kg dw	138	3	7.5	800	119	113	87	323	133

Note: N – number of samples; MDL – method detection limit; Min – minimum; Max - maximum; StDev – standard deviation; GeoMean – geometric mean; 95th % – 95th percentile; 95% UCLM – 95th percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

Figure K.50 Soil sampling locations in South Baker Creek

Giant Mine Site-Wide

To develop EPCs for the entire Giant Mine, the datasets for the four quadrants were combined; these EPCs were developed to estimate exposure for ecological receptors with larger home ranges such as the fox, falcon, owl, and lynx. Summary statistics for the combined dataset are shown in Table K.29. As can be seen with over 430 samples from this quadrant, the dataset is considered to be adequate for use in the ERA.

Table K.29 Soil summary statistics for Giant Mine site-wide

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95^{th} %	95% UCLM
Antimony	mg/kg dw	452	10	0.79	$1.1x10^4$	137	569	42	410	162
Arsenic	mg/kg dw	505	0	18	$8.7x10^4$	1,865	4,642	711	5,928	2,766
Copper	mg/kg dw	430	0	2.5	2,543	86	210	46	201	130
Manganese	mg/kg dw	451	0	7.0	9,500	798	1,178	402	2,930	969
Zinc	mg/kg dw	430	3	6.7	1,774	126	155	83	337	134

Note: N – number of samples; MDL – method detection limit; Min – minimum; Max – maximum; StDev – standard deviation; GeoMean – geometric mean; 95^{th} % – 95^{th} percentile; 95% UCLM – 95^{th} percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

K.4.2.2 Giant Townsite

While no terrestrial receptors were evaluated on the Giant Townsite area, some aquatic receptors (e.g., mink) that were evaluated in Back Bay ingest terrestrial media and so were linked to conditions in the Giant Townsite area for these intakes. Summary statistics for the data collected from the Giant Townsite area are provided in Table K.30. Available soil data for the Giant Townsite are discussed in Appendix B.

Table K.30 Soil summary statistics for the Giant Townsite

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95^{th} %	95% UCLM
Antimony	mg/kg dw	31	4	3.3	198	45	49	26	146	76
Arsenic	mg/kg dw	36	0	21	2,020	733	660	444	2,000	991
Copper	mg/kg dw	27	0	21	340	76	75	54	216	105
Manganese	mg/kg dw	27	0	74	3,500	831	862	524	2,446	1,179
Zinc	mg/kg dw	31	0	17	571	157	129	111	385	196

Note: N – number of samples; MDL – method detection limit; Min - minimum; Max – maximum; StDev – standard deviation; GeoMean – geometric mean; 95^{th} % – 95^{th} percentile; 95% UCLM – 95^{th} percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

K.4.2.3 Background

The soil dataset used to develop background EPCs for the ERA is the background soil dataset developed for the Yellowknife Greenstone Belt, which is presented and discussed fully in Appendix C. Summary statistics for this dataset are provided in Table K.31.

Table K.31 Soil summary statistics for Greenstone Belt background areas

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95^{th} %	95% UCLM
Antimony	mg/kg dw	28	1	0.05	11	1.9	2.2	1.1	4.2	2.9
Arsenic	mg/kg dw	35	0	5.0	482	65	97	35	236	94
Copper	mg/kg dw	3	0	35	47	40	6.1	40	46	NA
Manganese	mg/kg dw	3	0	17	23	20	2.8	20	22	NA
Zinc	mg/kg dw	27	13	25	299	99	89	67	284	137

Note: N – number of samples; MDL – method detection limit; Min – minimum; Max – maximum; StDev – standard deviation; GeoMean – geometric mean; 95^{th} % – 95^{th} percentile; 95% UCLM – 95^{th} percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

K.4.2.4 Moose and Caribou EPCs

The EPCs for moose and caribou were based off of measured data collected as part of the voluntary sampling program, which is presented in Appendix B. Caribou EPCs were set equal to a single reindeer meat sample that was collected from Inuvik and submitted to the program. As caribou are expected to only rarely come close to the Giant Mine, the use of a remote sample well outside the influence of the site is appropriate. This sample was taken to be representative of both exposure and reference caribou.

Moose EPCs for background were set to an average of two moose flesh samples collected from over 50 km from the site; these moose locations are labeled samples 009 and 020 in Figure K.51. The two moose flesh samples collected from closest to the Giant Mine (both shot within 25 km of the site) were averaged and used as EPCs for the moose exposed to the Giant Mine. The moose used in calculating exposure EPCs are labeled as samples 032 and 098 in Figure K.51.

Figure K.51 Moose flesh sample locations

K.5 Water and Sediment Model

Water quality models are tools that can be used to determine changes in water and sediment quality due to changes in contaminant loads, taking into account natural process in the environment. Modelling can be used to assist in assessments and decision making. There are different levels of water quality models from simple basic model to those with increasing various levels of complexity. For this application, a simple, empirically-based approach was adopted to predict future concentrations. The model provides a high-level approximation of the change in concentration with the implementation of remediation activities. The final design of the the Giant Mine Remediation Program (GMRP) will be supported by more refined modelling.

Future modelling of water and sediment concentrations in Baker Creek and Yellowknife Bay was completed to estimate post-remediation conditions for arsenic (As), antimony (Sb), chloride (Cl), and sulphate (SO_4), as discussed in Section 4 and Appendix D. The model used spreadsheet (Microsoft Excel) calculations and input assumptions based on measured data to estimate future concentrations at specific points in time: Current (year 2016); End of Remediation (year 2030); Post Remediation (years 2040, 2060, 2080, and 2120). Baker Creek segments, shown in Figure K.52, were considered consistent with Golder (2016b) calculations: Reach 7 to 11; Reach 6, Reach 4 and 5; Reach 1 to 3; and Reach 0. Yellowknife Bay was segmented consistent with SENES (2006), as shown in Figure K.53.

Figure K.52 Baker Creek segments considered for calculations

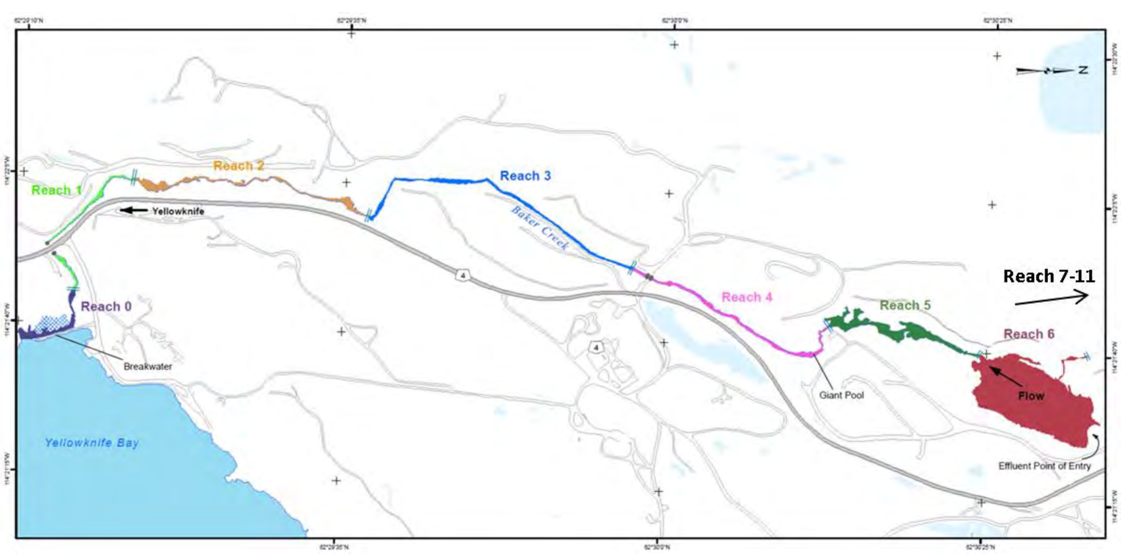
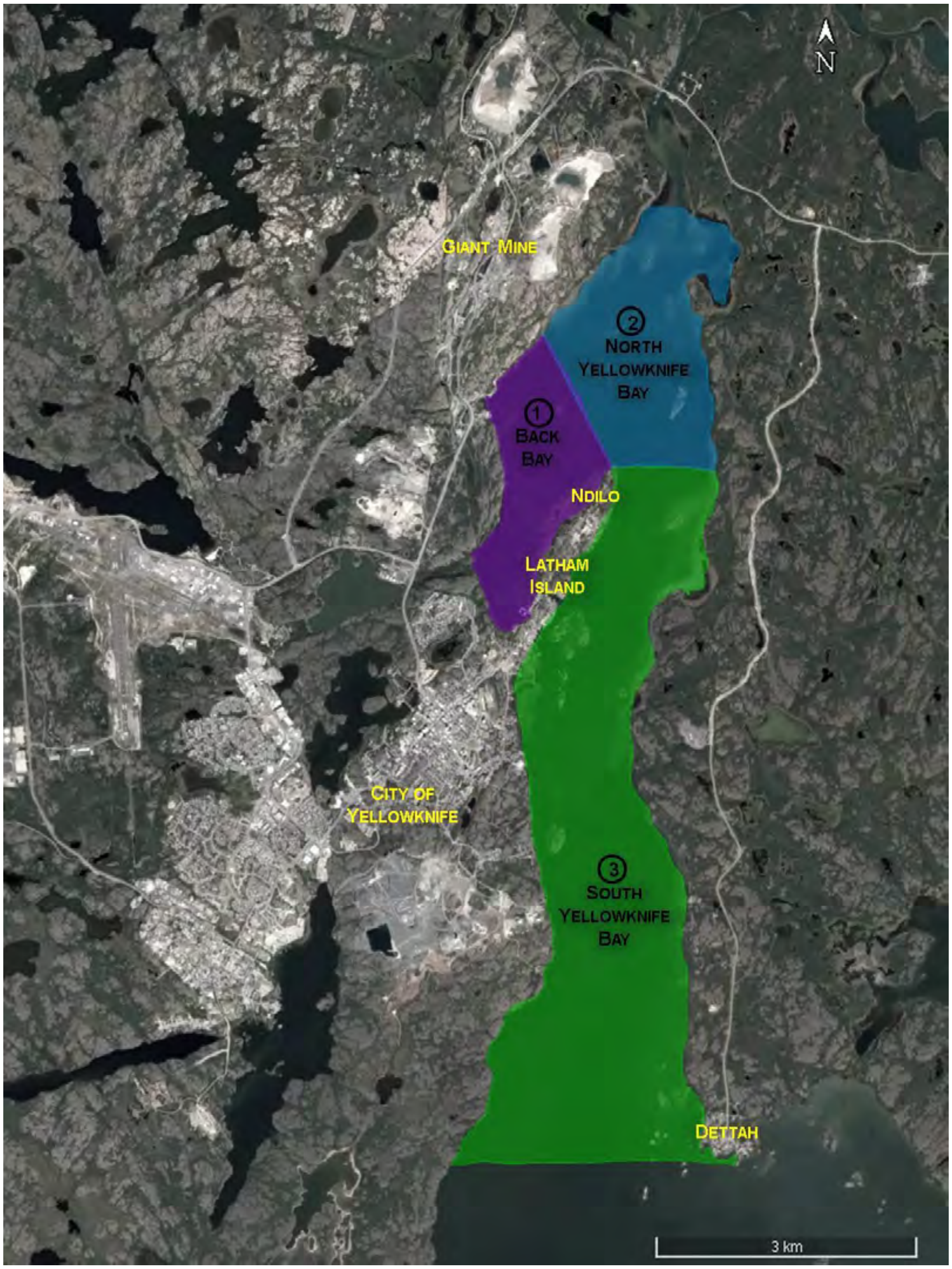


Figure K.53 Yellowknife Bay segments considered for calculations



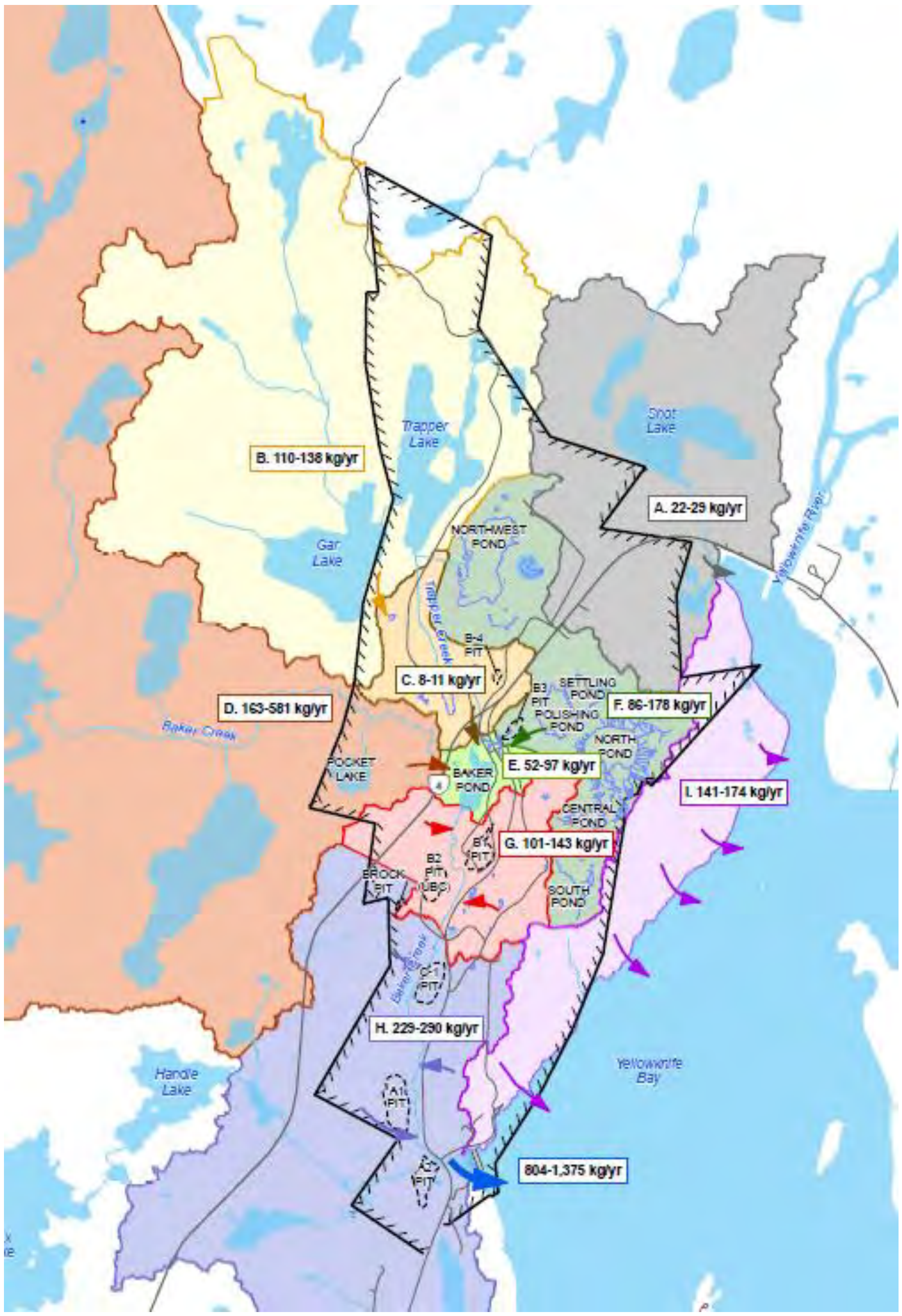
K.5.1 Estimated Loads

The estimated current and predicted future loads to Baker Creek and Yellowknife Bay are provided in the following sections.

K.5.1.1 Loads to Baker Creek

Current (year 2016) loadings for arsenic and antimony were based on information provided by Golder (2017b) for each segment of Baker Creek, as summarized in Figure K.54 and Table K.32.

Figure K.54 Overview of current arsenic loads



From: Golder (2016b).

Table K.32 Summary of current arsenic and antimony loads to Baker Creek

COPC	Current (year 2016) Cumulative Loads (kg/y) [a]				
	Reach 7-11	**Reach 6**	**Reach 4-5**	**Reach 1-3**	**Reach 0** [b]
Arsenic	396	688	810	1063	1063
Antimony	15.4	219	233	374	374
Individual Loads Considered:	Upper Baker Creek WS	Trapper Lake WS Trapper Creek WS ETP Baker Pond	Mill Pond Shallow Seepage	Lower Baker Creek WS	–

Note: a – based on Golder (2017b).
b – Golder (2017b) did not consider individual loads to Reach 0.

Loadings in the future following remedial activities planned for the site were estimated using the current loadings (as presented in Table K.32) with assumptions related to the potential improvements from remedial activities being conducted in areas of the site. The basis of the adjustments to the future loads is provided in the following discussion for each segment.

Reach 7-11

There is no change in loads from Upper Baker Creek watershed assumed for the future. An examination of the concentrations of arsenic at SNP 43-11 over the last few years does not show any trend of decreasing concentration. Therefore, this seems to be a conservative, yet reasonable, assumption.

Reach 6

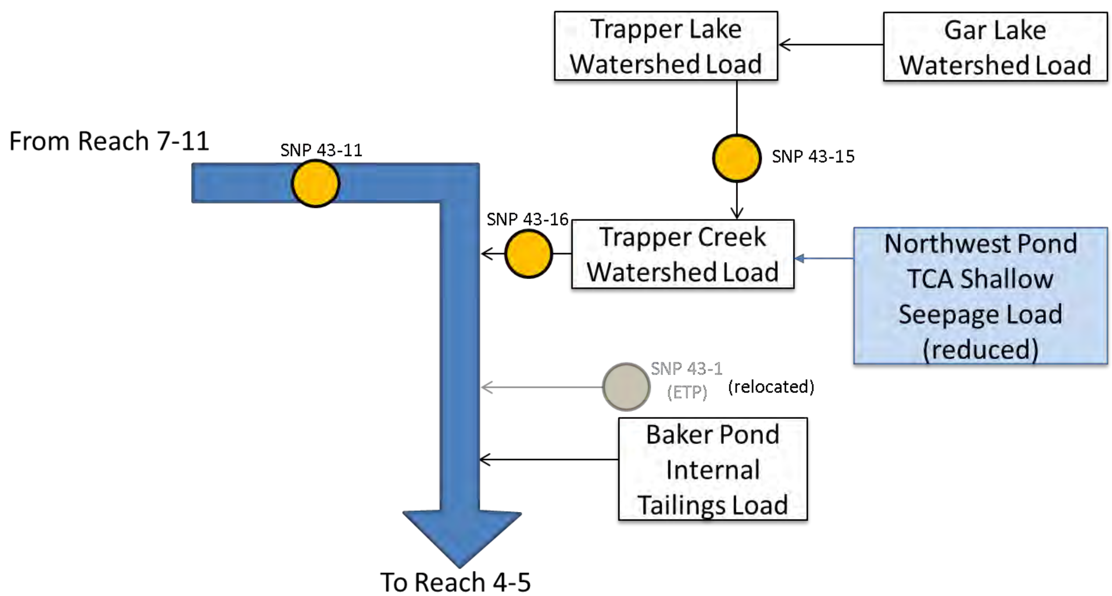
In the future, the loads from Trapper Lake watershed will remain unchanged. The concentrations of arsenic at SNP 43-15 do not indicate a decreasing trend, so this seems to be a reasonable assumption.

With the covering of the Northwest Tailings Pond, the shallow seepage load to Reach 6 (Trapper Creek WS) were assumed to be reduced by 14% based on Table M.7 of the SRK loadings memo for the Giant Mine Developer's Assessment Report (DAR; INAC/GNWT 2010). SRK indicated that concentration in surface runoff from all sources is expected to decrease as readily soluble contaminants are flushed from the system. It was assumed that 50% of the load reduction would be realized at the End of Remediation (2030), 80% would be realized by 2040, and the full load reduction would be in place for the remainder of the modelling period.

In the future, the Effluent Treatment Plant (ETP) will be relocated to Yellowknife Bay near the mouth of Baker Creek; thus, the loads of arsenic, antimony, sulphate, and chloride to Baker Creek from the ETP were removed from Reach 6.

It was assumed that remedial activities in Baker Pond will reduce the internal tailings load from Baker Pond to Reach 6 by 80%. Figure K.55 provides an overview of the future loads to Reach 6.

Figure K.55 Overview of future loads to Reach 6



<u>Reach 4-5</u>

It was assumed that remediation efforts in the old Mill area will reduce the load to Reach 4 and 5 by 14% based on Table M.7 of the SRK loadings memo for the Giant Mine DAR (INAC/GNWT 2010). Similar to above, it was assumed that 50% of the load reduction would be realized at the End of Remediation (2030), 80% would be realized by 2040, and the full load reduction would be in place for the remainder of the modelling period.

<u>Reach 1-3</u>

It was assumed that remedial activities will not change the runoff load from the Giant Mine to Reach 1 to 3.

Reach 0

Consistent with Golder (2017b), individual loads to Reach 0 were not considered. Reductions in loadings to this segment of Baker Creek are assumed to be only from upstream activities.

A summary of the future predicted loads for arsenic and antimony are presented in Table K.33.

Table K.33 Summary of assumed future arsenic and antimony loads to Baker Creek

COPC	Estimated Cumulative Loads (kg/y) [a]				
	Reach 7-11	Reach 6	Reach 4-5	Reach 1-3	Reach 0 [b]
End of Remediation (year 2030)					
Arsenic	396	525	638	891	891
Antimony	15.4	21	33	174	174
Post Remediation – 10 years (year 2040)					
Arsenic	396	524	632	885	885
Antimony	15.4	21	33	174	174
Post Remediation – 30 years (year 2060)					
Arsenic	396	523	628	881	881
Antimony	15.4	21	32	173	173
Post Remediation – 50 years (year 2080)					
Arsenic	396	523	628	881	881
Antimony	15.4	21	32	173	173
Post Remediation – 90 years (year 2120)					
Arsenic	396	523	628	881	881
Antimony	15.4	21	32	173	173
Individual Loads Considered:	Upper Baker Creek WS	Trapper Lake WS Trapper Creek WS Baker Pond	Mill Pond Shallow Seepage	Lower Baker Creek WS	–
Load Assumptions:	No change from current	Trapper Creek WS – reduced 14% ETP – relocated Baker Pond – 80% reduction	Reduced 14%	No change from current	–

Note: a – based on Golder (2017b), with assumptions based on remedial activities. See text for more details.
b – Golder (2017b) did not consider individual loads to Reach 0.

A different approach was used to estimate future concentrations for chloride and sulphate to Baker Creek; concentrations for these COPC were estimated based on measured concentrations, as described in Section K.5.2.

K.5.1.2 Loads to Yellowknife Bay

As mentioned previously, Yellowknife Bay was divided into Back Bay and North Yellowknife Bay, consistent with information provided in SENES (2006). In addition to upstream loads to Yellowknife Bay, horizontal dispersion between the segments also affects the load contributions to each segment. SENES (2006) considered dispersion between the segments, and this was approximated within the current calculations using the information provided in Appendix B of SENES (2006), as follows. The volumetric dispersion coefficient was calculated using Equation K-2 and the segment-specific information provided in Table K.34.

$$E' = \frac{\bar{E} A_c}{l} \tag{K-2}$$

Where:

E' = volumetric dispersion coefficient (m^3/s)
$\bar{E}$ = scale average dispersion coefficient between two connected segments (m^2/s)
A_c = cross-sectional area (depth x width) between two connected segments (m^2)
l = distance between the midpoints of two connected segments (m)

Table K.34 Summary of Yellowknife Bay segments for dispersion calculation

Segment 1	Segment 2	$\bar{E}$ (m^2/s)	A_c (m^2)	l (m)	Calculated E' (m^3/s)	Calculated E' (m^3/y)
Back Bay	North Yellowknife Bay	1.08	1.8×10^4	1300	15	4.7×10^8
North Yellowknife Bay	South Yellowknife Bay	0.1	1.1×10^4	7600	0.15	4.7×10^6

Note: based on information provided in SENES (2006), Appendix B.
South Yellowknife Bay was not explicitly modelled for the current work; however, it was considered for dispersion with North Yellowknife Bay. Water quality in South Yellowknife Bay was assumed to be equal to background water concentrations for the bay for the purposes of the calculation.

The annual volumetric dispersion (E') calculated (Table K.34) was multiplied by the incremental water concentration between two adjacent segments to approximate the load lost or gained from dispersion. The dispersion loads were considered with the upstream loads to estimate the total load to Back Bay and North Yellowknife Bay for the modelled timesteps. These loads are presented in Table K.35 for current conditions.

Table K.35 Summary of current loads to Yellowknife Bay

COPC	Current (year 2016) Cumulative Loads (kg/y)	
	Back Bay	North Yellowknife Bay
Arsenic	1039	674
Antimony	316	307
Chloride	1.2×10^{5} [a]	2.1×10^{6} [a]
Sulphate	3.9×10^{5} [a]	2.3×10^{7} [a]
Individual Loads Considered:	Baker Creek [b] Dispersion with North Yellowknife Bay	Yellowknife River [c] Shot Creek WS [d] Shoreline [d] Dispersion with Back Bay Dispersion with South Yellowknife Bay

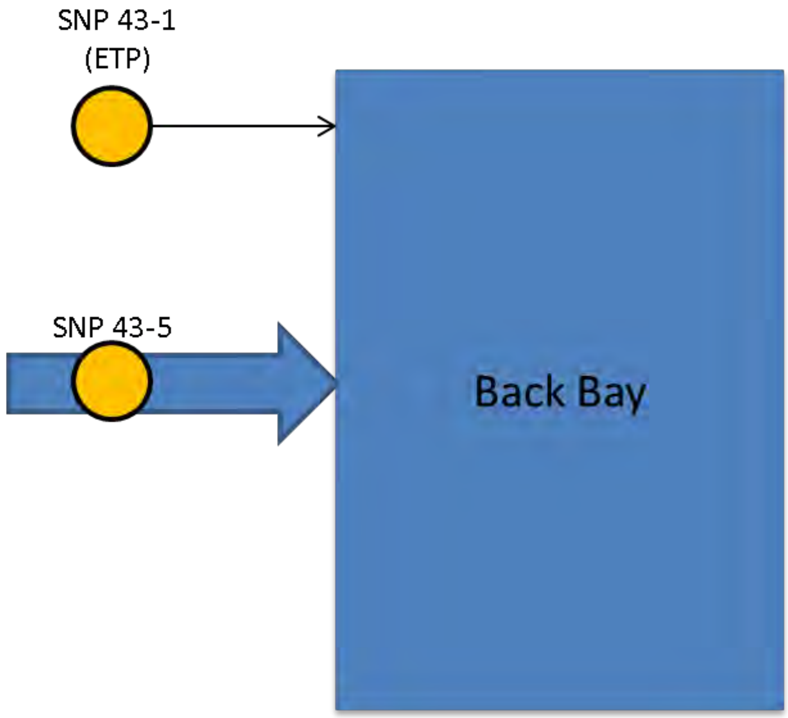
Note: a – Excludes upstream load from Baker Creek.
b – Based on Table K.32.
c – Estimated using Yellowknife River background concentration data and an annual "freshwater inflow" to North Yellowknife Bay of 1.13×10^{9} m3/y specified in SENES (2006).
d – Based on Golder (2017b).

Loadings in the future following remedial activities planned for the site were estimated assuming the relocation of the ETP discharge to Back Bay and remediation of the site to reduce shoreline loads.

ETP Performance

In the future, the ETP will be relocated to Back Bay of Yellowknife Bay near the mouth of Baker Creek (Figure K.56). Flows from AECOM (2012) during the freezing period (630,000 m^3/y) were used for the 10 year period from 2030 to 2040, and, post-freezing, a flow of 404,290 m^3/y was used. Arsenic and antimony concentrations in ETP effluent were assumed to meet drinking water guidelines of 0.01 mg/L and 0.006 mg/L, respectively. At present, it has not been determined what the discharge loads for chloride and sulphate will be for the new effluent treatment plant; therefore, it was assumed that the concentration of chloride and sulphate from the ETP are the same as for the current effluent treatment plant (SNP 43-1). The 95th UCLM of the SNP 43-1 data were used for chloride (444 mg/L) and sulphate (1,170 mg/L) to represent future concentrations from the ETP.

Figure K.56 Relocation of ETP discharge



Shoreline Remediation

The remediation on the surface of the Giant Mine, including the covering of the tailings area, will reduce the runoff to Yellowknife Bay (north segment). It was assumed that the runoff from the Giant Mine to North Yellowknife Bay (Shoreline load) will be reduced by 37% based on Table M.7 of the SRK loadings memo for the Giant Mine DAR (INAC/GNWT 2010). It was assumed that 50% of the load reduction would be realized at the End of Remediation (2030), 80% would be realized by 2040, and the full load reduction would be in place for the remainder of the modelling period.

These assumptions are used in the calculation of future loads to Yellowknife Bay in Table K.36.

Table K.36 Summary of assumed future loads to Yellowknife Bay

COPC	Estimated Cumulative Loads (kg/y) [a]	
	Back Bay	North Yellowknife Bay
End of Remediation (year 2030)		
Arsenic	874	644
Antimony	120	303
Chloride	$4.0x10^{5}$ [a]	$2.1x10^{6}$ [a]
Sulphate	$1.1x10^{6}$ [a]	$2.3x10^{7}$ [a]
Post Remediation – 10 years (year 2040)		
Arsenic	866	626
Antimony	118	300
Chloride	$3.0x10^{5}$ [a]	$2.1x10^{6}$ [a]
Sulphate	$8.6x10^{5}$ [a]	$2.3x10^{7}$ [a]
Post Remediation – 30 years (year 2060)		
Arsenic	862	615
Antimony	118	299
Chloride	$3.0x10^{5}$ [a]	$2.1x10^{6}$ [a]
Sulphate	$8.6x10^{5}$ [a]	$2.3x10^{7}$ [a]
Post Remediation – 50 years (year 2080)		
Arsenic	862	615
Antimony	118	299
Chloride	$3.0x10^{5}$ [a]	$2.1x10^{6}$ [a]
Sulphate	$8.6x10^{5}$ [a]	$2.3x10^{7}$ [a]
Post Remediation – 90 years (year 2120)		
Arsenic	862	615
Antimony	118	299
Chloride	$3.0x10^{5}$ [a]	$2.1x10^{6}$ [a]
Sulphate	$8.6x10^{5}$ [a]	$2.3x10^{7}$ [a]
Individual Loads Considered:	Baker Creek[b] ETP – relocated Dispersion with North Yellowknife Bay	Yellowknife River[c] Shot Creek WS[d] Shoreline[d] Dispersion with Back Bay Dispersion with South Yellowknife Bay
Load Assumptions:	ETP performance	Shoreline – 37% reduction

Note: a – excludes upstream load from Baker Creek.
b – based on Table K.33.
c – estimated using Yellowknife River background concentration data and an annual "freshwater inflow." to North Yellowknife Bay of 1.13×10^{9} m^3/y specified in SENES (2006).
d – based on Golder (2017b).

K.5.2 Water Quality

The current and future loads presented in Section K.5.1 were considered along with water quality assumptions to estimate future water quality post-remediation. Current water quality was characterized based on measured data, as presented in Table K.37.

Table K.37 Summary of current water quality

	Water Concentration (mg/L)						
COPC	**Reach 7-11**	**Reach 6**	**Reach 4-5**	**Reach 1-3**	**Reach 0**	**Back Bay**	**North Yellowknife Bay**
Arsenic	0.05	0.39	0.28	0.32	0.12	0.003	0.003
Antimony	0.003	0.29	0.26	0.22	0.12	0.0004	0.0002
Chloride	4.1	364	364[a]	364[a]	516	3.4	3.7
Sulphate	28.2	970	970[a]	970[a]	1511	10.7	11.5
Statistic	95% UCLM	95% UCLM	95% UCLM	95th Percentile	95% UCLM	95% UCLM	95% UCLM

Note: Based on measured data. UCLM – upper confidence limit of the mean.

a – assumed upstream (Reach 6) concentrations in the absence of measured data.

Future water quality for arsenic and antimony were estimated by weighting the current concentrations with the ratio of future to current loads, as shown in Equation K-3. This calculation assumes that the current concentrations are a result of current loadings, and the change in concentration in the future would be proportional to the change in load.

$$C_{wat-future} = C_{wat-current}\frac{Load_{future}}{Load_{current}} \tag{K-3}$$

Where:

$C_{wat-future}$ = future concentration of arsenic and antimony in water (mg/L)
$C_{wat-current}$ = current concentration of arsenic and antimony in water (mg/L)
$Load_{future}$ = future predicted load of arsenic and antimony to segment (kg/y)
$Load_{current}$ = current estimated load of arsenic and antimony to segment (kg/y)

The calculated future water concentrations are presented in Table K.38. For chloride and sulphate concentrations in Baker Creek in the future, the relocation of the ETP will have the biggest impact on concentrations of these constituents. Therefore, future concentrations of chloride and sulphate in Baker Creek were estimated based on recent measured concentrations in Baker Creek during periods where no effluent is being released. The data indicate that 95th percentile concentrations of chloride and sulphate of

4 mg/L and 10 mg/L, respectively. These concentrations were used to represent future water quality in Baker Creek following relocation of the ETP.

Table K.38 Summary of predicted future water quality

COPC	Water Concentration (mg/L)						
	Reach 7-11	Reach 6	Reach 4-5	Reach 1-3	Reach 0	Back Bay	North Yellowknife Bay
End of Remediation (year 2030)							
Arsenic	0.05	0.30	0.22	0.27	0.10	0.002	0.002
Antimony	0.003	0.03	0.04	0.10	0.06	0.0001	0.0002
Chloride	4.1	4.0 [a]	4.0 [a]	4.0 [a]	4.0 [a]	11.6	3.7
Sulphate	28	10 [a]	10 [a]	10 [a]	10 [a]	31	11
Post Remediation – 10 years (year 2040)							
Arsenic	0.05	0.30	0.22	0.26	0.10	0.002	0.002
Antimony	0.003	0.03	0.04	0.10	0.06	0.0001	0.0002
Chloride	4.1	4.0 [a]	4.0 [a]	4.0 [a]	4.0[a]	8.7	3.7
Sulphate	28	10 [a]	10 [a]	10[a]	10 [a]	24	11
Post Remediation – 30 years (year 2060)							
Arsenic	0.05	0.30	0.21	0.26	0.10	0.002	0.002
Antimony	0.003	0.03	0.04	0.10	0.06	0.0001	0.0002
Chloride	4.1	4.0[a]	4.0[a]	4.0 [a]	4.0 [a]	8.7	3.7
Sulphate	28	10[a]	10[a]	10 [a]	10 [a]	24	11
Post Remediation – 50 years (year 2080)							
Arsenic	0.05	0.30	0.21	0.26	0.10	0.002	0.002
Antimony	0.003	0.03	0.04	0.10	0.06	0.0001	0.0002
Chloride	4.1	4.0 [a]	4.0 [a]	4.0 [a]	4.0 [a]	8.7	3.7
Sulphate	28	10 [a]	10 [a]	10 [a]	10 [a]	24	11
Post Remediation – 90 years (year 2120)							
Arsenic	0.05	0.30	0.21	0.26	0.10	0.002	0.002
Antimony	0.003	0.03	0.04	0.10	0.06	0.0001	0.0002
Chloride	4.1	4.0	4.0	4.0	4.0	8.7	3.7
Sulphate	28	10.0	10.0	10.0	10.0	24	11

Note: Estimated based on predicted future loads.

a – based on measured data from Baker Creek when effluent not flowing.

K.5.3 Sediment Quality

Another consideration in the modelling is the potential impact on the sediment. Sediments represent a complex and dynamic environment. Contaminants in the water can be absorbed or adsorbed onto suspended particles and biomass and settle to the bottom.

The concentration in the bottom layer sediment is affected by diffusion into the water column, resuspension, mixing from benthic organisms (bioturbation). Eventually the deposited sediment are buried to where they are less accessible, but changes in oxygen levels and pH can be important considerations.

Remedial activities will also affect arsenic and antimony levels in sediment. The current and future loads presented in Section K.5.1 were considered along with predicted water quality (Table K.38) to estimate future sediment quality post-remediation. Current sediment quality were characterized based on measured data, as presented in Table K.39. Chloride and sulphate are conservative parameters and are assumed to not undergo transfer to sediment and are therefore not included in Table K.39.

Table K.39 Summary of current sediment quality

	Sediment Concentration (mg/kg)						
COPC	**Reach 7-11**	**Reach 6**	**Reach 4-5**	**Reach 1-3**	**Reach 0**	**Back Bay**	**North Yellowknife Bay**
Arsenic	183	1716	2803	2114	1555	1119	709
Antimony	5	385	471	189	325	49	28
Statistic	95% UCLM	95^{th} Percentile	95% UCLM	95% UCLM	95% UCLM	95% UCLM	95% UCLM

Note: Based on measured data. UCLM – upper confidence limit of the mean.

As part of the planned remedial activities, sediments in Baker Creek (Reach 0 to 6) will be dredged, thus removing much of the contaminated material. The resulting concentrations in the sediments were assumed to be around 30 mg/kg for arsenic and 3 mg/kg for antimony; these values are based on Reach 4 post-dredge concentrations.

Sediment concentrations would be expected to increase following dredging activities in the presence of continued loads to the system. This increase was modelled using simplified calculations based on historical relationships between water concentration and sediment concentration (represented by a calculated water-to-sediment distribution coefficient). The consideration of future loading conditions was reflected in the estimated future water concentrations. It should be noted that the relationship between water and sediment concentrations is complex, and this is a simplified approach that provides a rough estimation of future sediment concentrations; however, it is appropriate considering the level of uncertainty in the effect of the remediation plans on the future loadings.

The behaviour of arsenic in sediment is complicated as the change in oxygen levels and presence of iron affects the speciation of arsenic and thus the mobility. The dredging of sediment will remove material, and, thus, detailed consideration of the geochemical behaviour of arsenic in the sediment was not required.

The estimated post-remediation concentrations in sediment were considered within the context of estimates presented in the SENES (2012) letter regarding *Giant Mine Remediation Project: Screening Level Assessment of Post-Remediation Conditions in Baker Creek*. The letter provided simplified calculations to approximate steady-state, or equilibrium, conditions based on the estimated future loads. The calculations presented in SENES (2012) were also verified by application to other sites with model output in steady-state conditions.

Future sediment concentrations post-dredging were estimated using Equation K-4:

$$C_{sed-future} = C_{sed-prev+} \left(C_{wat-future} \times Kd_{wat} \times EF\right) \quad \text{(K-4)}$$

Where:

$C_{sed\text{-}future}$	=	future concentration of arsenic and antimony in sediment (mg/kg)
$C_{sed\text{-}prev}$	=	previous concentration of arsenic and antimony in sediment (mg/kg)
$C_{wat\text{-}future}$	=	future concentration of arsenic and antimony in water (mg/L)
Kd_{wat}	=	approximated water-to-sediment distribution coefficient, based on historical concentrations (L/kg)
EF	=	equilibrium factor (-)

Although steady-state/equilibrium conditions are expected to be reached in Baker Creek and Yellowknife Bay post-remediation, the calculations for sediment consider the changes to sediment over time. Since the distribution coefficient (Kd_{wat}) assumes water and sediment concentrations are in equilibrium, an equilibrium factor (EF) was used to account for the delay for sediment concentrations to reach equilibrium under changing load and water concentration conditions. The EF is considered a reasonable estimate considering the available data (i.e., sediment concentrations observed in Reach 4) and experience from other sites. In the summer of 2006 various activities were taken in Reach 4 including re-alignment, the following information was collected from Reach 4 subsequent to these activities:

- In 2009 a sediment sample was collected from a pool area of Reach 4, the arsenic was measured at 27.9 mg/kg and antimony was measured at <10 mg/kg (Golder 2010).
- In 2011 sediment samples were collected at three depositional areas from Reach 4 (Golder 2013):

	Arsenic (mg/kg)	Antimony (mg/kg)
Baker CreekSS-DEP-11	11.8 (surface)	1.04 (surface)
	23.6 (5-10 cm)	2.87 (5-10 cm)
	11.2 (15-20 cm)	0.96 (15-20 cm)
Baker CreekSS-DEP-12	43.4 (surface)	7.64 (surface)
	18.4 (10-15 cm)	0.76 (10-15 cm)
Baker CreekSS-DEP-13	2370 (surface)	140 (surface)
	1900 (10-15 cm)	280 (10-15 cm)
	1360 (15-20 cm)	201 (15-20 cm)
	604 (25-30 cm)	149 (25-30 cm)

- In 2016 sediment samples were collected from four shoreline locations in Reach 4 (Golder 2016a):

	Arsenic (mg/kg)	Antimony (mg/kg)
16-GIANT-S-01AP	241	53.2
16-GIANT-S-02AP	964	265
16-GIANT-S-03AP	30.7	3.7
16-GIANT-S-04AP	133	7.77

Although there is a substantial amount of uncertainty in this data, it appears that arsenic rose from approximately 30 mg/kg to 300 mg/kg (or approximately 30% of the equilibrium value) in 10 years.

The calculated future sediment concentrations are presented in Table K.40. Chloride and sulphate are conservative parameters and are assumed to not undergo transfer to sediment. Therefore, chloride, and sulphate concentrations in sediment are not included in Table K.40.

Table K.40 Summary of predicted future sediment quality

COPC	Sediment Concentration (mg/kg)						
	Reach 7-11	Reach 6	Reach 4-5	Reach 1-3	Reach 0	Back Bay	North Yellowknife Bay
End of Remediation (year 2030)							
Arsenic	183	30	30	30	30	30 [a]	30 [a]
Antimony	5	3	3	3	3	4 [a]	4 [a]
Chloride	-	-	-	-	-	-	-
Sulphate	-	-	-	-	-	-	-
Post Remediation – 10 years (year 2040)							
Arsenic	183	814	594	723	290	36 [a]	36 [a]
Antimony	5	32	43	112	63	4 [a]	4 [a]
Chloride	-	-	-	-	-	-	-
Sulphate	-	-	-	-	-	-	-
Post Remediation – 30 years (year 2060)							
Arsenic	183	1206	875	1068	419	38 [a]	39
Antimony	5	47	62	166	94	4 [a]	4 [a]
Chloride	-	-	-	-	-	-	-
Sulphate	-	-	-	-	-	-	-
Post Remediation – 50 years (year 2080)							
Arsenic	183	1336	968	1183	462	39 [a]	40
Antimony	5	52	69	185	104	4 [a]	4 [a]
Chloride	-	-	-	-	-	-	-
Sulphate	-	-	-	-	-	-	-
Post Remediation – 90 years (year 2120)							
Arsenic	183	1336	968	1183	462	39 [a]	40
Antimony	5	52	69	185	104	4 [a]	4 [a]
Chloride	-	-	-	-	-	-	-
Sulphate	-	-	-	-	-	-	-

Note: Estimated based on predicted future water concentrations and loads and calculated water-to-sediment distribution coefficient (Kd_{wat}) of 4,400 L/kg for arsenic and 1,800 L/kg for antimony.
a – for near-shore sediments only.

Sediment concentrations presented in Table K.40 for Back Bay were developed to be representative of nearshore concentrations that humans may be exposed to during wading or other recreational activities. Predictions for the entire Back Bay area, which is more appropriate for assessing exposure of aquatic receptors, were developed by accounting for both near-shore and non near-shore sediment predictions. The EPCs derived to be representative of the entire Back Bay area for use in the ERA were estimated, assuming the nearshore area accounts for roughly 5% of the Back Bay area and that levels in the remaining 95% of the area will improve at approximately 25% for each 100 years; this rate of recovery is based on arsenic predictions presented in the DAR (SENES 2006).

K.6 Post-Remediation Soil Estimates

Remediation of the Giant Mine and Giant Townsite is expected to include:

- installation of a fence to limit human access to the portions of the Giant Mine with the highest levels of arsenic;
- remediation of soil in selected areas of the Giant Mine;
- cover of tailings on the Giant Mine; and
- remediation of soil in the Giant Townsite.

Post-remediation soil concentrations on the Giant Mine were estimated by re-evaluating the current soil dataset for each quadrant and site-wide; by removing samples that are in tailings areas slated for cover; and by reducing the concentration associated with any samples in the remediation areas that were above the remediation target/assumption levels to the target/assumption levels. Derived remediation soil targets/assumptions for the Giant Mine are presented in Table K.41; these values are based on an industrial standard of 340 mg/kg arsenic (GNWT 2003).

The portions of the Giant Site slated for remediation (either soil remediation or tailings cover) within these areas are indicated in Figure K.57 for Trapper Lake North, Figure K.58 for West of Baker Creek, Figure K.59 for East of Baker Creek, and Figure K.60 for South Baker Creek. As can be seen, no remediation is expected to occur in the Trapper Lake North quadrant and very little in West of Baker Creek. The only location expected to have tailings cover is within the East of Baker Creek quadrant. Since it is not expected that the planned fence will limit access to ecological receptors in any substantial way, this remedial activity was assumed to have no effect on the ERA.

The summary statistics for the future soil in the Giant Mine quadrants are presented in Table K.42, Table K.43, Table K.44, and Table K.45. Summary statistics for the resulting combined post-remediation soil dataset for the Giant Mine are shown in Table K.46.

Future soil concentrations within the Giant Townsite area were set equal to the residential soil standard (GNWT 2003) for arsenic, and assumptions were made for the other COPC; these remediation targets/assumptions are presented in Table K.41.

Table K.41 Soil remediation assumptions

COPC	Giant Mine		Giant Townsite
	Tailings Areas	Remediation Areas	
Antimony	Removed all samples from the Tailings Areas.	Remediation Assumption: 34 mg/kg (10% of arsenic). Changed all samples in remediation areas >34 mg/kg to 34 mg/kg.	Remediation Assumption: 16 mg/kg (10% of arsenic). Assumed entire area is at 16 mg/kg.
Arsenic	Removed all samples from the Tailings Areas.	Remediation Target: 340 mg/kg (Site-Specific Industrial Standard, (GNWT 2003). Changed all samples in remediation areas > 340 mg/kg to 340 mg/kg.	Remediation Target: 160 mg/kg (Residential Standard, GNWT [2003]) Assumed entire area is at 160 mg/kg.
Copper	Removed all samples from the Tailings Areas.	No target/assumption, copper samples unchanged.	No target/assumption, copper samples unchanged.
Manganese	Removed all samples from the Tailings Areas.	Remediation Assumption: 476 mg/kg (140% of arsenic). Changed all samples in remediation areas >476 mg/kg to 476 mg/kg.	Remediation Assumption: 220 mg/kg (140% of arsenic). Assumed entire area is at 16 mg/kg.
Zinc	Removed all samples from the Tailings Areas.	No target/assumption, zinc samples unchanged.	No target/assumption, zinc samples unchanged.

Note: The rationale for the assumptions regarding antimony and manganese is presented in Section 3.3.6.3 of the main report.

Figure K.57 Soil in Trapper Lake North and remediation areas

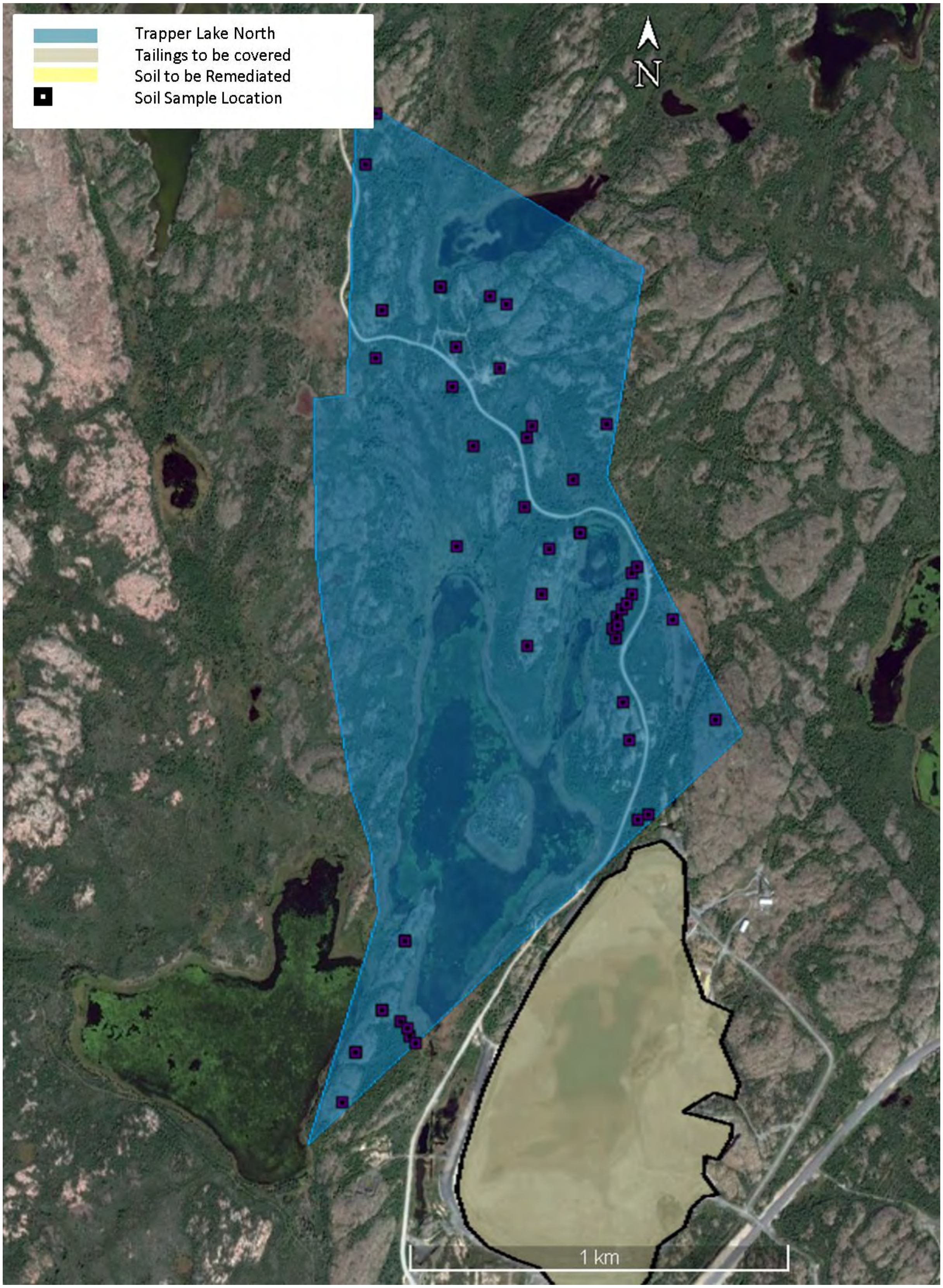


Figure K.58 Soil in West of Baker Creek and remediation areas

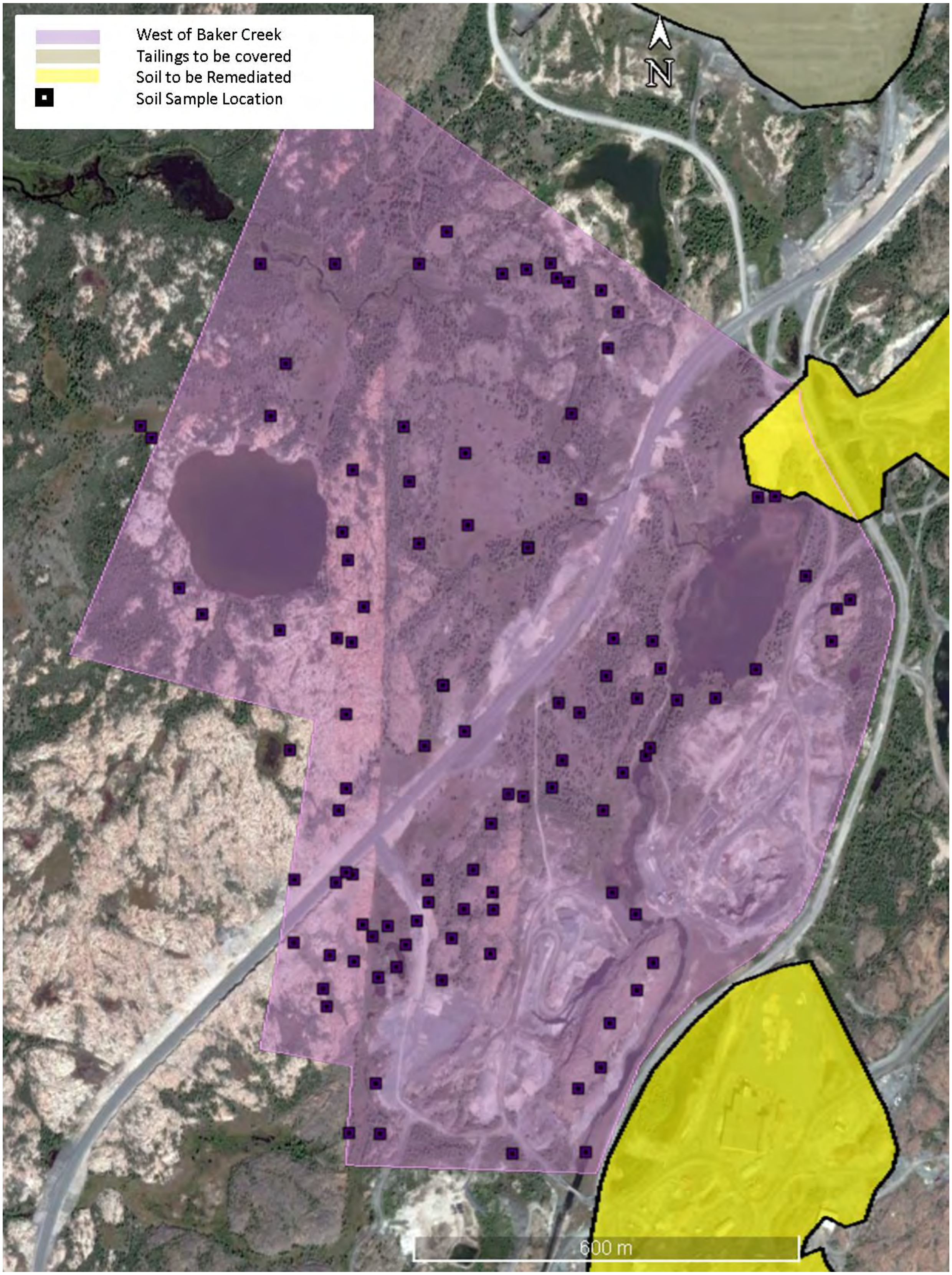


Figure K.59 Soil in East of Baker Creek and remediation areas

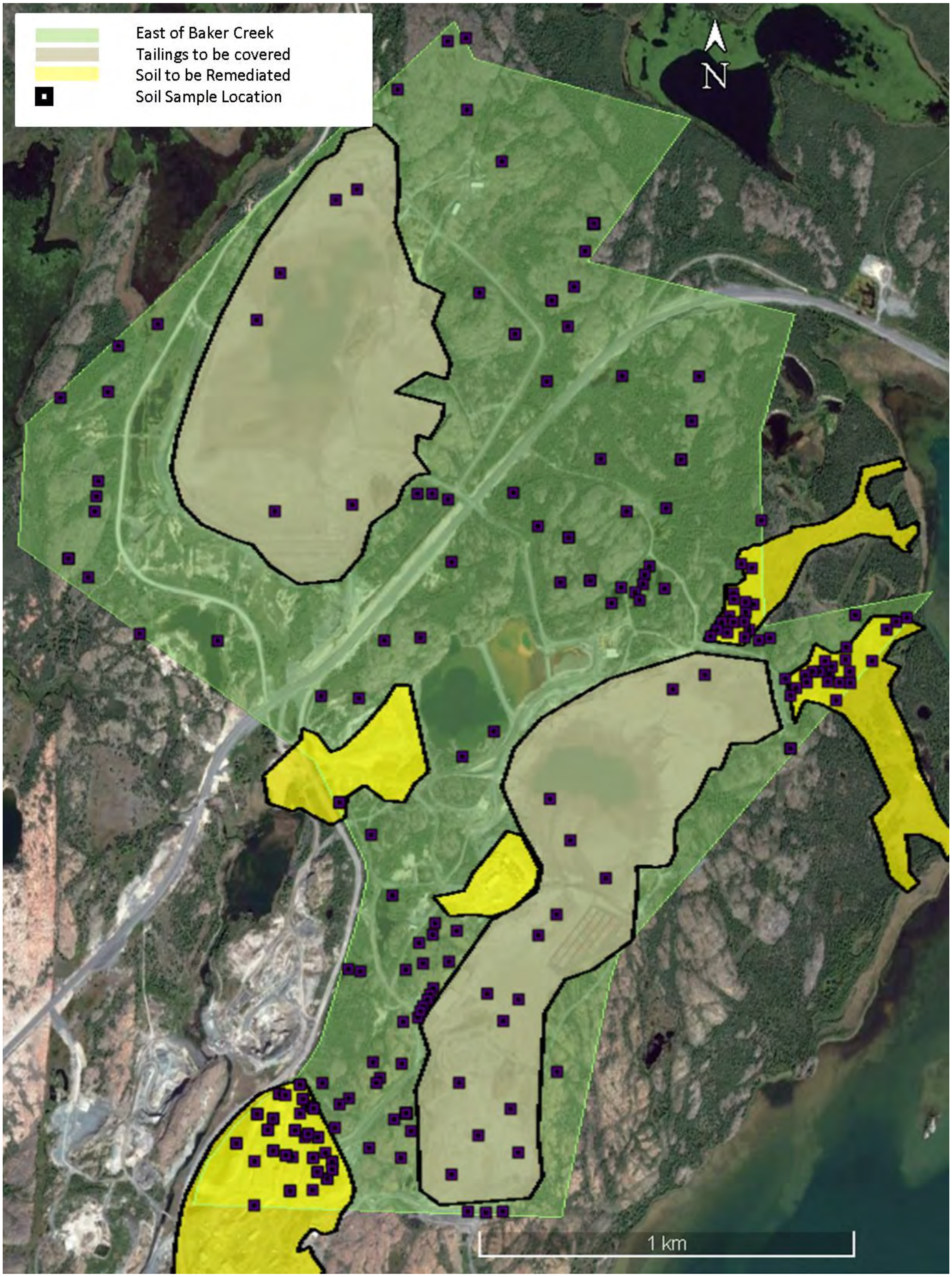


Figure K.60 Soil in South Baker Creek and remediation areas

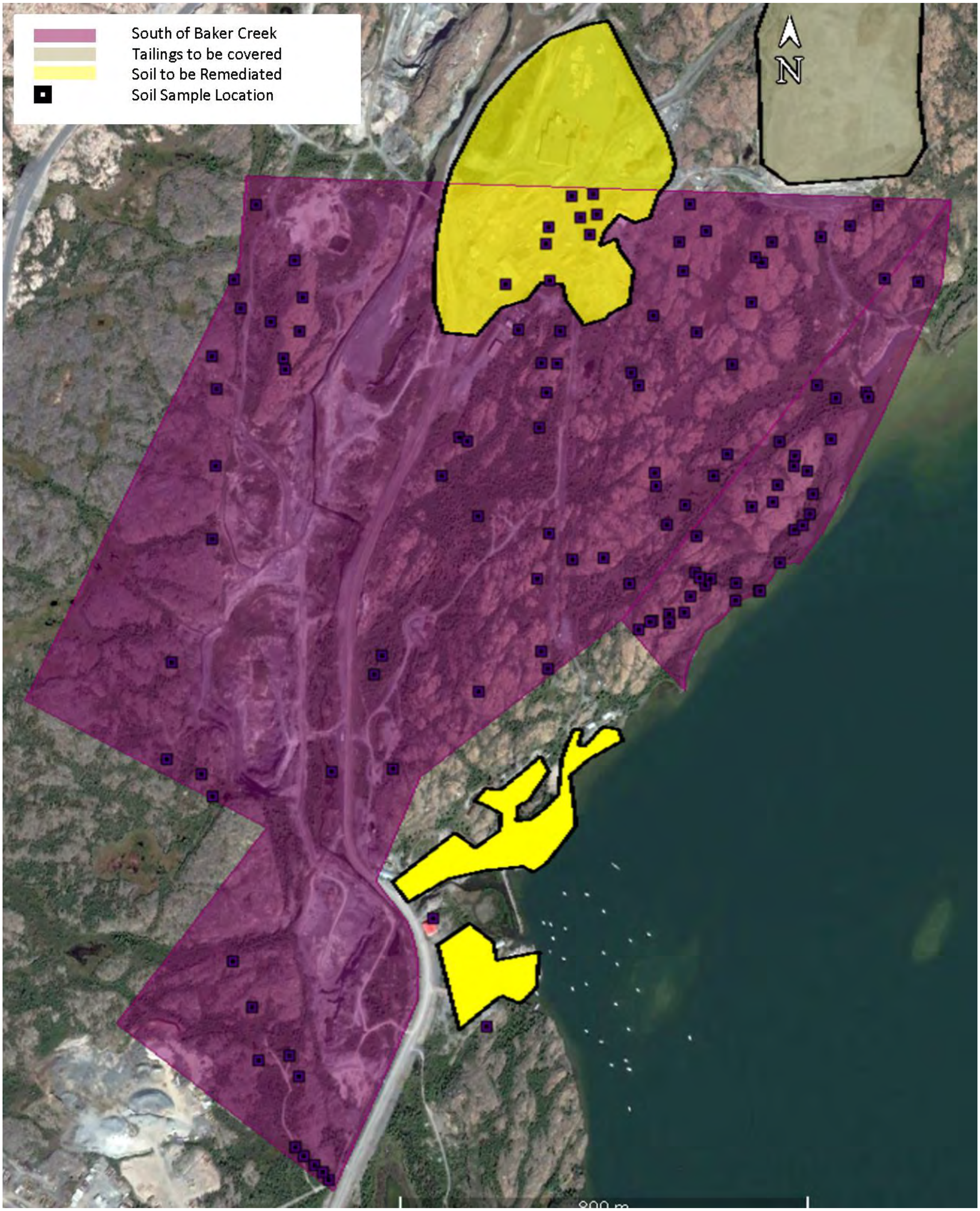


Table K.42 Post-remediation soil summary statistics for Trapper Lake North

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95th %	95% UCLM
Antimony	mg/kg dw	61	0	0.94	165	29	31	18	92	36
Arsenic	mg/kg dw	66	0	35	3,600	537	677	305	1,475	667
Copper	mg/kg dw	58	0	2.5	310	54	67	31	201	92
Manganese	mg/kg dw	61	0	9.0	6,000	781	1,074	365	3,400	1,014
Zinc	mg/kg dw	58	0	6.7	250	78	62	57	202	94

Notes: N – number of samples; MDL – method detection limit; Min - minimum; Max – maximum; StDev – standard deviation; GeoMean – geometric mean; 95th % –- 95th percentile; 95% UCLM – 95th percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

Table K.43 Post-remediation soil summary statistics for West of Baker Creek

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95th %	95% UCLM
Antimony	mg/kg dw	109	4	0.79	1,180	125	201	45	486	165
Arsenic	mg/kg dw	113	0	26	2.3×10^4	1,616	3,129	638	5,274	2,519
Copper	mg/kg dw	106	0	4.0	1,330	55	131	32	137	56
Manganese	mg/kg dw	109	0	7.0	4,960	533	856	242	2,082	807
Zinc	mg/kg dw	106	0	7.1	1,130	91	127	61	208	100

Notes: N – number of samples; MDL – method detection limit; Min - minimum; Max – maximum; StDev – standard deviation; GeoMean – geometric mean; 95th % – 95th percentile; 95% UCLM – 95th percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

Table K.44 Post-remediation soil summary statistics for East of Baker Creek

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95th %	95% UCLM
Antimony	mg/kg dw	120	2	1.3	564	66	88	29	227	101
Arsenic	mg/kg dw	160	0	18	1.7×10^4	969	1,890	427	4,867	1,621
Copper	mg/kg dw	108	0	10	2,543	141	377	58	385	126
Manganese	mg/kg dw	120	0	11	9,500	799	1,098	478	2,345	995
Zinc	mg/kg dw	108	0	17	1,774	159	223	101	453	253

Notes: N – number of samples; MDL – method detection limit; Min - minimum; Max – maximum; StDev – standard deviation; GeoMean – geometric mean; 95th % – 95th percentile; 95% UCLM – 95th percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

Table K.45 Post-remediation soil summary statistics for South Baker Creek

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95th %	95% UCLM
Antimony	mg/kg dw	142	4	1.2	900	92	115	48	303	133
Arsenic	mg/kg dw	146	0	29	$1.7x10^4$	1,839	2,714	760	7,020	2,818
Copper	mg/kg dw	138	0	8.5	432	77	71	54	202	104
Manganese	mg/kg dw	141	0	36	9,400	945	1,514	448	4,600	1,501
Zinc	mg/kg dw	138	3	7.5	800	119	113	87	323	133

Notes: N – number of samples; MDL – method detection limit; Min - minimum; Max – maximum; StDev – standard deviation; GeoMean – geometric mean; 95th % – 95th percentile; 95% UCLM – 95th percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

Table K.46 Post-remediation soil summary statistics for the entire Giant Mine

COPC	Unit	N	N<MDL	Min	Max	Mean	StDev	GeoMean	95th %	95% UCLM
Antimony	mg/kg dw	432	10	0.79	1,180	84	133	36	297	112
Arsenic	mg/kg dw	485	0	18	$2.3x10^4$	1,323	2,436	533	5,480	1,805
Copper	mg/kg dw	410	0	2.5	2,543	85	213	44	201	131
Manganese	mg/kg dw	431	0	7.0	9,500	777	1,204	379	3,090	922
Zinc	mg/kg dw	410	3	6.7	1,774	116	151	78	322	122

Notes: N – number of samples; MDL – method detection limit; Min – minimum; Max – maximum; StDev – standard deviation; GeoMean – geometric mean; 95th % – 95th percentile; 95% UCLM – 95th percentile upper confidence limit of the mean (only calculated if N ≥ 10); NA – statistic not generated.

K.7 Bioavailability/Bioaccessibility

Bioavailability/bioaccessibility assumptions for the purposes of the ERA were made based on the available data and literature. The bioavailability/bioaccessibility of antimony, copper, manganese, and zinc were assumed to be 100%; this is a conservative assumption that was made in the absence of available measured data.

Assumptions for arsenic bioaccessibility were applied to soil, sediment, fish, foliage, and wildlife (e.g., mouse, shrew, hare, waterfowl, ptarmigan, moose, and caribou). Bioaccessibility data for arsenic in soils, sediments, and fish were obtained from samples collected in the study area as part of sampling programs for the GMRP. Bioaccessibility data for arsenic in plants and wildlife were obtained from a publication by Koch et al. (2013) related to bioaccessibility and speciation of arsenic in country foods from contaminated sites in Canada where Giant Mine was part of the study.

Arsenic in other media (e.g., water, aquatic vegetation, benthic invertebrates, terrestrial insects, and non-foliage vegetation) was assumed to be 100% bioavailable in the absence of other information.

The specific assumptions for arsenic bioavailability/bioaccessibility are provided in Table K.47. The samples that went into development of these values are presented and discussed in Appendix F.

Table K.47 Summary of arsenic bioaccessibility values used in the assessment

Media	Location	Bioaccessibility Assumption	Rationale	Data Reference
Sediment	Background Locations	26%	Average of 10 samples from Townsite, assume background same as Townsite.	Golder (2016a), Table 2
Sediment	Baker Creek – Reach 7-11	16.6%	Average of 7 samples.	Golder (2015)
Sediment	Baker Creek – Reach 0-6	44%	Single sample from Reach 6.	Golder (2015)
Sediment	Back Bay	26%	Average of 10 samples from the Townsite area.	Golder (2016a), Table 2
Sediment	Baker Creek/Back Bay Combined	35%	Average of Back Bay and Baker Creek Reach 0-6.	-
Fish	Background Locations	62%	Average of lake whitefish, northern pike, and inconnu from background locations.	Stantec (2014), Appendix C
Fish	Baker Creek – Reach 7-11	62%	Assumed same as background.	Stantec (2014), Appendix C
Fish	Baker Creek – Reach 0-6	61%	Average of lake whitefish and northern pike from the outlet of Baker Creek.	Stantec (2014), Appendix C
Fish	Back Bay	68%	Average of lake whitefish and northern pike from Back Bay.	Stantec (2014), Appendix C
Fish	Baker Creek/Back Bay Combined	65%	Average of Back Bay and Baker Creek Reach 0-6.	-
Waterfowl	Background Locations	50%	Average of hare muscle from uncontaminated areas.	Koch et al. (2013)
Waterfowl	Back Bay	38%	Average of 8 hare samples from contaminated areas.	Koch et al. (2013)
Waterfowl	Baker Creek/Back Bay Combined	38%	Average of Back Bay and Baker Creek Reach 0-6.	-
Waterfowl	Baker Creek – Reach 0-6	38%	Average of 8 hare samples from contaminated areas.	Koch et al. (2013)
Soil	Background Locations	38%	Average of 9 samples representative of undisturbed soils.	Golder (2016c)
Soil	Giant Site	36%	Average of 38 samples from disturbed areas.	Golder (2016d)

Media	Location	Bioaccessibility Assumption	Rationale	Data Reference
Soil	Giant Townsite	30%	Average of 8 samples from the Townsite area.	Golder (2016a), Table 4
Foliage	All	34%	Average of 10 alder and cranberry leaf samples.	Golder (2016a), Table 8
Mouse/Shrew/ Hare/Ptarmigan	Background Locations	50%	Average of hare muscle from uncontaminated areas.	Koch et al. (2013)
Mouse/Shrew/ Hare/Ptarmigan	Giant Site and Townsite	38%	Average of 8 hare samples from contaminated areas.	Koch et al. (2013)
Moose/Caribou	All	50%	Average of hare muscle from uncontaminated areas.	Koch et al. (2013)

K.8 Arsenic Speciation

Arsenic speciation was considered for fish; speciation assumptions were made based on the available data and literature. Organic arsenic, in the form of arsenobetaine, can be assumed to be non-toxic (ATSDR 2007). Therefore, the portion of arsenic assumed to be present as arsenobetaine was removed from the arsenic concentration in order to more accurately represent the potential risks from arsenic.

The specific assumptions for arsenic speciation are provided in Table K.48. The data that went into developing these values is presented in Appendix F.

Table K.48 Summary of fish arsenobetaine values used in the assessment

Location	Arsenobetaine Content	Rationale	Data Reference
Background Locations	36%	Average of lake whitefish, northern pike, and inconnu from background locations.	Stantec (2014), Appendix C
Baker Creek – Reach 7-11	36%	Assumed same as background.	Stantec (2014), Appendix C
Baker Creek – Reach 0-6	46%	Average of lake whitefish and northern pike from the outlet of Baker Creek.	Stantec (2014), Appendix C
Back Bay	54%	Average of lake whitefish and northern pike from Back Bay.	Stantec (2014), Appendix C
Baker Creek/Back Bay Combined	50%	Average of Back Bay and Baker Creek Reach 0-6.	-

K.9 Exposure Estimation and Pathways Calculations

K.9.1 Aquatic Biota and Terrestrial Vegetation

For the aquatic assessment of non-radiological COPC, the evaluation of potential effects is based on a direct comparison of EPCs to aquatic toxicity data. Similarly, potential effects to the benthic invertebrate community are assessed via comparison of sediment concentrations to sediment quality benchmarks. Thus, calculation of species uptake of non-radiological COPC is not needed for the aquatic biota risk assessment component.

The evaluation of potential effects to terrestrial vegetation is done by comparing terrestrial vegetation foliage concentrations to available phytotoxicity information. No intake calculations are required for this evaluation as these vegetation concentrations are estimated using media-to-flesh transfer factors as detailed in Section K.3.

K.9.2 Wildlife

Smaller organisms such as benthic invertebrates are exposed to COPC through sediment or surface water, while larger organisms, such as the wildlife species considered in this sub-section are exposed through multiple pathways.

Intakes for the selected aquatic and terrestrial receptors were estimated up the food chain. Thus, the total intake of a COPC for the selected receptors is the sum of COPC intakes from all the appropriate pathways, including the ingestion of water, sediment or soil, aquatic vegetation, benthic organisms, fish, terrestrial vegetation (e.g., woody vegetation, foliage, and berries/fruits), and prey (e.g., snowshoe hare, waterfowl, etc.). Equation K-5 was used to calculate each of the intake routes as follows:

$$I_n = C_n \times IR_n \times f_{loc} \times CF \qquad \text{(K-5)}$$

Where:

I_n	=	Intake of COPC via “n” exposure pathway (mg/d)
C_n	=	COPC concentration in “n” medium (mg/kg or mg/L for water)
IR_n	=	Intake rate of “n” by the receptor (g/d, or L/d for water)
f_{loc}	=	Fraction of time at site
CF	=	Conversion factor 1.0×10^{-3} (kg/g)

The total intake was then divided by the body weight of the terrestrial receptor for comparison to the TRV which has units of mg per kg body weight per day. The receptor characteristics used to calculate the intakes are provided in Appendix J. For large receptors roaming the site as well as areas off-site, the background contribution to total exposure was accounted. For example, the lynx was evaluated for exposure 50% of the time at the site, while the remainder of the time (50%), the lynx was assumed to be exposed to background concentrations.

There were no measured data for wildlife at the site. Therefore, the amount of COPC ingested through food sources for wildlife was calculated using Equation K-5 and then applying a feed-to-flesh TF to estimate tissue concentrations. Selected TFs for hare and ptarmigan/waterfowl are shown in Table K.49 and Table K.50, respectively.

While the majority of the hare TFs were derived specifically for rabbits, the copper TF was developed for beef; this value was scaled allometrically[1] for using the body weights of the cow and hare (Equation K-6).

For the avian species, Feed-to-flesh TFs for antimony, manganese, and zinc were obtained from N288.1-08 (CSA 2008) and are values derived for poultry flesh. For arsenic and copper, in the absence of any more appropriate TFs, the hare feed-to-flesh TFs were adopted.

The derived TFs are applied as shown in Equation K-7 to calculate the concentration of COPC in the flesh of each ingested species.

$$TF_w = TF_a \left(\frac{BW_w}{BW_a} \right)^{-0.75} \tag{K-6}$$

Where:

TF_w = Feed-to-flesh transfer factor for wildlife (d/(kg ww));
TF_a = Transfer factor for animal available from literature (d/(kg ww));
BW_w = Body weight of wildlife (kg);
BW_a = Body weight of animal (kg).

$$C_{flesh} = I_{total} \times TF_w \tag{K-7}$$

Where:

C_{flesh} = COPC concentration in flesh of ingested mammal (mg/(kg ww))
I_{total} = Intake of COPC via all pathways for ingested mammal (mg/d)

[1] This approach is consistent with the U.S. EPA (1993) approach for developing food and water intake rates for wildlife.

Table K.49 Summary of feed-to-flesh transfer factors for hare

	Feed-to Flesh d/kg ww	Comment
Antimony	4.80E-02	Rabbit TF from N288.1-08 pg 285(CSA 2008)
Arsenic	1.00E+00	Rabbit TF from N288.1-08 pg 285 (CSA 2008)
Copper	9.96E-01	From Baes et al. (1984) for beef; converted to hare using allometric scaling
Manganese	9.80E-02	Rabbit TF from N288.1-08 pg 285 (CSA 2008)
Zinc	6.92E+00	Rabbit TF from N288.1-08 pg 285 (CSA 2008)

Table K.50 Summary of feed-to-flesh transfer factors for waterfowl and ptarmigan

	Feed-to-Flesh d/kg ww	Comment
Antimony	1.00E-01	Poultry meat TF from N288.1-08 pg 285 (CSA 2008)
Arsenic	1.00E+00	Adopted hare feed-to-flesh TF
Copper	9.96E-01	Adopted hare feed-to-flesh TF
Manganese	5.00E-02	Poultry meat TF from N288.1-08 pg 285 (CSA 2008)
Zinc	9.00E+00	Poultry meat TF from N288.1-08 pg 285 (CSA 2008)

K.10 Current Wildlife Concentrations

For the purposes of pathways calculations, concentrations in the flesh of waterfowl, hare, and ptarmigan were required. Concentrations in these species, which were calculated using the approach and feed-to-flesh transfer factors outlined in Section K.9.2, are as follows.

Waterfowl concentrations were taken to be the average of mallard and merganser concentrations calculated using intakes and feed-to-flesh TFs as discussed in Section K.9.2. Site-wide average hare and ptarmigan concentrations were taken to be the average of hare or ptarmigan concentrations for the four quadrants of the site.

Table K.51 Calculated current waterfowl concentrations

Media	Location	Units	Antimony	Arsenic	Comment
Waterfowl	Background	mg/kg ww	$5.8x10^{-3}$	3.7	-
Waterfowl	Back Bay	mg/kg ww	0.05	20	-
Waterfowl	Back Bay/ Baker Creek	mg/kg ww	0.24	31	Average of concentrations for Back Bay and the lower reaches of Baker Creek
Waterfowl	Baker Creek Lower Reach (0-6)	mg/kg ww	0.43	42	-

Table K.52 Calculated current hare concentrations

Media	Location	Units	Antimony	Arsenic	Copper	Manganese	Zinc	Comment
Hare	Background	mg/kg ww	$2.0x10^{-3}$	0.40	0.57	1.8	6.0	-
Hare	Site Average	mg/kg ww	0.04	7.2	1.1	11	6.4	Average of hare concentrations calculated for each of the 4 quadrants

Table K.53 Calculated current ptarmigan concentrations

Media	Location	Units	Antimony	Arsenic	Copper	Manganese	Zinc	Comment
Ptarmigan	Background	mg/kg ww	$2.5x10^{-3}$	0.23	0.34	0.48	5.7	-
Ptarmigan	Site Average	mg/kg ww	0.07	5.1	0.73	3.0	6.7	Average of ptarmigan concentrations calculated for each of the 4 quadrants

K.11 Future EPCs and Wildlife Concentrations

Future EPCs derived for the ERA are presented in Table K.54 and Table K.55 for media related to aquatic receptors and Table K.56 for media related to terrestrial receptors. Surface water and sediment EPCs were based on the modelling detailed in Section K.5, while future soil EPCs were developed using the approach outlined in Section K.6. The rest of the future EPCs were based on site-specific transfer factors presented in Section K.3.

Future wildlife concentrations used in the ERA are presented below for waterfowl (Table K.57 and Table K.58), hare (Table K.59), and ptarmigan (Table K.60); these values were generated using feed-to-flesh TFs as discussed in Section K.9.2.

Table K.54 Future EPCs for aquatic receptors - 2030

Media	Location	Units	Antimony	Arsenic	Chloride	Sulphate	Comment
Surface Water	Back Bay	mg/L	$1.3x10^{-4}$	$2.2x10^{-3}$	12	31	Modelled as discussed in K.5.
Surface Water	Back Bay/ Baker Creek	mg/L	0.03	0.11	7.8	20	Average of the EPCs for Back Bay and the lower reaches of Baker Creek.
Surface Water	Baker Creek Reach 0	mg/L	0.06	0.10	4.0	10	Modelled as discussed in K.5.
Surface Water	Baker Creek Reach 1-3	mg/L	0.10	0.27	4.0	10	Modelled as discussed in K.5.
Surface Water	Baker Creek Reach 4-5	mg/L	0.04	0.22	4.0	10	Modelled as discussed in K.5.
Surface Water	Baker Creek Reach 6	mg/L	0.03	0.30	4.0	10	Modelled as discussed in K.5.
Surface Water	Baker Creek Lower Reach (0-6)	mg/L	0.06	0.22	4.0	10	Average of the EPCs for Reach 0-6.
Surface Water	Baseline - Baker Creek Reach 7-11	mg/L	$2.5x10^{-3}$	0.05	4.1	28	Unchanged from current conditions.
Surface Water	Background - Prosperous/Yellowknife Bay Locations	mg/L	$2.0x10^{-4}$	$5.6x10^{-4}$	NA	NA	Unchanged from current conditions.
Surface Water	Trapper Lake	mg/L	0.02	0.17	NA	NA	Unchanged from current conditions.
Sediment	Back Bay	mg/kg dw	36	875	NA	NA	Modelled as discussed in K.5.
Sediment	Back Bay/ Baker Creek	mg/kg dw	19	452	NA	NA	Average of the EPCs for Back Bay and the lower reaches of Baker Creek.
Sediment	Baker Creek Reach 0	mg/kg dw	3.0	30	NA	NA	Modelled as discussed in K.5.
Sediment	Baker Creek Reach 1-3	mg/kg dw	3.0	30	NA	NA	Modelled as discussed in K.5.
Sediment	Baker Creek Reach 4-5	mg/kg dw	3.0	30	NA	NA	Modelled as discussed in K.5.
Sediment	Baker Creek Reach 6	mg/kg dw	3.0	30	NA	NA	Modelled as discussed in K.5.
Sediment	Baker Creek Lower Reach (0-6)	mg/kg dw	3.0	30	NA	NA	Average of the EPCs for Reach 0-6.
Sediment	Baseline - Baker Creek Reach 7-11	mg/kg dw	5.0	183	NA	NA	Unchanged from current conditions.
Sediment	Background - All Locations	mg/kg dw	1.2	23	NA	NA	Unchanged from current conditions.
Sediment	Background - South Yellowknife Bay	mg/kg dw	1.1	40	NA	NA	Unchanged from current conditions.
Aquatic Vegetation	Back Bay	mg/kg ww	0.16	4.8	NA	NA	Calculated as maximum concentration from water and sediment using transfer factors discussed in K.3.
Aquatic Vegetation	Baker Creek Reach 0	mg/kg ww	0.22	0.63	NA	NA	Calculated as maximum concentration from water and sediment using transfer factors discussed in K.3.

Media	Location	Units	Antimony	Arsenic	Chloride	Sulphate	Comment
Aquatic Vegetation	Baker Creek Reach 1-3	mg/kg ww	0.40	1.6	NA	NA	Calculated as maximum concentration from water and sediment using transfer factors discussed in K.3.
Aquatic Vegetation	Baker Creek Reach 4-5	mg/kg ww	0.15	1.3	NA	NA	Calculated as maximum concentration from water and sediment using transfer factors discussed in K.3.
Aquatic Vegetation	Baker Creek Reach 6	mg/kg ww	0.11	1.8	NA	NA	Calculated as maximum concentration from water and sediment using transfer factors discussed in K.3.
Aquatic Vegetation	Baker Creek Lower Reach (0-6)	mg/kg ww	0.22	1.3	NA	NA	Calculated as maximum concentration from water and sediment using transfer factors discussed in K.3.2.
Aquatic Vegetation	Baseline - Baker Creek Reach 7-11	mg/kg ww	0.03	1.9	NA	NA	Calculated as maximum concentration from water and sediment using transfer factors discussed in K.3.
Aquatic Vegetation	Background – South Yellowknife Bay	mg/kg ww	$6.7x10^{-3}$	0.75	NA	NA	Calculated as maximum concentration from water and sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Back Bay	mg/kg ww	2.8	131	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Baker Creek Reach 0	mg/kg ww	0.23	4.5	NA	NA	Calculated from sediment using transfer factors discussed in K.3.3.
Benthic Invertebrates	Baker Creek Reach 1-3	mg/kg ww	0.23	4.5	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Baker Creek Reach 4-5	mg/kg ww	0.23	4.5	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Baker Creek Reach 6	mg/kg ww	0.23	4.5	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Baker Creek Lower Reach (0-6)	mg/kg ww	0.23	4.5	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Baseline - Baker Creek Reach 7-11	mg/kg ww	0.39	27	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Background – South Yellowknife Bay	mg/kg ww	0.09	6.0	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Emergent Aquatic Insects	Back Bay	mg/kg ww	0.28	13	NA	NA	Assumed to be 1/10 concentration of benthic invertebrates, see K.3 for details.
Emergent Aquatic Insects	Baker Creek Lower Reach (0-6)	mg/kg ww	0.02	0.45	NA	NA	Assumed to be 1/10 concentration of benthic invertebrates, see K.3 for details.

Media	Location	Units	Antimony	Arsenic	Chloride	Sulphate	Comment
Emergent Aquatic Insects	Baseline - Baker Creek Reach 7-11	mg/kg ww	0.04	2.7	NA	NA	Assumed to be 1/10 concentration of benthic invertebrates, see K.3 for details.
Emergent Aquatic Insects	Background – South Yellowknife Bay	mg/kg ww	$8.6x10^{-3}$	0.60	NA	NA	Assumed to be 1/10 concentration of benthic invertebrates, see K.3 for details.
Fish	Background - South Yellowknife Bay	mg/kg ww	$1.5x10^{-3}$	0.16	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Fish	Baseline - Baker Creek Reach 7-11	mg/kg ww	$7.0x10^{-3}$	0.97	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Fish	Back Bay	mg/kg ww	0.05	3.4	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Fish	Back Bay/ Baker Creek	mg/kg ww	0.08	2.1	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Fish	Baker Creek Reach 0	mg/kg ww	0.16	1.9	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Fish	Baker Creek Reach 1-3	mg/kg ww	0.28	5.1	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Fish	Baker Creek Reach 4-5	mg/kg ww	0.10	4.1	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Fish	Baker Creek Reach 6	mg/kg ww	0.08	5.7	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Fish	Baker Creek Lower Reach (0-6)	mg/kg ww	0.16	4.2	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Mouse	Background	mg/kg ww	0.05	1.4	NA	NA	Calculated from soil using transfer factors discussed in K.3.
Mouse	Giant Townsite	mg/kg ww	0.07	1.6	NA	NA	Calculated from soil using transfer factors discussed in K.3.
Mouse	Site Average	mg/kg ww	0.08	3.1	NA	NA	Calculated from soil using transfer factors discussed in K.3.

Notes: NA - EPC not calculated.

Table K.55 Future EPCs for aquatic receptors - 2120

Media	Location	Units	Antimony	Arsenic	Chloride	Sulphate	Comment
Surface Water	Back Bay	mg/L	$1.3x10^{-4}$	$2.1x10^{-3}$	8.7	24	Modelled as discussed in K.5.
Surface Water	Back Bay/ Baker Creek	mg/L	0.03	0.11	6.3	17	Average of the EPCs for Back Bay and the lower reaches of Baker Creek.
Surface Water	Baker Creek Reach 0	mg/L	0.06	0.10	4.0	10	Modelled as discussed in K.5.
Surface Water	Baker Creek Reach 1-3	mg/L	0.10	0.26	4.0	10	Modelled as discussed in K.5.
Surface Water	Baker Creek Reach 4-5	mg/L	0.04	0.21	4.0	10	Modelled as discussed in K.5.
Surface Water	Baker Creek Reach 6	mg/L	0.03	0.30	4.0	10	Modelled as discussed in K.5.
Surface Water	Baker Creek Lower Reach (0-6)	mg/L	0.05	0.22	4.0	10	Average of the EPCs for Reach 0-6.
Surface Water	Baseline - Baker Creek Reach 7-11	mg/L	$2.5x10^{-3}$	0.05	4.1	28	Unchanged from current conditions.
Surface Water	Background - Prosperous/Yellowknife Bay Locations	mg/L	$2.0x10^{-4}$	$5.6x10^{-4}$	NA	NA	Unchanged from current conditions.
Surface Water	Trapper Lake	mg/L	0.02	0.17	NA	NA	Unchanged from current conditions.
Sediment	Back Bay	mg/kg dw	27	657	NA	NA	Modelled as discussed in K.5.
Sediment	Back Bay/ Baker Creek	mg/kg dw	64	822	NA	NA	Average of the EPCs for Back Bay and the lower reaches of Baker Creek.
Sediment	Baker Creek Reach 0	mg/kg dw	104	462	NA	NA	Modelled as discussed in K.5.
Sediment	Baker Creek Reach 1-3	mg/kg dw	185	1,183	NA	NA	Modelled as discussed in K.5.
Sediment	Baker Creek Reach 4-5	mg/kg dw	69	968	NA	NA	Modelled as discussed in K.5.
Sediment	Baker Creek Reach 6	mg/kg dw	52	1,336	NA	NA	Modelled as discussed in K.5.
Sediment	Baker Creek Lower Reach (0-6)	mg/kg dw	102	987	NA	NA	Average of the EPCs for Reach 0-6.
Sediment	Baseline - Baker Creek Reach 7-11	mg/kg dw	5.0	183	NA	NA	Unchanged from current conditions.
Sediment	Background - All Locations	mg/kg dw	1.2	23	NA	NA	Unchanged from current conditions.
Sediment	Background - South Yellowknife Bay	mg/kg dw	1.1	40	NA	NA	Unchanged from current conditions.
Aquatic Vegetation	Back Bay	mg/kg ww	0.13	4.0	NA	NA	Calculated as maximum concentration from water and sediment using transfer factors discussed in K.3.
Aquatic Vegetation	Baker Creek Reach 0	mg/kg ww	0.44	3.3	NA	NA	Calculated as maximum concentration from water and sediment using transfer factors discussed in K.3.

Media	Location	Units	Antimony	Arsenic	Chloride	Sulphate	Comment
Aquatic Vegetation	Baker Creek Reach 1-3	mg/kg ww	0.74	5.7	NA	NA	Calculated as maximum concentration from water and sediment using transfer factors discussed in K.3.
Aquatic Vegetation	Baker Creek Reach 4-5	mg/kg ww	0.30	5.1	NA	NA	Calculated as maximum concentration from water and sediment using transfer factors discussed in K.3.
Aquatic Vegetation	Baker Creek Reach 6	mg/kg ww	0.23	6.2	NA	NA	Calculated as maximum concentration from water and sediment using transfer factors discussed in K.3.
Aquatic Vegetation	Baker Creek Lower Reach (0-6)	mg/kg ww	0.43	5.1	NA	NA	Calculated as maximum concentration from water and sediment using transfer factors discussed in K.3.
Aquatic Vegetation	Baseline - Baker Creek Reach 7-11	mg/kg ww	0.03	1.9	NA	NA	Calculated as maximum concentration from water and sediment using transfer factors discussed in K.3.
Aquatic Vegetation	Background – South Yellowknife Bay	mg/kg ww	6.7×10^{-3}	0.75	NA	NA	Calculated as maximum concentration from water and sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Back Bay	mg/kg ww	2.1	99	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Baker Creek Reach 0	mg/kg ww	8.1	69	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Baker Creek Reach 1-3	mg/kg ww	14	177	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Baker Creek Reach 4-5	mg/kg ww	5.4	145	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Baker Creek Reach 6	mg/kg ww	4.0	200	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Baker Creek Lower Reach (0-6)	mg/kg ww	8.0	148	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Baseline - Baker Creek Reach 7-11	mg/kg ww	0.39	27	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Benthic Invertebrates	Background – South Yellowknife Bay	mg/kg ww	0.09	6.0	NA	NA	Calculated from sediment using transfer factors discussed in K.3.
Emergent Aquatic Insects	Back Bay	mg/kg ww	0.21	9.9	NA	NA	Assumed to be 1/10 concentration of benthic invertebrates, see K.3 for details.

Media	Location	Units	Antimony	Arsenic	Chloride	Sulphate	Comment
Emergent Aquatic Insects	Baker Creek Lower Reach (0-6)	mg/kg ww	0.80	15	NA	NA	Assumed to be 1/10 concentration of benthic invertebrates, see K.3 for details.
Emergent Aquatic Insects	Baseline - Baker Creek Reach 7-11	mg/kg ww	0.04	2.7	NA	NA	Assumed to be 1/10 concentration of benthic invertebrates, see K.3 for details.
Emergent Aquatic Insects	Background – South Yellowknife Bay	mg/kg ww	$8.6x10^{-3}$	0.60	NA	NA	Assumed to be 1/10 concentration of benthic invertebrates, see K.3 for details.
Fish	Background - South Yellowknife Bay	mg/kg ww	0.0015	0.16	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Fish	Baseline - Baker Creek Reach 7-11	mg/kg ww	$1.5x10^{-3}$	0.16	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Fish	Back Bay	mg/kg ww	$7.0x10^{-3}$	0.97	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Fish	Back Bay/ Baker Creek	mg/kg ww	0.04	2.6	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Fish	Baker Creek Reach 0	mg/kg ww	0.16	1.9	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Fish	Baker Creek Reach 1-3	mg/kg ww	0.28	5.0	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Fish	Baker Creek Reach 4-5	mg/kg ww	0.10	4.1	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Fish	Baker Creek Reach 6	mg/kg ww	0.08	5.7	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Fish	Baker Creek Lower Reach (0-6)	mg/kg ww	0.09	3.2	NA	NA	Calculated as the maximum from water or sediment using factors discussed in K.3.
Mouse	Background	mg/kg ww	0.05	1.4	NA	NA	Calculated from soil using transfer factors discussed in K.3.
Mouse	Giant Townsite	mg/kg ww	0.07	1.6	NA	NA	Calculated from soil using transfer factors discussed in K.3.
Mouse	Site Average	mg/kg ww	0.08	3.1	NA	NA	Calculated from soil using transfer factors discussed in K.3.

Notes: NA - EPC not calculated.

Table K.56 Future EPCs for terrestrial receptors

Media	Location	Units	Antimony	Arsenic	Copper	Manganese	Zinc	Comment
Soil	Background	mg/kg dw	2.2	94	31	165	137	Same as current.
Soil	Trapper Lake North	mg/kg dw	36	667	92	1,014	94	Estimated as described in K.6.
Soil	West of Baker Creek	mg/kg dw	165	2,519	56	807	100	Estimated as described in K.6.
Soil	East of Baker Creek	mg/kg dw	101	1,621	126	995	253	Estimated as described in K.6.
Soil	South Baker Creek	mg/kg dw	112	2,818	104	1,501	133	Estimated as described in K.6.
Soil	Giant Townsite	mg/kg dw	16	160	105	220	196	Estimated as described in K.6.
Soil	Site Average	mg/kg dw	112	1805	131	922	122	Estimated as described in K.6.
Surface Water	Baker Creek Reach 0	mg/L	0.12	0.12	$6.1x10^{-3}$	0.05	$8.8x10^{-3}$	Set to current concentrations for terrestrial receptors.
Surface Water	Baker Creek Reach 1-3	mg/L	0.22	0.32	0.01	0.32	0.15	Set to current concentrations for terrestrial receptors.
Surface Water	Baker Creek Reach 4-5	mg/L	0.26	0.28	$7.2x10^{-3}$	0.19	0.02	Set to current concentrations for terrestrial receptors.
Surface Water	Baker Creek Reach 6	mg/L	0.29	0.39	$9.4x10^{-3}$	0.04	$4.8x10^{-3}$	Set to current concentrations for terrestrial receptors.
Surface Water	Baker Creek Lower Reach (0-6)	mg/L	0.22	0.28	$8.2x10^{-3}$	0.15	0.04	Set to current concentrations for terrestrial receptors.
Surface Water	Baseline - Baker Creek Reach 7-11	mg/L	$2.5x10^{-3}$	0.05	$1.8x10^{-3}$	0.17	$3.7x10^{-3}$	Set to current concentrations for terrestrial receptors.
Surface Water	Trapper Lake	mg/L	0.02	0.17	$9.9x10^{-4}$	0.03	$6.1x10^{-3}$	Set to current concentrations for terrestrial receptors.
Foliage	Background	mg/kg ww	0.11	0.94	1.5	63	0.57	Calculated from soil using transfer factors discussed in K.3 except copper where measured data was used.
Foliage	Trapper Lake North	mg/kg ww	0.21	2.4	1.5	385	0.55	Calculated from soil using transfer factors discussed in K.3 except copper where measured data was used.
Foliage	West of Baker Creek	mg/kg ww	0.31	4.4	1.5	307	0.55	Calculated from soil using transfer factors discussed in K.3 except copper where measured data was used.
Foliage	East of Baker Creek	mg/kg ww	0.27	3.6	1.5	378	0.61	Calculated from soil using transfer factors discussed in K.3 except copper where measured data was used.

Media	Location	Units	Antimony	Arsenic	Copper	Manganese	Zinc	Comment
Foliage	South Baker Creek	mg/kg ww	0.28	4.6	1.5	570	0.57	Calculated from soil using transfer factors discussed in K.3 except copper where measured data was used.
Foliage	Giant Townsite	mg/kg ww	0.18	1.2	1.5	84	0.59	Calculated from soil using transfer factors discussed in K.3 except copper where measured data was used.
Foliage	Site Average	mg/kg ww	0.28	3.8	1.5	350	0.56	Calculated from soil using transfer factors discussed in K.3 except copper where measured data was used.
Woody Vegetation	Background	mg/kg ww	0.11	0.94	1.5	63	0.57	Set equal to foliage.
Woody Vegetation	Trapper Lake North	mg/kg ww	0.21	2.4	1.5	385	0.55	Set equal to foliage.
Woody Vegetation	West of Baker Creek	mg/kg ww	0.31	4.4	1.5	307	0.55	Set equal to foliage.
Woody Vegetation	East of Baker Creek	mg/kg ww	0.27	14	1.5	378	0.61	Set equal to foliage except arsenic, where a ratio of future/current arsenic soil concentrations was used to estimate change to woody vegetation for arsenic.
Woody Vegetation	South Baker Creek	mg/kg ww	0.28	4.6	1.5	570	0.57	Set equal to foliage.
Woody Vegetation	Giant Townsite	mg/kg ww	0.18	1.2	1.5	84	0.59	Set equal to foliage.
Woody Vegetation	Site Average	mg/kg ww	0.28	3.8	1.5	350	0.56	Set equal to foliage.
Fruits and Flowers	Background	mg/kg ww	0.11	0.94	1.5	63	0.57	Set equal to foliage.
Fruits and Flowers	Trapper Lake North	mg/kg ww	0.21	2.4	1.5	385	0.55	Set equal to foliage.
Fruits and Flowers	West of Baker Creek	mg/kg ww	0.31	4.4	1.5	307	0.55	Set equal to foliage.
Fruits and Flowers	East of Baker Creek	mg/kg ww	0.27	30	1.5	378	0.61	Set equal to foliage except arsenic, where a ratio of future/current arsenic soil concentrations was used to estimate change to fruits and flowers for arsenic.
Fruits and Flowers	South Baker Creek	mg/kg ww	0.28	4.6	1.5	570	0.57	Set equal to foliage.
Fruits and Flowers	Giant Townsite	mg/kg ww	0.18	1.2	1.5	84	0.59	Set equal to foliage.
Fruits and Flowers	Site Average	mg/kg ww	0.28	3.8	1.5	350	0.56	Set equal to foliage.
Terrestrial Insects	Background	mg/kg ww	0.11	0.94	1.5	63	0.57	Set equal to foliage.
Terrestrial Insects	Trapper Lake North	mg/kg ww	0.21	2.4	1.5	385	0.55	Set equal to foliage.
Terrestrial Insects	West of Baker Creek	mg/kg ww	0.31	4.4	1.5	307	0.55	Set equal to foliage.
Terrestrial Insects	East of Baker Creek	mg/kg ww	0.27	3.6	1.5	378	0.61	Set equal to foliage.
Terrestrial Insects	South Baker Creek	mg/kg ww	0.28	4.6	1.5	570	0.57	Set equal to foliage.
Terrestrial Insects	Giant Townsite	mg/kg ww	0.18	1.2	1.5	84	0.59	Set equal to foliage.

Media	Location	Units	Antimony	Arsenic	Copper	Manganese	Zinc	Comment
Terrestrial Insects	Site Average	mg/kg ww	0.28	3.8	1.5	350	0.56	Set equal to foliage.
Shrew	Background	mg/kg ww	0.05	1.4	0.60	0.98	32	Calculated from soil using transfer factors discussed in K.3.
Shrew	Trapper Lake North	mg/kg ww	0.07	2.3	0.66	6.0	31	Calculated from soil using transfer factors discussed in K.3.
Shrew	West of Baker Creek	mg/kg ww	0.09	3.4	0.63	4.8	32	Calculated from soil using transfer factors discussed in K.3.
Shrew	East of Baker Creek	mg/kg ww	0.08	3.0	0.68	5.9	34	Calculated from soil using transfer factors discussed in K.3.
Shrew	South Baker Creek	mg/kg ww	0.08	3.5	0.67	8.9	32	Calculated from soil using transfer factors discussed in K.3.
Shrew	Site Average	mg/kg ww	0.08	3.1	0.68	5.5	32	Calculated from soil using transfer factors discussed in K.3.
Shrew	Giant Townsite	mg/kg ww	0.07	1.6	0.67	1.3	33	Calculated from soil using transfer factors discussed in K.3.
Mouse	Background	mg/kg ww	0.05	1.4	0.60	0.98	32	Calculated from soil using transfer factors discussed in K.3.
Mouse	Trapper Lake North	mg/kg ww	0.07	2.3	0.66	6.0	31	Calculated from soil using transfer factors discussed in K.3.
Mouse	West of Baker Creek	mg/kg ww	0.09	3.4	0.63	4.8	32	Calculated from soil using transfer factors discussed in K.3.
Mouse	East of Baker Creek	mg/kg ww	0.08	3.0	0.68	5.9	34	Calculated from soil using transfer factors discussed in K.3.
Mouse	South Baker Creek	mg/kg ww	0.08	3.5	0.67	8.9	32	Calculated from soil using transfer factors discussed in K.3.
Mouse	Site Average	mg/kg ww	0.08	3.1	0.68	5.5	32	Calculated from soil using transfer factors discussed in K.3.
Mouse	Giant Townsite	mg/kg ww	0.07	1.6	0.67	1.3	33	Calculated from soil using transfer factors discussed in K.3.
Moose	Background	mg/kg ww	1.6×10^{-3}	0.01	0.90	0.22	0.01	Same as current.
Moose	Giant Mine	mg/kg ww	1.4×10^{-3}	0.40	1.2	0.23	0.01	Same as current.
Caribou	Background	mg/kg ww	1.0×10^{-3}	0.02	3.3	0.44	23	Same as current.
Caribou	Giant Mine	mg/kg ww	1.0×10^{-3}	0.02	3.3	0.44	23	Same as current.

Table K.57 Future waterfowl concentrations - 2030

Media	Location	Units	Antimony	Arsenic	Comment
Waterfowl	Background	mg/kg ww	5.8×10^{-3}	3.7	-
Waterfowl	Back Bay	mg/kg ww	0.04	18	-
Waterfowl	Back Bay/ Baker Creek	mg/kg ww	0.03	9.4	Average of concentrations for Back Bay and the lower reaches of Baker Creek.
Waterfowl	Baker Creek Lower Reach (0-6)	mg/kg ww	7.6×10^{-3}	0.92	-

Table K.58 Future waterfowl concentrations - 2120

Media	Location	Units	Antimony	Arsenic	Comment
Waterfowl	Background	mg/kg ww	5.8×10^{-3}	3.7	-
Waterfowl	Back Bay	mg/kg ww	0.03	13	-
Waterfowl	Back Bay/ Baker Creek	mg/kg ww	0.08	17	Average of concentrations for Back Bay and the lower reaches of Baker Creek.
Waterfowl	Baker Creek Lower Reach (0-6)	mg/kg ww	0.13	21	-

Table K.59 Future hare concentrations

Media	Location	Units	Antimony	Arsenic	Copper	Manganese	Zinc	Comment
Hare	Background	mg/kg ww	2.3×10^{-3}	0.40	0.65	0.24	6.0	-
Hare	Site Average	mg/kg ww	0.05	5.2	0.96	11	6.2	Average of hare concentrations calculated for each of the 4 quadrants.

Table K.60 Future ptarmigan concentrations

Media	Location	Units	Antimony	Arsenic	Copper	Manganese	Zinc	Comment
Ptarmigan	Background	mg/kg ww	2.8×10^{-3}	0.23	0.40	0.06	5.7	-
Ptarmigan	Site Average	mg/kg ww	0.07	3.6	0.64	3.1	5.9	Average of ptarmigan concentrations calculated for each of the 4 quadrants.

K.12 Sample Calculations

Sample calculations are presented here for muskrat in Baker Creek Reach 6 (Table K.61), merganser in Lower Baker Creek (Table K.62), bat in Lower Baker Creek (Table K.63), shrew in East of Baker Creek(Table K.64), hare in East of Baker Creek (Table K.65), and lynx site wide (Table K.66). Results for all locations and scenarios are provided in Appendix M.

Table K.61 Sample Calculation for exposure – muskrat in Baker Creek Reach 6

Baker Creek Reach 6 (Baker Pond) - Current
Muskrat

Receptor Characteristics	Code	Units	Value
Body weight	BW	kg	1.0
Water ingestion rate	Qwat	m3/d	$1.1x10^{-4}$
Sediment ingestion rate	Qsed	g dw/d	2.7
Food ingestion rate – wet weight basis	Qfood	g (ww)/d	408
Food Fraction:			
Benthic Invertebrates	fben	-	0.20
Aquatic Vegetation	faqveg	-	0.80
Fish	ffish	-	-
Emergent Aquatic Insects	feai	-	-
Fraction of time on site	Frac	-	1.0

Concentrations	Code	Units	Antimony			Comment
			Base value	Bioaccessibility	Final Conc.	
Water	Cwat	mg/L	0.29	100%	0.29	EPC for Baker Creek Reach 6.
Sediment	Csed	mg/kg dw	385	100%	385	EPC for Baker Creek Reach 6.
Benthic Invertebrates	Cben	mg/kg ww	30	100%	30	=0.078*Csed
Aquatic Vegetation	Caqveg	mg/kg ww	1.5	100%	1.5	=exp(0.92*ln(Csed)-5.1)

Concentrations	Code	Units	Arsenic				Comment
			Base value	Bioaccessibility	Arsenobetaine content	Final Conc	
Water	Cwat	mg/L	0.39	100%	-	0.39	EPC for Baker Creek Reach 6.
Sediment	Csed	mg/kg dw	1,716	44%	-	755	EPC for Baker Creek Reach 6.
Benthic Invertebrates	Cben	mg/kg ww	257	100%	-	257	= 0.15*Csed
Aquatic Vegetation	Caqveg	mg/kg ww	7.2	100%	-	7.2	= exp(0.6*ln(Csed)-2.5)

Intakes	Code	Units	Antimony	Arsenic	Calculation
Water	Iwat	mg/kg-d	0.03	0.04	= Qwat * Cwat * Frac / BW * (1000 L/m3)
Sediment	Ised	mg/kg-d	1.0	2.0	= Qsed * Csed / BW * Frac / (1000 g/kg)
Benthic Invertebrates	Iben	mg/kg-d	2.5	21	= Qfood * fben * Cben * Frac / BW / (1000 g/kg)
Aquatic Vegetation	Iaqveg	mg/kg-d	0.48	2.3	= Qfood * faqveg * Caqveg * Frac / BW / (1000 g/kg)
Total Intake	Itot	mg/kg-d	4.0	25	= Iwat + Ised + Iben + Iaqveg
TRV	TRV	mg/kg-d	0.06	1.0	
SI value	SI	-	68	25	= Itot / TRV

Table K.62 Sample Calculation for exposure – merganser in lower Baker Creek

Lower Baker Creek - Current
Merganser

Receptor Characteristics	Code	Units	Value
Body weight	BW	kg	1.5
Water ingestion rate	Qwat	m3/d	7.8×10^{-5}
Sediment ingestion rate	Qsed	g dw/d	1.5
Food ingestion rate – wet weight basis	Qfood	g (ww)/d	379
Food Fraction:			
Benthic Invertebrates	fben	-	0.08
Aquatic Vegetation	faqveg	-	0.02
Fish	ffish	-	0.90
Emergent Aquatic Insects	feai	-	-
Fraction of time on site	Frac	-	1.0

Concentrations	Code	Units	Antimony			Comment
			Base value	Bioaccessibility	Final Conc.	
Water	Cwat	mg/L	0.22	100%	0.22	EPC for Lower Baker Creek (Reach 0-6).
Sediment	Csed	mg/kg dw	343	100%	343	EPC for Lower Baker Creek (Reach 0-6).
Benthic Invertebrates	Cben	mg/kg ww	27	100%	27	= 0.078*Csed.
Aquatic Vegetation	Caqveg	mg/kg ww	1.3	100%	1.3	= exp(0.92*ln(Csed)-5.1).
Fish	Cfish	mg/kg ww	0.62	100%	0.62	= max(0.0014*Csed, 2.8*Cwat).

Concentrations	Code	Units	Arsenic				Comment
			Base value	Bioaccessibility	Arsenobetaine content	Final Conc.	
Water	Cwat	mg/L	0.28	100%	-	0.28	EPC for Lower Baker Creek (Reach 0-6).
Sediment	Csed	mg/kg dw	2,047	44%	-	901	EPC for Lower Baker Creek (Reach 0-6).
Benthic Invertebrates	Cben	mg/kg ww	307	100%	-	307	= 0.15*Csed
Aquatic Vegetation	Caqveg	mg/kg ww	8.0	100%	-	8.0	= exp(0.6*ln(Csed)-2.5)
Fish	Cfish	mg/kg ww	8.0	61%	46%	2.7	= max(0.0039*Csed, 19*Cwat)

Intakes	Code	Units	Antimony	Arsenic	Calculation
Water	Iwat	mg/kg-d	0.01	0.01	= Qwat * Cwat * Frac / BW * (1000 L/m3)
Sediment	Ised	mg/kg-d	0.35	0.91	= Qsed * Csed * Frac / BW / (1000 g/kg)
Benthic Invertebrates	Iben	mg/kg-d	0.54	6.2	= Qfood * fben * Cben * Frac / BW / (1000 g/kg)
Aquatic Vegetation	Iaqveg	mg/kg-d	6.6×10^{-3}	0.04	= Qfood * faqveg * Caqveg * Frac / BW / (1000 g/kg)
Fish	Ifish	mg/kg-d	0.14	0.60	= Qfood * ffish * Cfish * Frac / BW / (1000 g/kg)
Total Intake	Itot	mg/kg-d	1.0	7.8	= Iwat + Ised + Iben + Iaqveg + Ifish
TRV	TRV	mg/kg-d	-	4.4	
SI value	SI	-	-	1.8	= Itot / TRV

Table K.63 Sample Calculation for exposure – bat in lower Baker Creek

Lower Baker Creek - Current
Bat

Receptor Characteristics	Code	Units	Value
Body weight	BW	kg	0.01
Water ingestion rate	Qwat	m3/d	$1.5x10^{-6}$
Soil ingestion rate	Qsoil	g dw/d	0.03
Food ingestion rate – wet weight basis	Qfood	g ww/d	3.8
Food Fraction:			
Benthic Invertebrates	fben	-	-
Aquatic Vegetation	faqveg	-	-
Fish	ffish	-	-
Emergent Aquatic Insects	feai	-	1.0
Fraction of time on site	Frac	-	1.0

Concentrations	Code	Units	Antimony			Comment
			Base value	Bioaccessibility	Final Conc.	
Water	Cwat	mg/L	0.22	100%	0.22	EPC for Lower Baker Creek (Reach 0-6).
Soil	Csoil	mg/kg dw	162	100%	162	EPC for Giant Mine site-wide.
Sediment	Csed	mg/kg dw	343	100%	343	EPC for Lower Baker Creek (Reach 0-6).
Benthic Invertebrates (used to calculate Emergent Insects)	Cben	mg/kg ww	27	100%	27	= 0.078*Csed
Emergent Aquatic Insects	Ceai	mg/kg ww	2.7	100%	2.7	= Cben / 10

Concentrations	Code	Units	Arsenic				Comment
			Base value	Bioaccessibility	Arsenobetaine content	Final Conc	
Water	Cwat	mg/L	0.28	100%	-	0.28	EPC for Lower Baker Creek (Reach 0-6).
Soil	Csoil	mg/kg dw	2,766	36%	-	996	EPC for Giant Mine site-wide.
Sediment	Csed	mg/kg dw	2,047	44%	-	901	EPC for Lower Baker Creek (Reach 0-6).
Benthic Invertebrates (used to calculate Emergent Insects)	Cben	mg/kg ww	307	100%	-	307	= 0.15*Csed
Emergent Aquatic Insects	Ceai	mg/kg ww	31	100%	-	31	= Cben / 10

Intakes	Code	Units	Antimony	Arsenic	Calculation
Water	Iwat	mg/kg-d	0.03	0.04	= Qwat * Cwat * Frac / BW * (1000 L/m3)
Soil	Isoil	mg/kg-d	0.49	3.0	= Qsoil* Csoil * Frac / BW / (1000 g/kg)
Emergent Aquatic Insects	Ieai	mg/kg-d	1.0	12	= Qfood * feai * Ceai * Frac / BW / (1000 g/kg)
Total Intake	Itot	mg/kg-d	1.5	15	= Iwat + Isoil + Ieai
TRV	TRV	mg/kg-d	0.06	1.0	
SI value	SI	-	26	14	= Itot / TRV

Table K.64 Sample Calculation for exposure – shrew in East of Baker Creek

East of Baker Creek - Current
Shrew

Receptor Characteristics	Code	Units	Value
Body weight	BW	kg	$4.0x10^{-3}$
Water ingestion rate	Qwat	m3/d	$8.3x10^{-7}$
Soil ingestion rate	Qsoil	g dw/d	0.04
Food ingestion rate – wet weight basis	Qfood	g ww/d	5.0
Food Fraction:			
Terrestrial Insects	fterin	-	0.95
Foliage	ffol	-	0.05
Woody Vegetation	fwveg	-	-
Fruits and Flowers	fff	-	-
Caribou	fcar	-	-
Ptarmigan	fptar	-	-
Moose	fmoo	-	-
Hare	fhar	-	-
Mouse	fmou	-	-
Fraction of time on site	Frac	-	1.0

Concentrations	Code	Units	Antimony			Comment
			Base value	Bioaccessibility	Final Conc.	
Water	Cwat	mg/L	0.29	100%	0.29	EPC for Baker Creek Reach 6.
Soil	Csoil	mg/kg dw	306	100%	306	EPC for East of Baker Creek.
Terrestrial Insects	Cterin	mg/kg ww	0.36	100%	0.36	=Cfol
Foliage	Cfol	mg/kg ww	0.36	100%	0.36	=exp(0.24*ln(Csoil)-2.4)

Concentrations	Code	Units	Arsenic			Comment
			Base value	Bioaccessibility	Final Conc.	
Water	Cwat	mg/L	0.39	100%	0.39	EPC for Baker Creek Reach 6.
Soil	Csoil	mg/kg dw	4,575	36%	4,575	EPC for East of Baker Creek.
Terrestrial Insects	Cterin	mg/kg ww	5.8	100%	5.8	=Cfol
Foliage	Cfol	mg/kg ww	5.8	34%	5.8	= exp(0.47*ln(Csoil)-2.2)

Intakes	Code	Units	Antimony	Arsenic	Calculation
Water	Iwat	mg/kg-d	0.06	0.08	= Qwat * Cwat * Frac / BW * (1000 L/m3)
Sediment	Isoil	mg/kg-d	2.8	15	= Qsoil* Csoil * Frac / BW / (1000 g/kg)
Terrestrial Insects	Iterin	mg/kg-d	0.43	6.9	= Qfood * fterin * Cterin * Frac / BW / (1000 g/kg)
Foliage	Ifol	mg/kg-d	0.02	0.12	= Qfood * ffol * Cfol * Frac / BW / (1000 g/kg)
Total Intake	Itot	mg/kg-d	3.3	22	= Iwat + Isoil + Iterin + Ifol
TRV	TRV	mg/kg-d	0.06	1.0	
SI value	SI	-	56	21	= Itot / TRV

Table K.65 Sample Calculation for exposure – hare in East of Baker Creek

East of Baker Creek - Current
Hare

Receptor Characteristics	Code	Units	Value
Body weight	BW	kg	1.3
Water ingestion rate	Qwat	m3/d	$1.3x10^{-4}$
Soil ingestion rate	Qsoil	g dw/d	5.2
Food ingestion rate – wet weight basis	Qfood	g ww/d	273
Food Fraction:			
Terrestrial Insects	fterin	-	-
Foliage	ffol	-	0.30
Woody Vegetation	fwveg	-	0.60
Fruits and Flowers	fff	-	0.10
Caribou	fcar	-	-
Ptarmigan	fptar	-	-
Moose	fmoo	-	-
Hare	fhar	-	-
Mouse	fmou	-	-
Fraction of time on site	Frac	-	1.0

Concentrations	Code	Units	Antimony			Comment
			Base value	Bioaccessibility	Final Conc.	
Water	Cwat	mg/L	0.29	100%	0.29	EPC for Baker Creek Reach 6.
Soil	Csoil	mg/kg dw	306	100%	306	EPC for East of Baker Creek.
Foliage	Cfol	mg/kg ww	0.36	100%	0.36	=exp(0.24*ln(Csoil)-2.4)
Woody Vegetation	Cwveg	mg/kg ww	0.36	100%	0.36	= Cfol
Fruits and Flowers	Cff	mg/kg ww	0.36	100%	0.36	= Cfol

Concentrations	Code	Units	Arsenic			Comment
			Base value	Bioaccessibility	Final Conc.	
Water	Cwat	mg/L	0.39	100%	0.39	EPC for Baker Creek Reach 6.
Soil	Csoil	mg/kg dw	4,575	36%	1,647	EPC for East of Baker Creek.
Foliage	Cfol	mg/kg ww	5.8	34%	1.9	= exp(0.47*ln(Soil)-2.2)
Woody Vegetation	Cwveg	mg/kg ww	22	100%	22	EPC for East of Baker Creek.
Fruits and Flowers	Cff	mg/kg ww	49	100%	49	EPC for East of Baker Creek.

Intakes	Code	Units	Antimony	Arsenic	Calculation
Water	Iwat	mg/kg-d	0.03	0.04	= Qwat * Cwat * Frac / BW * (1000 L/m3)
Sediment	Isoil	mg/kg-d	1.2	6.5	= Qsoil* Csoil * Frac / BW / (1000 g/kg)
Foliage	Ifol	mg/kg-d	0.02	0.12	= Qfood * ffol * Cfol * Frac / BW / (1000 g/kg)
Woody Vegetation	Iwveg	mg/kg-d	0.05	2.8	= Qfood * fwveg * Cwveg * Frac / BW / (1000 g/kg)
Fruits and Flowers	Iff	mg/kg-d	0.01	1.0	= Qfood * fff * Cff * Frac / BW / (1000 g/kg)
Total Intake	Itot	mg/kg-d	1.3	11	= Iwat + Isoil + Ifol + Iwveg + Iff
TRV	TRV	mg/kg-d	0.06	1.0	
SI value	SI	-	22	10	= Itot / TRV

Table K.66 Sample Calculation for exposure – lynx site-wide

Site-Wide - Current
Lynx

Receptor Characteristics	Code	Units	Value
Body weight	BW	kg	11
Water ingestion rate	Qwat	m3/d	$8.6x10^{-4}$
Soil ingestion rate	Qsoil	g dw/d	14
Food ingestion rate – wet weight basis	Qfood	g ww/d	1,640
Food Fraction:			
Terrestrial Insects	fterin	-	-
Foliage	ffol	-	-
Woody Vegetation	fwveg	-	-
Fruits and Flowers	fff	-	-
Caribou	fcar	-	0.08
Ptarmigan	fptar	-	0.09
Moose	fmoo	-	0.08
Hare	fhar	-	0.75
Mouse	fmou	-	-
Fraction of time on site	Frac	-	0.50

Giant Mine Concentrations	Code	Units	Antimony			Comment
			Base value	Bioaccessibility	Final Conc.	
Water	Cwat	mg/L	0.22	100%	0.22	EPC for Lower Baker Creek (Reach 0-6).
Soil	Csoil	mg/kg dw	162	100%	162	
Caribou	Ccar	mg/kg ww	$1.0x10^{-3}$	100%	$1.0x10^{-3}$	Based on single reindeer flesh sample, see K.4.2.4 for details.
Ptarmigan	Cptar	mg/kg ww	0.07	100%	0.07	Calculated using feed-to-flesh transfer factors.
Moose	Cmoo	mg/kg ww	$1.4x10^{-3}$	100%	$1.4x10^{-3}$	Based on two moose flesh samples, see K.4.2.4 for details.
Hare	Char	mg/kg ww	0.04	100%	0.04	Calculated using feed-to-flesh transfer factors.

Giant Mine Concentrations	Code	Units	Arsenic			Comment
			Base value	Bioaccessibility	Final Conc.	
Water	Cwat	mg/L	0.28	100%	0.28	EPC for Lower Baker Creek (Reach 0-6).
Soil	Csoil	mg/kg dw	2,766	36%	996	
Caribou	Ccar	mg/kg ww	0.02	50%	$8.2x10^{-3}$	Based on single reindeer flesh sample, see K.4.2.4 for details.
Ptarmigan	Cptar	mg/kg ww	5.1	38%	1.9	Calculated using feed-to-flesh transfer factors.
Moose	Cmoo	mg/kg ww	0.40	50%	0.20	Based on two moose flesh samples, see K.4.2.4 for details.
Hare	Char	mg/kg ww	7.2	38%	2.7	Calculated using feed-to-flesh transfer factors.

Background Concentrations	Code	Units	Antimony			Comment
			Base value	Bioaccessibility	Final Conc.	
Water	Cwatbg	mg/L	$3.0x10^{-3}$	100%	$2.5x10^{-3}$	EPC for Upper Baker Creek (Reach 7-11).
Soil	Csoilbg	mg/kg dw	2.2	100%	2.2	
Caribou	Ccarbg	mg/kg ww	$1.0x10^{-3}$	100%	$1.0x10^{-3}$	Based on single reindeer flesh sample, see K.4.2.4 for details.
Ptarmigan	Cptarbg	mg/kg ww	$2.4x10^{-3}$	100%	$2.4x10^{-3}$	Calculated using feed-to-flesh transfer factors
Moose	Cmoobg	mg/kg ww	$1.6x10^{-3}$	100%	$1.6x10^{-3}$	Based on two moose flesh samples, see K.4.2.4 for details.
Hare	Charbg	mg/kg ww	$2.0x10^{-3}$	100%	$2.0x10^{-3}$	Calculated using feed-to-flesh transfer factors.

Background Concentrations	Code	Units	Arsenic			Comment
			Base value	Bioaccessibility	Final Conc.	
Water	Cwatbg	mg/L	0.05	100%	0.05	EPC for Upper Baker Creek (Reach 7-11).
Soil	Csoilbg	mg/kg dw	94	38%	36	
Caribou	Ccarbg	mg/kg ww	0.02	50%	$8.2x10^{-3}$	Based on single reindeer flesh sample, see K.4.2.4 for details.
Ptarmigan	Cptarbg	mg/kg ww	0.23	50%	0.12	Calculated using feed-to-flesh transfer factors.
Moose	Cmoobg	mg/kg ww	0.01	50%	$6.1x10^{-3}$	Based on two moose flesh samples, see K.4.2.4 for details.
Hare	Charbg	mg/kg ww	0.40	50%	0.20	Calculated using feed-to-flesh transfer factors.

Intakes	Code	Units	Antimony	Arsenic	Calculation
Water	Iwat	mg/kg-d	$8.7x10^{-3}$	0.01	= Qwat * (Cwat * Frac + Cwatbg * (1-Frac)) / BW * (1000 L/m3)
Soil	Isoil	mg/kg-d	0.10	0.65	= Qsoil* (Csoil * Frac + Csoilbg * (1-Frac)) / BW / (1000 g/kg)
Caribou	Icar	mg/kg-d	$1.2x10^{-5}$	$9.7x10^{-5}$	= Qfood * fcar * (Ccar * Frac + Ccarbg * (1-Frac)) / BW / (1000 g/kg)
Ptarmigan	Iptar	mg/kg-d	$4.7x10^{-4}$	0.01	= Qfood * fptar * (Cptar * Frac + Cptarbg * (1-Frac)) / BW / (1000 g/kg)
Moose	Imoo	mg/kg-d	$1.8x10^{-5}$	$1.2x10^{-3}$	= Qfood * fmoo* (Cmoo * Frac + Cmoobg * (1-Frac)) / BW / (1000 g/kg)
Hare	Ihar	mg/kg-d	$2.6x10^{-3}$	0.16	= Qfood * fhar * (Char * Frac + Charbg * (1-Frac)) / BW / (1000 g/kg)
Total Intake	Itot	mg/kg-d	0.11	0.84	= Iwat + Isoil + Icar + Iptar + Imoo + Ihar
TRV	TRV	mg/kg-d	0.06	1.0	
SI value	SI	-	1.9	0.81	= Itot / TRV

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APPENDIX L

ECOLOGICAL TOXICITY REVIEW

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APPENDIX L: ECOLOGICAL TOXICITY REVIEW

L.1 Aquatic Biota

The Water Quality Task Group of the Canadian Council of the Ministers of the Environment (CCME) has a protocol to develop the Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCME 2007). The goals of the protocol include (i) accounting for the unique properties of contaminants that influence their toxicity and (ii) incorporating the species sensitivity distribution (SSD) method, which uses all available toxicity data (provided these data pass quality control criteria) in the development of the guideline. The SSD approach has been adopted for the development of the site-specific water quality objectives and is therefore supported by the CCME protocol (CCME 2007).

The first step in the development of the SSD curves was the compilation of relevant aquatic toxicity data. In general, the U.S. EPA ECOTOXicology database (ECOTOX; U.S. EPA 2017) was the primary source of toxicity data, infilled with data from literature searches when required. The ECOTOX database reports toxicity data for a wide range of aquatic species as well as laboratory and field studies. For most chemicals, ECOTOX includes toxicity data in literature from 1972 to the present. All data were quality assured according to the U.S. EPA's criteria, and the system is updated quarterly. The toxicity data were then summarized and screened to meet the following criteria:

- Freshwater tests;
- Chronic;
- LCx, ECx, ICx, MATC endpoints (where x >=10); and
- Inorganic chemical form.

Toxicity tests completed in a saltwater environment with lowest observed effect concentrations/no observed effect concentrations (LOEC/NOEC) reported were excluded from the datasets. Chronic tests were considered to be greater than four days (96 hours). In the development of the SSDs, preference was given to endpoints such as an EC_{20} based on endpoints such as survival, growth, or reproduction.

After the compilation of the dataset, toxicity data were grouped by species. If only one toxicity value was available for a species then that value was used as the toxicity value for the species; however, when multiple toxicity values were available for a species then the geometric mean of the toxicity values was calculated and assumed to represent the toxicity value for that species. The geometric mean was selected instead of the arithmetic mean in order to minimize the bias towards high test results. Species mean values were then ranked from lowest to highest and the percent of species affected was calculated using Equation L-1:

$$\%\ \mathit{Affected} = \frac{\text{Rank - 0.5}}{\text{Number of Species}} \times 100 \qquad \text{(L-1)}$$

After manipulation of the dataset and ranking, SSD curves were developed using either the U.S. EPA (2010) SSD generator (downloaded from the Causal Analysis/Diagnosis Decision Information System [CADDIS]) or the SSD Master V3 tool from the CCME (2013). The U.S. EPA SSD generator applies a log-probit distribution to the dataset to develop the SSD curve, while the SSD Master V3 tool evaluates several distributions to the dataset. The distribution with the best fit was selected for the SSD.

L.1.1 Antimony SSD for Aquatic Toxicity

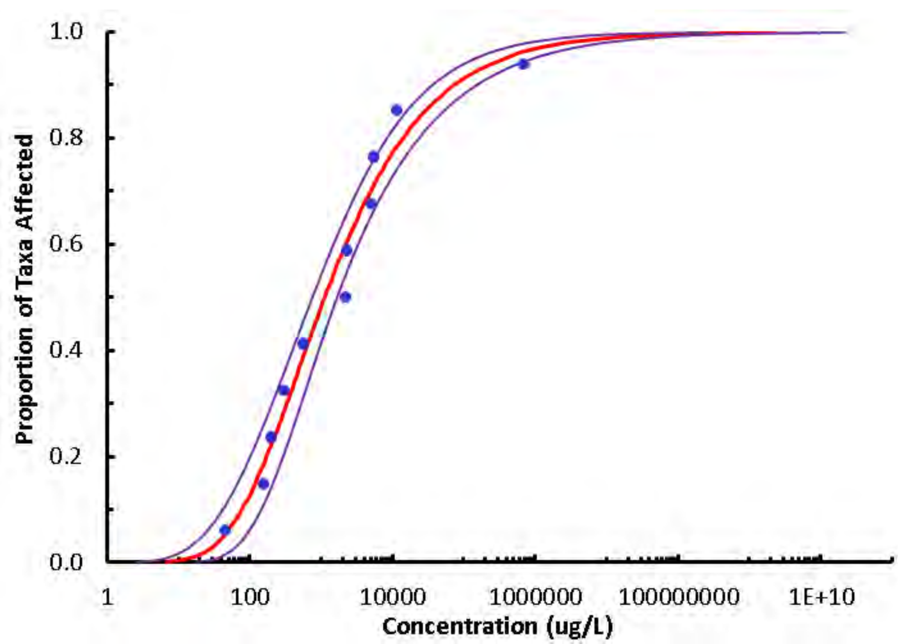
There were 11 chronic studies with acceptable toxicity information for developing an antimony SSD. There were 4 fish studies, 1 amphibian study, 3 aquatic plant studies and 3 aquatic invertebrate studies. Table L.1 provides a summary of the values used in the development of the SSD while the complete data set for antimony is provided in ATTACHMENT L.1. The toxicity values at the lower end of the curve are the most important studies in the derivation of the protection levels for low effects. The study on population endpoints for the alga *Chlorella vulgaris* (deJong and Roman 1965) was based on a 3 to 4 month timeframe and is deemed to be a chronic endpoint. A NOEC of 32 µg/L, and a NOEC of 64 µg/L are provided in the study. A MATC of 45.3 µg/L was derived from these values. Birge et al. (1980) provides a LC_{10} of 157 µg/L based on a 28 day study in rainbow trout. Birge et al. (1978) also provide LC_{50} and LC_1 values for toads, goldfish, and trout. It is unclear how the LC_1 values were derived and, thus, only LC_{50} values for toad (300 µg/L) and goldfish (11,300 µg/L) were considered from this study.

The SSD curve presented in Figure L.1 was developed using the SSD Master V3 (CCME 2013) model. The gumbel model was selected as the best fit for the antimony data set, particularly for the data in the lower end of the curve. Additional parameters describing the curve are provided in Table L.2. The gumbel model passed the Anderson-Darling fit test, and further information on the fit statistics can be found in the manual accompanying SSD Master V3 (CCME 2013).

Table L.1 Summary of data used to derive SSD for antimony

Species	Group	Endpoint	Effect	Concentration (µg/L)
Chlorella vulgaris	Plant/Algae	MATC	Population	45.3
Oncorhynchus mykiss	Fish	LC10	Mortality	157
Pseudokirchneriella subcapitata	Plant/Algae	NOEC	Population	200
Gastrophryne carolinensis	Amphibian	LC50	Mortality	300
Macrobrachium nipponense	Aquatic Invertebrate	MATC	Physiology	566
Ictalurus punctatus	Fish	NOEC	Gills, Hematology	2191
Pimephales promelas	Fish	MATC	Growth	2284
Fontinalis antipyretica	Plant/Algae	EC50	Physiology	5034
Daphnia magna	Aquatic Invertebrate	MATC	Reproduction	5460
Carassius auratus	Fish	LC50	Mortality	11300
Tubifex tubifex	Aquatic Invertebrate	EC50	Intoxication	678000

Figure L.1 Species sensitive distribution for the protection of aquatic life – antimony



Gumbel Model $$F(x) = e^{-e^{\frac{(L-x)}{s}}}$$

Table L.2 SSD curve parameters for antimony

Statistic	Value
M	2.7
Σ	0.0226
A^2	0.204
MSE	0.0025
MSE (lower tail)	0.0137
N	11

Note: For the gumbel model, as determined by SSD Master V3 (CCME 2013).

The CCME protocol for the derivation of water quality guidelines (CCME 2007) considers the 95% protection level (or 5th percentile of the SSD) for defining the guideline from a cumulative SSD, with some additional protection considerations. For setting benchmarks other than water quality guidelines, lower protection levels could be considered, such as the 90% or 80% protection levels, using professional judgement and consideration of site-specific circumstances.

Table L.3 summarizes the concentrations that are protective of 80%, 90%, and 95% of the species, based on the central tendency and upper and lower prediction intervals of the SSD curve. The specific species from the SSD potentially affected at each protection level for the central tendency are also summarized. At the 95% protection level, there are no potentially affected species indicated. At the 90% protection level, green algae may be affected. At the 80% protection level, rainbow trout may also be affected.

Table L.3 Protection levels based on species sensitivity distribution - antimony

Protection Level	Concentration (µg/L)			Species Affected at Central Tendency
	Central Tendency	Upper Prediction Interval	Lower Prediction Interval	
95%	43.2	86.5	21.6	None
90%	77.7	144	41.8	*Chlorella vulgaris*
80%	172	293	102	*Chlorella vulgaris, Oncorhynchus mykiss*

The CCME does not provide a water quality guideline for the protection of aquatic life for antimony. The Ontario Ministry of Environment and Energy (MOEE) prepared a scientific criteria document for antimony (MOEE 1996) that describes the basis for the 20 µg/L proposed guideline. It was determined at that time that there was insufficient aquatic toxicity data available to derive a Provincial Water Quality Objective, so an Interim Provincial Water Quality Objective was developed by dividing the lowest observed effect concentration (7d-LC50) for the toad *Gastrophyne carolinensis* of

300 µg/L by an uncertainty factor of 14.5. The uncertainty factor was derived with consideration of six effects concentrations.

The Predicted No Effect Concentration (PNEC) for antimony in freshwater derived by the European Chemicals Agency (ECHA) is 113 µg/L (ECHA 2017). The PNEC was based on the application of a factor of 10 to the lowest chronic NOEC in their dataset, which was the 28-d growth/length NOEC of 1.13 mg/L for *Pimephales promelas* (Swedish Chemicals Agency 2008). The U.S. EPA (1988) developed a chronic value for the ambient aquatic life water quality criteria for antimony(III) of 30 µg/L. This value was based on the derived acute value of 175 µg/L. The Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000) derived a low reliability trigger value for antimony of 9 µg/L. This interim working level is based on a 96-hr LC50 fish data for *Pimephales promelas* of 9,000 µg/L and an applied factor of 1000. This trigger level is based on short term toxicity data and the determined level is intended to trigger an investigation to develop more appropriate guidelines in the case of an exceedance. The British Columbia Ministry of the Environment (BCMOE 2017) based their freshwater quality guideline on the ANZECC trigger value.

Previously derived values for the protection of aquatic life for antimony range from 9 µg/L to 157 µg/L; the proposed 95% protection level of 43 µg/L based on the derived SSD falls within the lower end of this range and is, therefore, considered suitably conservative, despite the uncertainties introduced by the approach. Furthermore, the protection clause of the CCME (2007) protocol is not invoked.

L.1.2 Arsenic SSD for Aquatic Toxicity

The ECOTOX database (U.S. EPA 2017) was used as the primary source of toxicity data for arsenic. This dataset was supplemented with a number of additional studies including the Vocke et al. (1980) test result for EC_{50} growth endpoints for *Scenedesmus acutus* and Planas and Healey (1978) growth endpoints for *Ochromonas valesiaca* (IC_{20}/LOEC) and *Melosira granulate* (IC_{35}/LOEC), which were considered in the development of the CCME (2001) arsenic water quality guideline. In addition Chen et al. (1999) carried out studies on *Daphnia pulex* for both juvenile and adult life stages. Studies were carried out with both As(III) and As (V). There were differences in concentration-response relationships depending on the endpoint (survival or reproduction) and the form of arsenic. However, the authors noted a decrease of about 28% in cumulative egg production at an arsenic concentration of 10 µg/L. This value was selected as an

EC_{20}/LOEC concentration for reproductive endpoints. This invertebrate is the most sensitive species. A MATC value of 56 µg/L was derived from NOEC and LOEC values for growth for the freshwater algae *Monoraphidium arcuatum* (Levy et al. 2005). The complete dataset is provided in ATTACHMENT L.1 and indicates which data points were included in the development of the SSD. The aquatic toxicity data for arsenic were grouped by species (Table L.4) and the 27 species were ranked.

The SSD curve generated using the data is presented in Figure L.3; this curve was developed using the SSD Master V3 tool (CCME 2013), since the normal model fit the data in the lower and mid sections of the curve better than the logprobit model used in the U.S. EPA SSD generator (2010). The normal model passed the Anderson-Darling fit test and had the best fit in the lower portions of the curve of all included distributions, by visual inspection. Additional parameters describing the curve are provided in Table L.5, and further information on the fit statistics can be found in the manual accompanying SSD Master V3 (CCME 2013).

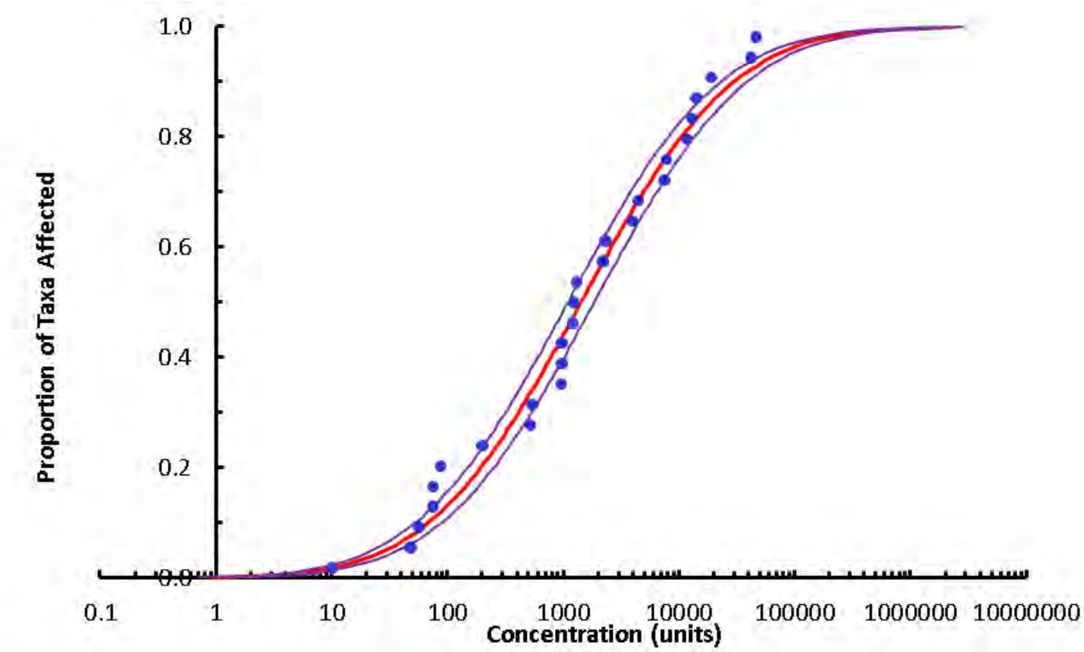
Table L.6 summarizes the concentrations that are protective of 80%, 90%, and 95% of the species, based on the central tendency and upper and lower prediction intervals of the SSD curve along with species potentially affected at each protection level for the central tendency.

Table L.4 Summary of data used to derive SSD for arsenic

Species	Common Name	Concentration (µg/L)	Endpoint	Geometric Mean (µg/L)	Species Rank	% Affected
Daphnia pulex	Water Flea	10	EC20/LOEC	10	1	2%
Scenedesmus acutus var. acutus	Green Algae	48	EC50	48	2	6%
Monoraphidium arcuatum	Algae	56	MATC	56	3	9%
Ochromonas valesiaca	Algae	75	IC35/LOEC	75	4	13%
Melosira granulata	Algae	75	IC20/LOEC	75	5	13%
Gammarus pseudolimnaeus	Scud	88	LC15	88	6	20%
Gammarus fossarum	Amphipod	200	LC50	200	7	24%
Hyalella azteca	Scud	483	LC50	518	8	28%
		494	LC50			
		581	LC50			
Oncorhynchus mykiss	Rainbow Trout	540	LC50	540	9	31%
		540	LC50			
Pteronarcys dorsata	Stonefly	961	NOEC	961	10	35%
Stagnicola emarginata	Snail	973	LC10	973	11	39%

Species	Common Name	Concentration (µg/L)	Endpoint	Geometric Mean (µg/L)	Species Rank	% Affected
Helisorna campanulata	Snail	973	LC10	973	12	39%
Ceriodaphnia dubia	Water Flea	1140	MATC	1,198	13	46%
		1259	EC50			
Chlorella sp.12	Green Algae	1243	MATC	1,243	14	50%
Daphnia magna	Water Flea	1300	IC10	1,300	15	54%
Physa fontinalis	Snail	2200	LC50	2,200	16	57%
Asellus aquaticus	Isopod	2310	LC50	2,310	17	61%
Niphargus rhenorhodanensis	Amphipod	3970	LC50	3,970	18	65%
Ambystoma opacum	Marbled Salamander	4450	LC50	4,450	19	69%
Coregonus hoyi	Bloater	5100	LC50	7,490	20	72%
		11000	LC50			
Pimephales promelas	Fathead Minnow	1500	MATC	7,779	21	76%
		1500	MATC			
		7079	EC50			
		11000	MATC			
		18200	LC50			
		21700	LC50			
		24900	LC50			
Carassius auratus	Goldfish	490	LC50	11,717	22	80%
		32100	LC50			
		33100	LC50			
		36200	LC50			
Salmo gairdneri	Rainbow Trout	4900	Chronic Toxicity Threshold	12,994	23	83%
		10800	LC50			
		12600	LC50			
		13300	LC50			
		13900	LC50			
		18500	LC50			
		27430	LC50			
Jordanella floridae	Flagfish	14200	EC50	14,200	24	87%
Salvelinus fontinalis	Brook Trout	18000	LC50	19,115	25	91%
		19400	LC50			
		20000	LC50			
Micropterus salmoides	Largemouth Bass	42100	LC50	42,100	26	94%
Lepomis macrochirus	Bluegill	31600	LC50	46,255	27	98%
		37000	LC50			
		42200	LC50			
		47800	LC50			
		61700	LC50			
		67300	LC50			

Figure L.2 Species sensitive distribution for the protection of aquatic life – arsenic



Normal Model:

$$F(x) = \frac{1}{2\left(1 + \mathrm{erf}\left(\frac{x-\mu}{\alpha\sqrt{2}}\right)\right)}$$

Table L.5 SSD curve parameters for arsenic

Parameters	
µ	3.15
s	1.03
A^2	0.62
MSE	0.0015
N	27

Table L.6 Protection levels based on species sensitivity distribution - arsenic

Protection Level	Concentration (µg/L)			Species Affected at Central Tendency
	Central Tendency	Upper Prediction Interval	Lower Prediction Interval	
95%	29	37	22	*Daphnia pulex*
90%	68	88	52	*Daphnia pulex, Scenedesmus acutus var. acutus, Monoraphidium arcuatum*
80%	193	251	149	*Daphnia pulex, Scenedesmus acutus var. acutus, Monoraphidium arcuatum, Ochromonas valesiaca, Melosira granulate, Gammarus pseudolimnaeus*

The CCME water quality guideline for arsenic for the protection of aquatic life is 5 μg/L. This value was derived from a study by Vocke et al. (1980) for growth endpoints for *Scenedesmus obliquus*. The 14 day EC_{50} for growth by dividing the lowest toxicity value of 50 μg/L by a safety factor of 10. It should be noted that this guideline was developed prior to the CCME using the SSD approach to derive water quality guidelines.

L.1.3 Chloride SSD for Aquatic Toxicity

Data for chloride were taken from the CCME chloride surface water quality factsheet (CCME 2011), which is provided in ATTACHMENT L.2. The aquatic toxicity data for chloride were grouped by species (Table L.7) and the 28 species were ranked. The SSD curve generated using the data is presented in Figure L.3; this curve was developed using the SSD Master V3 tool (CCME 2013) since the logistic model fit the data in the lower end of the curve better than the logprobit model used in the U.S. EPA SSD generator (2010). The logistic model passed the Anderson-Darling fit test and had the lowest Anderson-Darling test statistic of all included distributions, indicating best fit.

Further information on the fit statistics can be found in the manual accompanying SSD Master V3 (CCME 2013). Additional parameters describing the curve can be found in Table L.8, and Table L.9 summarizes the concentrations that are protective of 80%, 90%, and 95% of the species, based on the central tendency and upper and lower prediction intervals of the SSD curve. The specific species from the SSD potentially affected at each protection level for the central tendency are also summarized.

Table L.7 Summary of data used to derive SSD for chloride

Species	Common Name	Endpoint	Species Mean Concentration (mg/L)	Species Rank	% Affected
Lampsilis fasciola	Lampmussel	24-hr EC10, glochidia survival.	24	1	2%
Epioblasma torulosa rangiana	Northern Riffleshell	24-hr EC10, glochidia survival.	42	2	5%
Musculium securis	Fingernailclam	60-80 day LOEC, reduced natality.	121	3	9%
Daphnia ambigua	Water Flea	10 day EC10, mortality and reproduction.	259	4	13%
Daphnia pulex	Water Flea	21 day IC10, reproduction.	368	5	16%
Elliptio complanata	Mussel	24-hr EC10, glochidia survival.	406	6	20%

Species	Common Name	Endpoint	Species Mean Concentration (mg/L)	Species Rank	% Affected
Hyalella azteca	Scud	28 day EC25, growth and dry weight.	421	7	23%
Daphnia magna	Water flea	21 day EC25, reproduction.	421	8	23%
Ceriodaphnia dubia	Water Flea	7 day IC25, reproduction.	454	9	30%
Tubifex tubifex	Tubificid Worm	28 day IC10, reproduction.	519	10	34%
Pimephales promelas	Fathead minnow	33 day LC10, survival.	598	11	38%
Salmo trutta fario	Brown Trout	8 day NOEC, survival.	607	12	41%
Villosa delumbis	Mussel	24-hr EC10, glochidia survival.	716	13	45%
Villosa constricta	Mussel	24-hr EC10, glochidia survival.	789	14	48%
Lumbriculus variegatus	Blackworm	28 day EC25, reproduction.	825	15	52%
Oncorhynchus mykiss	Rainbow trout	7 day EC25, embryo viability.	989	16	55%
Lemna minor	Duckweed	96-hr MATC, frond production.	1171	17	59%
Brachionus calyciflorus	Rotifer	48-hr IC10, reproduction.	1241	18	63%
Xenopus laevis	Clawed frog	7 day LC10, survival.	1307	19	66%
Lampsilis siliquoidea	Fatmucket Clam	96-hr EC10, survival of juveniles.	1474	20	70%
Physa sp.	Snail	60 day NOEC, survival.	2000	21	73%
Gammarus pseudopinmaeus	Scud	60 day NOEC, survival.	2000	22	73%
Stenonema modestum	Mayfly	14 day MATC, development.	2047	23	80%
Chironomous tentans	Midge	20 day IC10, growth/biomass.	2316	24	84%
Rana pipiens	Northern Leopard Frog	108 day MATC, survival.	3431	25	88%
Chlorella zofingiensis	Microalgae	28 day MATC, growth.	6066	26	91%
Chlorella minutissimo	Microalgae	28 day MATC, growth.	6066	27	91%
Chlorella emersonii	Microalgae	8-14 day MATC, growth inhibition.	6824	28	98%

The CCME (2011) used the SSD approach to derive the long term freshwater quality guideline of 120 mg/L. This was based on the protection of 95% of the species. This is similar to the value derived in Table L.9.

Figure L.3 Species sensitive distribution for the protection of aquatic life – chloride

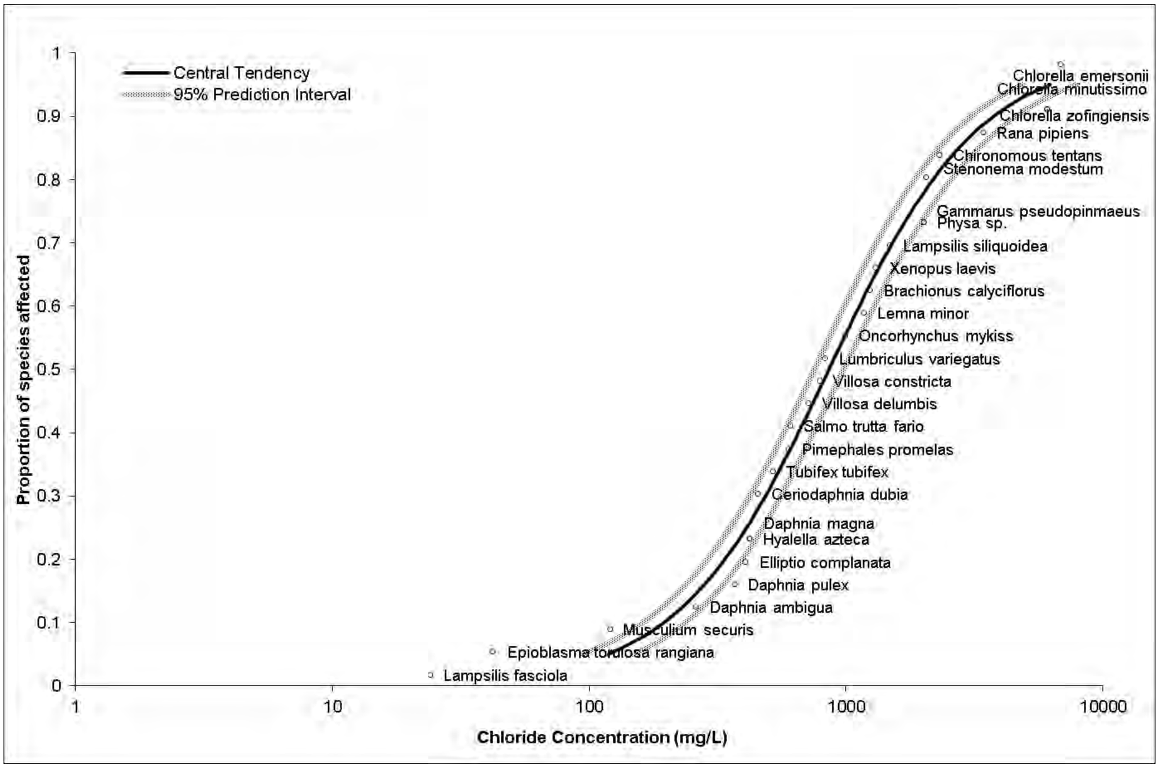


Table L.8 SSD curve parameters for chloride

Parameters	
μ	2.933
s	0.292
A^2	0.292
MSE	0.00080
N	28

Table L.9 Protection levels based on species sensitivity distribution - chloride

Protection Level	Concentration (mg/L)			Species Affected at Central Tendency
	Central Tendency	Lower Prediction Interval	Upper Prediction Interval	
95%	118	149	94	*Lampsilis fasciola, Epioblasma torulosa rangiana*
90%	196	236	162	*Lampsilis fasciola, Epioblasma torulosa rangiana, Musculium securis*
80%	337	394	289	*Lampsilis fasciola, Epioblasma torulosa rangiana, Musculium secures, Daphnia ambigua*

L.1.4 Sulphate SSD for Aquatic Toxicity

There are no CCME guidelines for sulphate. The BCMOE commissioned the work of Elphick et al. (2011) for the development a revised water quality guideline for sulphate. Sufficient evidence exists to suggest that the toxicity of sulphate reduces with increasing hardness (Elphick et al. 2011), and, therefore, it is appropriate to consider hardness as a toxicity-modifying factor for sulphate aquatic toxicity. However, in contrast to other chemicals that have established toxicity-modifying factors based on hardness (e.g., copper, zinc), an established relationship between toxicity and hardness is not available for sulphate. For sulphate, there are differences in the relationship between sulphate toxicity and hardness for different species (Elphick et al. 2011). Therefore, Elphick et al. (2011) divided the sulphate toxicity data into subsets based on tests conducted in soft water (10-50 mg/L hardness), moderately hard water (75-120 mg/L hardness), and hard water (150-250 mg/L hardness), and developed separate SSD curves for these hardness ranges. This same approach was adopted for the development of an SSD for the Giant Mine.

Because hardness was considered as a modifying factor for toxicity, test results without reported hardness conditions were screened out of the dataset for the development of the species sensitivity distribution for sulphate. While increased sensitivity to sulphate was reported in some tests completed by Elphick et al. (2011) at hardness levels above 250 mg/L, it was concluded that, for some species, the overall ionic strength at high hardness levels causes issues that may not reflect sulphate sensitivity, however, this data was used to generate an SSD curve for hardness above 250 mg/L for use at the Giant Mine.

The Elphick et al. (2011) paper was commissioned by BCMOE "to provide a comprehensive set of toxicological data, generated using standardized test methods, which can be used to establish safe limits for sulfate under varying conditions of hardness." They followed the CCME requirements for establishing Type A Canadian water quality guidelines for the protection of aquatic life, using an SSD approach and used the test species, durations, and endpoints required. Therefore, Elphick et al. (2011) did not consider all available toxicity data for sulphate. Although the Elphick et al. (2011) information was a key data source, a search of the information in the ECOTOX database (U.S. EPA 2017) was conducted to identify potential additional toxicity data. If multiple endpoints were reported within a study, preference was given to EC_{10} and EC_{25}.

Chronic tests were considered to be greater than four days (96 hours), with the exception of the algae *Pseudokirchneriella subcapitata*. A 72 hour test duration is recommended for conducting chronic toxicity tests for *Pseudokirchneriella subcapitata* (EC 2007) and, therefore, data points for algae with a test duration of three days (72 hours) were included in the dataset.

Aquatic toxicity tests completed with sodium sulphate, calcium sulphate, and magnesium sulphate were all considered for the development of the SSD. Data related to potassium sulphate was excluded from the dataset, because potassium exhibits a greater degree of toxicity, as compared with sodium (Mount et al. 1997), and is, therefore, not suitable as a counter-ion in evaluations of the toxicity of anions (Elphick et al. 2011).

The complete dataset is provided in Attachment A and indicates which data points were included in the development of the SSD. After the compilation of the dataset (presented in ATTACHMENT L.1), the data were subdivided based on water hardness, as described above. The next step in the development of the SSD was the grouping of toxicity data by species (Table L.10). Geometric mean concentrations were calculated for each species at each water hardness level. The geometric mean was selected instead of the arithmetic mean in order to minimize the bias towards high test results. Species mean values were then ranked from lowest to highest and the percent of species affected was calculated by dividing the species rank minus 0.5 by the total number of species (from 5 to 9 species, depending on the water hardness level). Additional parameters describing the curve can be found in Table L.11. The SSD curves generated using the data is presented in Figure L.4.

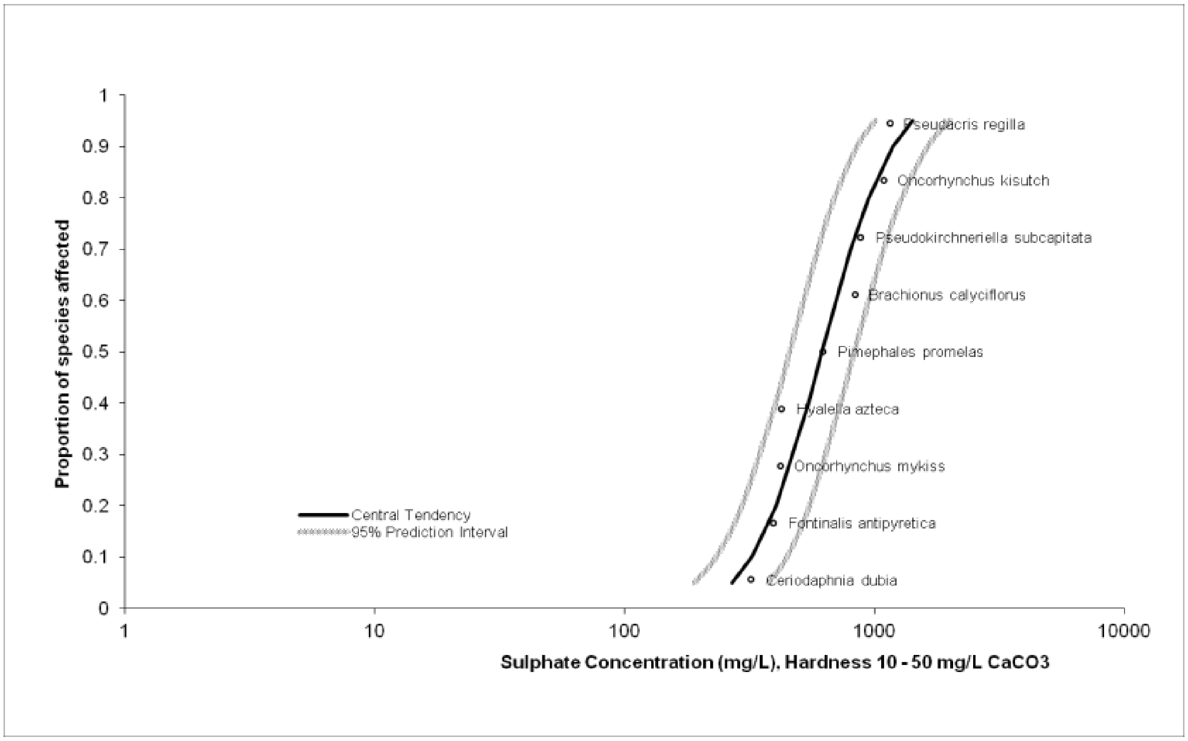
Table L.10 Summary of data used to derive SSD for sulphate

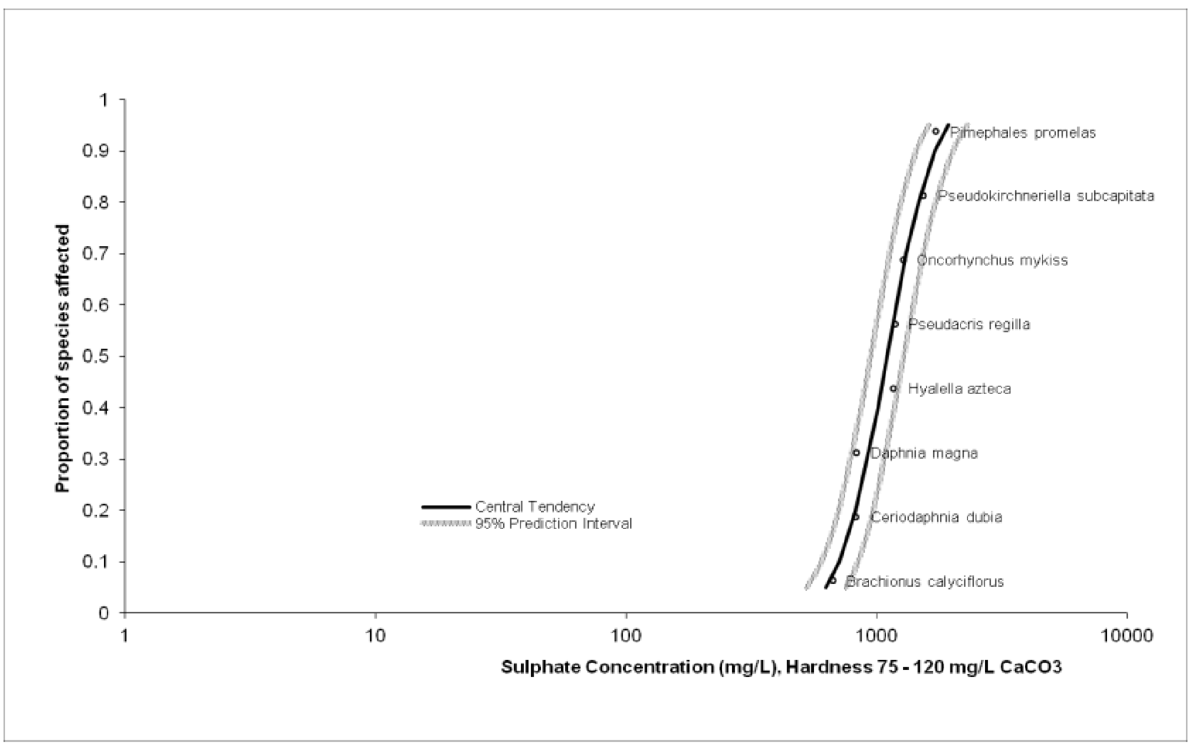
Test Species	Common Name	End Point	Sulphate Concentration (mg/L)	Hardness Concentration (mg/L)	Species Mean Sulphate Concentration (mg/L)	Rank	% Affected
10 – 50 mg/L Hardness Concentration							
Ceriodaphnia dubia	Water Flea	EC10	137	40	320	1	6%
		EC25	246	40			
		IC25	496	44			
		IC25	625	45			
Fontinalis antipyretica	Aquatic moss	EC10	53	15	396	2	17%
		EC25	176	15			
		EC10	297	15			
		EC10	531	15			
		EC10	716	15			
		EC25	820	15			

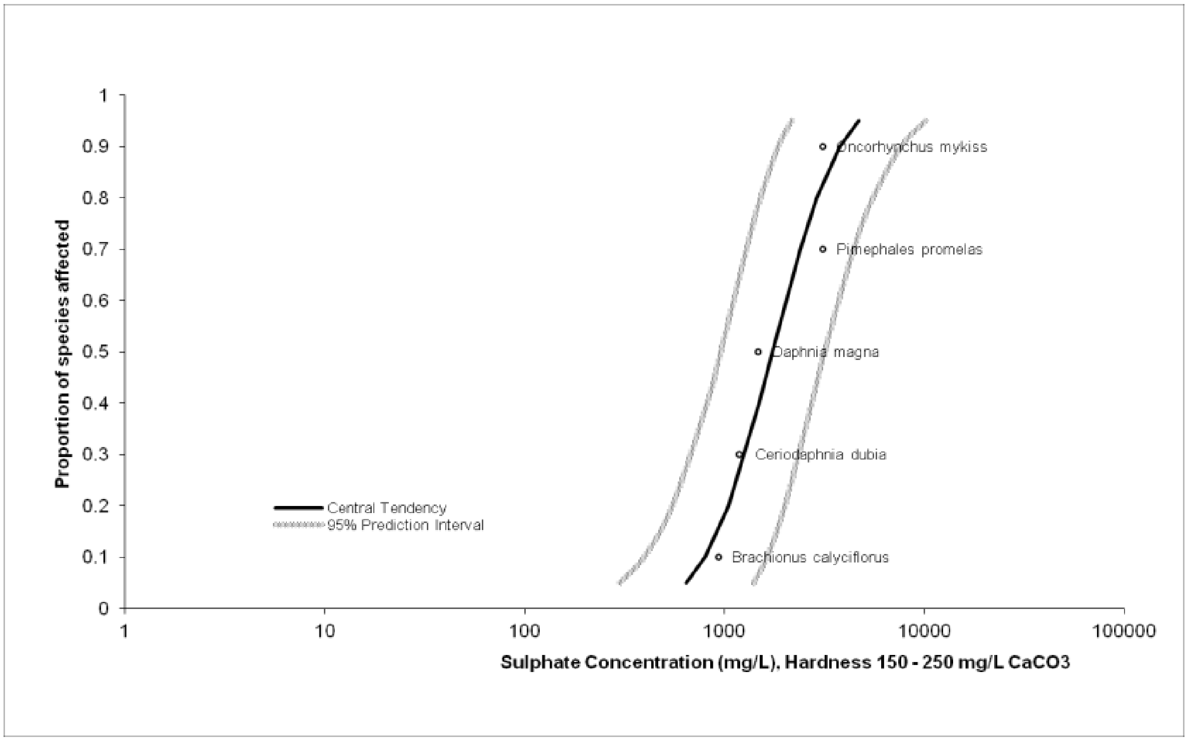
Test Species	Common Name	End Point	Sulphate Concentration (mg/L)	Hardness Concentration (mg/L)	Species Mean Sulphate Concentration (mg/L)	Rank	% Affected
		EC25	828	15			
		EC25	849	15			
Oncorhynchus mykiss	Rainbow Trout	EC10	356	15	422	3	28%
		EC25	501	15			
Hyalella azteca	Scud	LC50	193	25	425	4	39%
		LC50	205	25			
		LC50	569	25			
		LC50	1448	50			
Pimephales promelas	Fathead Minnow	EC10	388	40	625	5	50%
		EC10	559	40			
		EC25	752	40			
		EC25	933	40			
Brachionus calyciflorus	Rotifer	EC10	703	40	837	6	61%
		EC25	997	40			
Pseudokirchneriella subcapitata	Algae	EC10	700	10	882	7	72%
		EC25	1112	10			
Oncorhynchus kisutch	Coho salmon	EC10	941	15	1,091	8	83%
		EC25	1264	15			
Pseudacris regilla	Pacific Tree Frog	EC10	719	15	1,157	9	94%
		EC25	1190	15			
		EC10	1342	15			
		EC25	1560	15			
75 – 120 mg/L Hardness Concentration							
Brachionus calyciflorus	Rotifer	EC10	245	80	668	1	6%
		EC25	1824	80			
Ceriodaphnia dubia	Water Flea	EC10	622	80	826	2	19%
		EC25	855	80			
		IC25	1060	93			
Daphnia magna	Water Flea	IC25	833	100	833	3	31%
Hyalella azteca	Scud	EC10	380	80	1,169	4	44%
		EC25	1056	80			
		EC10	2069	80			
		EC25	2246	80			
Pseudacris regilla	Pacific Tree Frog	EC10	985	80	1,190	5	56%
		EC25	1205	80			
		EC10	1252	80			
		EC25	1348	80			
Oncorhynchus mykiss	Rainbow Trout	EC25	1280	100	1,280	6	69%
Pseudokirchneriella subcapitata	Algae	EC10	1345	80	1,540	7	81%
		EC25	1763	80			
Pimephales promelas	Fathead Minnow	EC10	1342	80	1,726	8	94%
		EC10	1555	80			
		EC25	1950	80			
		EC25	2183	80			

150 – 250 mg/L Hardness Concentration							
Brachionus calyciflorus	Rotifer	EC10	678	160	936	1	10%
		EC25	1292	160			
Ceriodaphnia dubia	Water Flea	EC10	1174	160	1,193	2	30%
		EC25	1212	160			
Daphnia magna	Water Flea	IC25	1476	250	1,476	3	50%
Pimephales promelas	Fathead Minnow	EC10	2491	160	3,115	4	70%
		EC25	3077	160			
		EC10	3231	160			
		EC25	3801	160			
Oncorhynchus	Rainbow Trout	EC50	3116	250	3,116	5	90%
250+ mg/L Hardness Concentration							
Ceriodaphnia dubia	Water Flea	EC10	402	320	467	1	13%
		EC25	542	320			
Brachionus calyciflorus	Rotifer	EC10	844	320	931	2	38%
		EC25	1027	320			
Pseudokirchneriella subcapitata	Algae	EC10	1377	320	1,542	3	63%
		EC25	1727	320			
Pimephales promelas	Fathead Minnow	EC10	1323	320	2,771	4	88%
		EC10	2451	320			
		EC25	3463	320			
		EC25	5250	320			

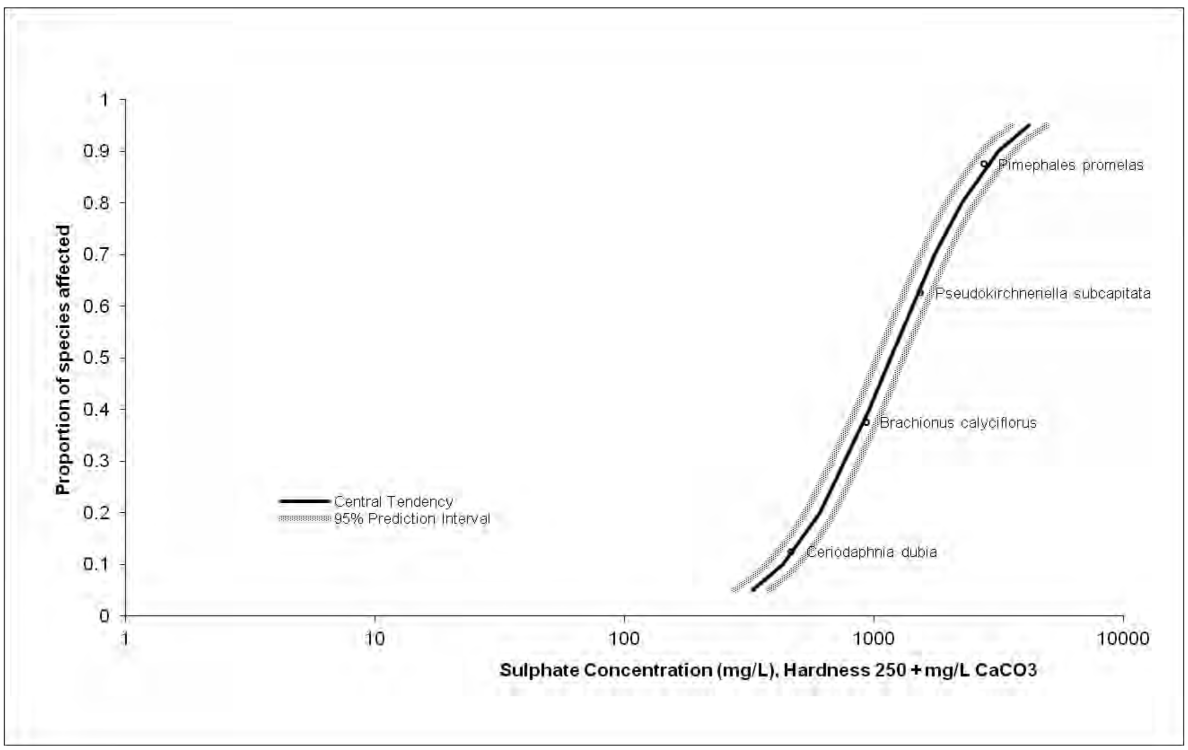
Figure L.4 Species sensitive distribution for the protection of aquatic life – sulphate







Proportion of species affected
Oncorhynchus mykiss
Pimephales promelas
Daphnia magna
Ceriodaphnia dubia
Brachionus calyciflorus
Central Tendency
95% Prediction Interval
Sulphate Concentration (mg/L), Hardness 150 - 250 mg/L CaCO3



Proportion of species affected
Pimephales promelas
Pseudokirchneriella subcapitata
Brachionus calyciflorus
Ceriodaphnia dubia
Central Tendency
95% Prediction Interval
Sulphate Concentration (mg/L), Hardness 250 + mg/L CaCO3

Table L.11 SSD curve parameters for sulphate

Hardness 10-50 mg/L $CaCO_3$

Parameters	
Slope	4.543
Intercept	-7.681
R^2	0.924
GrandMean	2.791
SumSQ	70.471
CSSQ	0.349
MSE	0.085
Tcrit	1.895
N	9
df	7

Hardness 75-120 mg/L $CaCO_3$

Parameters	
Slope	6.760
Intercept	-15.566
R^2	0.958
GrandMean	3.042
SumSQ	74.183
CSSQ	0.143
MSE	0.048
Tcrit	1.943
N	8
df	6

Hardness 150-250 mg/L $CaCO_3$

Parameters	
Slope	3.819
Intercept	-7.378
R^2	0.884
GrandMean	3.241
SumSQ	52.746
CSSQ	0.232
MSE	0.148
Tcrit	2.353
N	5
df	3

Hardness 250+ mg/L $CaCO_3$

Parameters	
Slope	2.965
Intercept	-4.093
R^2	0.998
GrandMean	3.067
SumSQ	37.955
CSSQ	0.324
MSE	0.002
Tcrit	2.920
N	4
df	2

Table L.12 summarizes the concentrations that are protective of 80%, 90%, and 95% of the species, based on the central tendency and upper and lower prediction intervals of the SSD curve. The specific species from the SSD potentially affected at each protection level for the central tendency are also summarized.

Table L.12 Protection levels based on species sensitivity distribution - sulphate

Hardness 10-50 mg/L $CaCO_3$

Protection Level	Concentration (mg/L)			Species Affected at Central Tendency
	Central Tendency	Lower Prediction Interval	Upper Prediction Interval	
95%	269	191	378	None
90%	323	234	446	*Ceriodaphnia dubia*
80%	404	297	549	*Ceriodaphnia dubia, Fontinalis antipyretica*

Hardness 75-120 mg/L $CaCO_3$

Protection Level	Concentration (mg/L)			Species Affected at Central Tendency
	Central Tendency	Lower Prediction Interval	Upper Prediction Interval	
95%	629	526	753	None
90%	712	601	844	*Brachionus calyciflorus*
80%	827	704	972	*Brachionus calyciflorus, Ceriodaphnia dubia*

Hardness 150-250 mg/L $CaCO_3$

Protection Level	Concentration (mg/L)			Species Affected at Central Tendency
	Central Tendency	Lower Prediction Interval	Upper Prediction Interval	
95%	646	299	1396	None
90%	804	396	1631	None
80%	1048	549	2002	*Brachionus calyciflorus*

Hardness 250+ mg/L $CaCO_3$

Protection Level	Concentration (mg/L)			Species Affected at Central Tendency
	Central Tendency	Lower Prediction Interval	Upper Prediction Interval	
95%	325	277	382	None
90%	431	372	500	None
80%	607	531	2694	*Brachionus calyciflorus*

L.2 Wildlife

Toxicity Reference Values (TRVs) for wildlife discussed below are for those constituents of potential concern (COPCs) identified in the soil screening process for which a quantitative evaluation is needed. These COPCs are antimony, arsenic, copper, manganese, and zinc.

L.2.1 FCSAP Toxicity Reference Values

The Federal Contaminated Sites Action Plan (FCSAP 2015) has developed a technical guidance module (Module 7) that recommends values to be used as default wildlife (mammals and birds) TRVs for effects assessments in ecological risk assessments (ERAs). The default wildlife TRVs provided in Module 7 represent a conservative level of protection that is consistent with minimal to low level of effects to common species, and is the level of protection inherent in the Canadian Council of Ministers of the Environment (CCME) soil quality guidelines. Module 7 indicates that the default wildlife TRVs are provided to be used within ERAs on federal contaminated sites where the project scope does not permit the development of site-specific TRVs or the application of a comprehensive weight of evidence approach. Module 7 indicates that the process of developing site-specific TRVs is time consuming and it also is quite costly. Therefore, in lieu of site-specific TRVs, the FCSAP default TRVs are used for this assessment. Module 7 provides TRVs for arsenic, copper, and zinc. Environment Canada provided this document to be used for the Giant Mine risk assessment.

The basis of the wildlife TRVs derived in Module 7 are primarily from data presented in the U.S. EPA risk-based ecological soil screening level (Eco-SSL) documents (U.S. EPA 2005a). Each of the recommended default TRVs have been assigned a quality rating based on the individual TRV's merits, limitations, and uncertainties. Module 7 assigns three grades to the default TRVs (A, B or C).

The TRVs that have been assigned a Grade A by the U.S. EPA are generally consistent with the TRV guidance (FCSAP 2015) and are associated with a high degree of confidence in their overall suitability to be used at federal contaminated sites. The TRVs assigned a grade B have some inherent inconsistencies with the FCSAP TRV guidance, and, therefore, there is a moderate degree of confidence in their overall suitability for use in ERA at contaminated sites. Arsenic and copper TRVs are given a grade A, whereas the zinc TRVs are given a Grade B.

L.2.1.1 Arsenic

Mammals

A default mammalian wildlife TRV of 1.04 mg As/kg-d has been provided in the FCSAP Module 7 (FCSAP 2015). This is based on the highest as the highest bounded NOAEL that was below the lowest bounded LOAEL for endpoints of growth, reproduction, and survival across a set of 55 toxicological studies from the Eco-SSL arsenic document (U.S. EPA 2005a). This highest bounded NOAEL corresponds to a toxicity study by Neiger and Osweiler (1989) where beagle dogs were exposed to sodium arsenite in food over an 8-week study period at dose levels of 0, 1, 2, and 4 mg sodium arsenite/kg bw/day. The dose level of 2 mg sodium arsenite/kg bw/day corresponded to the NOAEL for growth, and the 4 mg sodium arsenite/kg bw/day dose level corresponded to the LOAEL for growth. FCSAP (2015) indicates that this TRV incorporated a range of toxicity data for a variety of species which included rats, mice, rabbits, guinea pigs, dogs, and goats and for a variety of endpoints (specifically reproduction, growth, survival) and, thus, was deemed representative of a broad range of exposure conditions and was given an A grade. The Eco-SSL is based on the NOAEL and, as indicated in Module 7, may be potentially overly conservative. In the selection of the most appropriate default TRV for arsenic, FCSAP (2015) provided a list of candidate mammalian TRVs. Two of the TRVs to note are the geometric mean of the NOAELs for growth, reproduction, and survival for multiple species of 2.9 mg/kg-d and the geometric mean of the LOAELs for growth, reproduction, and survival for multiple species of 5.7 mg/kg-d.

Birds

A default bird TRV of 4.4 mg As/kg-d has been provided in the FCSAP Module 7 (FCSAP 2015). This is based on the second lowest EC20 value for 8 different studies reporting reproduction, growth and mortality studies for mallard ducks, chickens, and quail (CEAEQ 2012). The underlying study for the TRV was a study of arsenic ingestion in chicks which resulted in a reduced growth rate. CEAEQ (2012) applied uncertainty factors to the calculated EC_{20} values to account for duration and mortality. An uncertainty factor of 2 was used to divide EC_{20} values of short duration, and a factor of 5 was used to divide the EC20 for survival endpoints. FCSAP (2015) indicates that this TRV, while based on a limited toxicological data set for three species, provides a level of protection from ingestion studies that is consistent with minimal to low levels of effects and, thus, was given an A grade. In the selection of the most appropriate default TRV for arsenic, FCSAP (2015) provided a list of candidate avian TRVs. Two of the TRVs to note are based on the Eco-SSL arsenic document (U.S. EPA 2005a) and are the geometric mean of the NOAELs for growth, reproduction, and survival of 3.7 mg/kg-d and the geometric mean of the LOAELs for growth, reproduction, and survival of 4.5 mg/kg-d.

L.2.1.2 Copper

Mammals

A default mammalian wildlife TRV of 5.6 mg Cu/kg-d has been provided in the FCSAP Module 7 (FCSAP 2015). This is based on the highest bounded NOAEL that was below the lowest bounded LOAEL for endpoints of growth, reproduction, and survival across a set of 97 toxicological studies from the Eco-SSL copper document. This highest bounded NOAEL corresponds to a toxicity study by Allcroft et al. (1961) in pigs. FCSAP (2015) indicates that this TRV incorporated a range of toxicity data for a variety of species, which included rats, mice, shrews, rabbits, guinea pigs, pigs, mink cattle, horses, and goats and for a variety of endpoints (specifically reproduction, growth, survival) and, thus, was deemed representative of all mammals and was given an A grade. The Eco-SSL is based on the NOAEL and as indicated in Module 7 may be potentially overly conservative. It was noted that in the data set, all bounded NOAELS were found to be, on average, a factor of two times or less than their corresponding LOAEL, indicating a steep dose-response curve. FCSAP (2015) indicated that, based on this steep dose-response curve, the default copper TRV for mammals is likely to provide a sufficient level of protection. In the selection of the most appropriate default TRV for copper, FCSAP (2015) provided a list of candidate mammalian TRVs. One of the TRVs to note is the geometric mean of the NOAELs for growth, reproduction, and survival for multiple species of 38 mg/kg-d.

Birds

A default bird TRV of 4.5 mg Cu/kg-d has been provided in the FCSAP Module 7 (FCSAP 2015). This is based on using Weibull statistical methods to model dose-response curves from 5 different studies involving reproductive endpoints in chickens (CEAEQ 2012). The dose representing a 20% effect level (EC_{20}) was interpolated from the dose-response curves for each of these five studies; the EC_{20}s were divided by an uncertainty factor of 2 to account for the duration of the underlying toxicity test, which ranged from 14 to 70 days. The lowest EC_{20} (Stevenson and Jackson 1980) was selected as the TRV; however, as it is only based on chickens, it may not be representative of all bird species. FCSAP (2015) indicates that this TRV, while being based on a limited toxicological data set for one species (chickens), showed a high confidence based on the quality and relevance of the toxicity data and, thus, was given an A grade. FCSAP (2015) provided a list of candidate avian TRVs. Two of the TRVs to note are based on the Eco-SSL copper document (U.S. EPA 2007a) and are the geometric mean of the NOAELs for growth, reproduction, and survival of 20 mg/kg-d and the geometric mean of the LOAELs for growth, reproduction, and survival of 37 mg/kg-d. Based on this information, FCSAP (2015) acknowledges that the copper TRV may be at the low end of the range of NOAELs and, therefore, provide a level of protection which is well below a 20% effects level.

L.2.1.3 Zinc

Mammals

A default mammalian wildlife TRV of 75.4 mg Zn/kg-d has been provided in the FCSAP Module 7 (FCSAP 2015). This is based on the geometric of 69 NOAEL for endpoints of growth and reproduction from the Eco-SSL zinc document (U.S. EPA 2007b). FCSAP (2015) indicates that this TRV incorporated a data set for a variety of species, which included rats, mice, sheep, pigs, hamsters, and cattle and is considered to be representative of mammals; however, a number of these NOAEL values were unbounded and, thus, the TRV was given a B grade. In the selection of the most appropriate default TRV for copper, FCSAP (2015) provided a list of candidate mammalian TRVs. Two of the TRVs to note are the geometric mean of the NOAELs for growth, reproduction, and survival for multiple species of 87 mg/kg-d and the geometric mean of the LOAELs for growth, reproduction, and survival for multiple species of 290 mg/kg-d.

Birds

A default mammalian avian TRV of 66.1 mg Zn/kg-d has been provided in the FCSAP Module 7 (FCSAP 2015). This is based on the geometric of 43 NOAEL for endpoints of growth and reproduction from the Eco-SSL zinc document (U.S. EPA 2007b). FCSAP (2015) indicates that this TRV incorporated a data set for a variety of species which included chickens, ducks, quail, and turkeys and is considered to be representative of birds; however, a number of these NOAEL values were unbounded and thus the TRV was given a B grade. In the selection of the most appropriate default TRV for copper, FCSAP (2015) provided a list of candidate mammalian TRVs. Two of the TRVs to note are the geometric mean of the NOAELs for growth, reproduction, and survival for multiple species of 83 mg/kg-d and the geometric mean of the LOAELs for growth, reproduction, and survival for multiple species of 190 mg/kg-d.

L.2.2 Other Toxicity Reference Values

There are no default wildlife TRVs for antimony and manganese provided in the FCSAP Module 7 document (FCSAP 2015). Therefore, data from the Eco-SSL documents for antimony (U.S. EPA 2005b) and manganese (U.S. EPA 2007c) were used to develop the TRVs for these COPC.

The Eco-SSL screening process for wildlife toxicity data included a review of primary data sources. Data were preferentially selected from dietary studies (oral exposure) with exposure durations that encompass multiple generations and/or critical life stages and reported population-relevant endpoints (U.S. EPA 2005c). Chronic exposure was generally considered an exposure duration encompassing a significant portion of a species lifespan. However, exposure during sensitive life stages, such as reproduction, may produce severe adverse effects in a few days to as little as a few hours during gestation and embryo development (Sample et al. 1996). Therefore, reproductive studies with exposure durations as short as five days were also considered by the U.S. EPA to represent chronic exposures.

The TRVs were derived from growth- and reproduction-related LOAELs. Where available, the LOAELs were paired with no observable adverse effect levels (NOAELs) for reference purposes. However, NOAEL values were not always available for respective LOAELs in the same studies. A review of the data showed no consistent advantage or disadvantage to limiting the LOAEL data set to LOAELs that are bounded by NOAELs, so the full set of LOAELs was preferentially used to calculate a geometric mean NOAEL (where data allowed) and a geometric mean LOAEL for each test species. Exceptions to this approach were only made in cases where the calculated species geometric mean NOAEL was greater than the species geometric mean LOAEL due to differences in data set size. In these few cases, the species NOAELs and LOAELs were derived only from studies that reported both NOAEL and LOAEL values.

L.2.2.1 Antimony

Mammals

The Eco-SSL document (U.S. EPA 2005b) only has antimony data for growth and reproductive endpoints for rats and mice. This document selects the antimony TRV of

0.059 mg/kg-d based on the highest bounded NOAEL that was below the lowest bounded LOAEL for endpoints of growth, reproduction, and survival across a set of 10 toxicological studies. This highest bounded NOAEL is based on a reproduction end point and corresponds to a toxicity study by Rossi et al. (1987) in gestational female rats exposed to antimony (as antimony trichloride) in three doses (0, 1 and 10 mg/L) in drinking water for 31 days. Adverse effects on progeny (Reduced body weight) were observed at the 10 mg/L dose. Thus, the LOAEL for reproduction is 0.59 mg/kg-d. A review of the data in the Eco-SSL indicates that rats are more sensitive than mice to antimony. There was one growth study in rats exposed to antimony that had a bounded NOAEL. This is a study of rats exposed to antimony in drinking water for 13 weeks (Poon et al. 1998). This resulted in a NOAEL of 5.6 mg/kg-d and a LOAEL of 42 mg/kg-d. The geometric mean of these bounded NOAELs for rats is 0.58 mg/kg-d, which is close to the LOAEL for reproduction from the Rossi et al. (1987) study. There is also a LOAEL for growth obtained from the Rossi et al. (1987) study of 0.059 mg/kg-d. The geometric mean of these three studies is 1.14 mg/kg-d. There is uncertainty in the TRVs discussed here for antimony, as they are based on one species and a limited number of toxicity studies. However, there is a lack of additional data to derive a TRV.

Sample et al. (1996) provided a LOAEL of 1.25 mg/kg-d based on mice exposed to antimony potassium tartarate in drinking water (Schroeder et al. 1968). The median lifespan of the mice were reduced among female mice exposed to the 5ppm dose level, and this was determined to be the chronic LOAEL. Sample et al. divided this LOAEL by an uncertainty factor of 10 to determine a NOAEL of 0.125 mg/kg-d. This study provides values that are in the range of values provided by the Eco-SSL antimony document.

Birds

There are no acceptable avian toxicological studies identified for use in the derivation of TRV for antimony exposure in birds; therefore, no TRV is provided.

L.2.2.2 Manganese

Mammals

The Eco-SSL document for manganese (U.S. EPA 2007c) provides data for growth and reproductive endpoints for a variety of species including rats, mice, hamsters, pigs, rabbits, cattle, water buffalo, and sheep. A NOAEL TRV of 51.5 mg/kg-d was derived based on the geometric mean of 22 NOAEL for endpoints of growth and reproduction from the Eco-SSL manganese document (U.S. EPA 2007c). It is noted that a number of the NOAEL endpoints are unbounded. The lowest bounded LOAEL for reproduction is 71 mg/kg-d based on a gavage study in rats (Rehnberg et al. 1980). The geometric mean for the LOAELs for growth and reproduction from the Eco-SSL document (U.S. EPA 2007c) is 146 mg/kg-d.

Sample et al. (1996) provided a NOAEL of 88 mg/kg-d and a LOAEL of 284 mg/kg-d based on reproductive endpoints for rats exposed to manganese oxide in food (Laskey et al. 1982). Rats consuming 3550 mg Mn/kg food were found to have reduced pregnancy percentage and fertility; however, other reproductive parameters such as litter size, ovulations, resorptions, preimplantation death and fetal weights were not affected. The chronic NOAEL was determined to be 1100 mg Mn/kg food. This study was considered within the Eco-SSL manganese database. As the Eco-SSL document considers a wider number of species the NOAEL is the most appropriate value to use as the TRV.

Birds

The Eco-SSL document for manganese provides data for growth and reproductive endpoints for three species including chickens, turkeys, and quail. A NOAEL TRV of 179 mg/kg-d was derived based on the geometric of 24 NOAEL for endpoints of growth and reproduction from the Eco-SSL manganese document (U.S. EPA 2007c). It is noted that a number of the NOAEL endpoints are unbounded, including all the reproductive studies. The lowest bounded LOAEL for growth is 348 mg/kg-d based on a food study in chickens (Southern and Baker 1983).

Sample et al. (1996) provided a NOAEL of 977 mg/kg-d based on growth and aggressive endpoints for Japanese quail exposed to manganese oxide in food (Laskey and Edens 1985). There was no reduction in growth; however, aggressive behaviour was reduced 25% to 50% relative to controls. The reduction in aggressive behaviour was not considered to be a significant adverse effect. This study was considered within the Eco-SSL manganese database but does not represent a growth or reproductive endpoint and therefore is not a relevant TRV.

L.2.3 Summary of Selected Wildlife TRVs

The TRVs that were selected FCSAP Module 7 document (FCSAP 2015) for mammals and birds are summarized in Table L.13 and include the toxicological endpoint and source. Table L.14 provides the TRVs for antimony and manganese and includes the toxicological endpoint and source.

Table L.13 Summary of default wildlife toxicity reference values for arsenic, copper, and zinc

COPC	Mammals				Birds			
	TRV (mg/kg-d)	Grade	Endpoint	Source	TRV (mg/kg-d)	Grade	Endpoint	Source
Arsenic	1.04	A	Growth	Eco-SSL (U.S. EPA 2005a)	4.4	A	Growth	CEAEQ (2012)
Copper	5.6	A	Growth and survival	Eco-SSL (U.S. EPA 2007a)	4.5	A	Reproduction	CEAEQ (2012)
Zinc	75.4	B	Growth and reproduction	Eco-SSL (U.S. EPA 2007b)	66.1	B	Growth and reproduction	Eco-SSL (U.S. EPA 2007b)

Source: FCSAP (2015) Module 7 – Default Wildlife Toxicity Reference Values (TRVs).

Table L.14 Summary of wildlife toxicity reference values for antimony and manganese

COPC	Mammals			Birds		
	TRV (mg/kg-d)	Endpoint	Source	TRV (mg/kg-d)	Endpoint	Source
Antimony	0.059	Reproduction	Eco-SSL (U.S. EPA 2005b)	No data		
Manganese	51.5	Growth and Reproduction	Eco-SSL (U.S. EPA 2007c)	179	Growth and Reproduction	Eco-SSL (U.S. EPA 2007c)

L.3 Tissue Benchmarks for Wildlife and Terrestrial Plants

The following sections describe the tissue benchmarks that were used to evaluate potential effects in fish, plants, and small mammals.

L.3.1 Aquatic Environment

The fish tissue benchmarks for antimony and arsenic used in the assessment are provided in Table L.15. These benchmarks were obtained from studies that reported whole fish concentrations associated with no and lowest adverse effects levels for survival, reproduction, or growth endpoints (CH2MHill 2015).

For antimony, the benchmarks are based on the exposure of rainbow trout fingerlings to antimony potassium tartrate in water for 30 days. The endpoint was related to survival. The lowest observable effects concentration was based on a 50% reduction in survival of the rainbow trout.

For arsenic, the benchmarks are based on the exposure of rainbow trout fingerlings to arsenate in water for 11 weeks. The endpoint was related to growth. The lowest observable effects concentration was based on significant growth reduction after 28 days exposed to 18 mg/L arsenate. The no observable effects concentration was the highest tissue residue in the fish after 63 days exposed to 9 mg/L arsenate.

Table L.15 Tissue benchmarks selected for evaluation of fish

COPC	No Observable Effects Concentration (NOEC)	Lowest Observable Effects Concentration (LOEC)
	mg/kg ww	
Antimony	5	9
Arsenic	1.5	2

Notes: Benchmarks from CH2MHill (2015).

L.3.2 Terrestrial Environment

L.3.2.1 Foliage Phytotoxic Levels

In order to evaluate potential effects on terrestrial plant populations, measured and predicted vegetation concentrations were compared to available phytotoxicity levels. Available phytotoxicity values for plants are summarized in Table L.16. Kabata-Pendias

(2011) notes that the range of concentrations for trace elements required by plants is very close to concentrations where harmful effects on plant metabolism are observed.

Table L.16 Terrestrial plant phytotoxicity and typical concentrations

COPC	Phytotoxic Foliage Concentration [a] (mg/kg dw)	Critical Level in Leaves and Shoots [b] (mg/kg dw)	Excessive or Toxic Concentration in Mature Leaf Tissue [c] (mg/kg dw)
Antimony	-	-	150
Arsenic	3-10	11-26	5-20
Copper	-	-	20-100
Manganese	-	-	400-1,000
Zinc	500-1,500	160-320	100-400

Notes:
a - Phytotoxic concentration in plant foliage (Langmuir et al. 2004).
b - Upper Critical Level in leaves and shoots of spring barley associated with reduced yield (Davis et al. 1978).
c - Kabata-Pendias (2011).

L.3.2.2 Small Mammal

Tissue concentrations for small mammals were obtained from Puls (1994). The available benchmarks are for organs. For arsenic, the toxic levels are based on rabbits being exposed to 30mg/kg inorganic arsenic in drinking water. The toxic levels for copper are based on exposure of rabbits to dietary copper. As the small mammal concentrations were based on a whole body sample, the use of the organ concentrations are a reasonable surrogate for comparison purposes. Toxic levels from Puls (1994) were adopted as this is the only available source with benchmarks for tissue levels. It is unclear which endpoints the toxic tissue concentrations provided by Puls are based on.

Table L.17 Tissue benchmarks selected for evaluation of small terrestrial mammals

COPC	Toxic Tissue Concentration (mg/kg ww)
Arsenic	6 - 28 liver 5 - 26 kidney
Copper	690 liver 23 kidney

Source: Puls (1994).

It is also noted that a recent study examined biochemical responses to snowshoe hare in the area near Giant Mine compared to a reference location (Amuno et al. 2018b). This paper summarized that hepatic and ocular abnormalities have been associated with chronic arsenic and cadmium exposure in both human and animal studies. The Amuno et al. (2018b) study found that snowshoe hares breeding near the Giant Mine have been chronically exposed to elevated levels of arsenic, as well as cadmium, which has led to increased levels of oxidative stress and perturbation of the antioxidant defense system in exposed animals. Despite the differences in the levels of exposure between the exposed and reference locations, no ocular abnormalities (e.g. such as cataracts or conjunctivitis) were noted, nor any distinct pathological changes in the liver. In addition, Amuno et al. (2018a) provided a preliminary study that suggests that chronic concomitant exposure to arsenic and cadmium may be involved in the etiology of various bone abnormalities, including osteoporosis.

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LIST OF ATTACHMENTS

ATTACHMENT L.1

AQUATIC DATA CONSIDERED IN SSD DEVELOPMENT

Chemical	Species Scientific Name	Species Common Name	Organism Lifestage	Observed Duration (Days)	Include?	Endpoint	Effect	Effect Measurement	Conc 1 (µg/l)	Exposure Duration	Species Type	Author (Year)	Title	Source
Antmony	Caenorhabditis elegans	Nematode	Adult(s)	4	No - duration/lethal endpoint	LC50	Mortality	Mortality	>20000	Lethal < 4 d	Aquatic Invertebrate	Williams,P.L., and D.B. Dusenbery (1990)	Aquatic Toxicity Testing Using the Nematode, Caenorhabditis elegans	Environ. Toxicol. Chem.9(10): 1285-1290
Antmony	Carassius auratus	Goldfish	Egg(s)	7	Yes (but LC50)	LC50	Mortality	Mortality	11300	Long Term	Fish	Birge,W.J. (1978)	Aquatic Toxicology of Trace Elements of Coal and Fly Ash	In: J.H.Thorp and J.W.Gibbons (Eds.), Dep.Energy Symp.Ser., Energy and Environmental Stress in Aquatic Systems, Augusta, GA48:219-240
Antmony	Ceriodaphnia dubia	Water Flea	Not reported	2	No - duration/lethal endpoint	LC50	Mortality	Mortality	3470	Lethal < 4 d	Aquatic Invertebrate	Spehar,R.L. (1987)	Criteria Document Data on Antimony	Aug.27th Memo to C.Stephan, U.S.EPA, Duluth, MN:22 p.
Antmony	Ceriodaphnia dubia	Water Flea	Not reported	1	No - duration/lethal endpoint	LC50	Mortality	Mortality	4220	Lethal < 4 d	Aquatic Invertebrate	Spehar,R.L. (1987)	Criteria Document Data on Antimony	Aug.27th Memo to C.Stephan, U.S.EPA, Duluth, MN:22 p.
Antmony	Chironomus tentans	Midge	Larva(e)	4	No - duration/lethal endpoint	LC50	Mortality	Mortality	4100	Lethal = 4 d	Aquatic Invertebrate	TAI Environmental Sciences Inc. (1990)	Results of Acute Toxicity Testing of Antimony Trichloride Using the Freshwater Species Chironomus tentans, Physa heterostropha, Ictalurus punctatus, Hyalella azteca, Hydra oligactis and Chlorohydra viridissimus	Report Presented to Dr.Rick D.Cardwell, EBASCO Services Inc., Bellevue, WA:24 p.
Antmony	Chironomus tentans	Midge	Larva(e)	4	No - duration/lethal endpoint	LC50	Mortality	Mortality	5300	Lethal = 4 d	Aquatic Invertebrate	TAI Environmental Sciences Inc. (1990)	Results of Acute Toxicity Testing of Antimony Trichloride Using the Freshwater Species Chironomus tentans, Physa heterostropha, Ictalurus punctatus, Hyalella azteca, Hydra oligactis and Chlorohydra viridissimus	Report Presented to Dr.Rick D.Cardwell, EBASCO Services Inc., Bellevue, WA:24 p.
Antmony	Chlorella vulgaris	Green Algae	Not reported	3-4 months	Yes - MATC	NOEC	Population	Population changes, general	32	Long Term	Algae	De Jong,L.E.D. (1965)	Tolerance of Chlorella vulgaris for Metallic and Non-Metallic Ions	Antonie van Leeuwenhoek (Gedrukt)31:301-313
Antmony	Chlorella vulgaris	Green Algae	Not reported	3-4 months	Yes - MATC	LOEC	Population	Population changes, general	64	Long Term	Algae	De Jong,L.E.D. (1965)	Tolerance of Chlorella vulgaris for Metallic and Non-Metallic Ions	Antonie van Leeuwenhoek (Gedrukt)31:301-313
Antmony	Chlorella vulgaris	Green Algae		NR (classified as chronic by Fletcher)	No - endpoint	NOEC	Growth	Growth	3900	Long Term	Algae	De Jong,L.E.D. (1963)		
Antmony	Chlorella vulgaris	Green Algae		NR (classified as chronic by Fletcher)	No - in favour of NOEC	LOEC	Growth	Growth	7800	Long Term	Algae	De Jong,L.E.D. (1963)		
Antmony	Chlorohydra viridissima	Green Hydra	Not reported	4	No - duration/lethal endpoint	LC50	Mortality	Mortality	1770	Lethal = 4 d	Aquatic Invertebrate	TAI Environmental Sciences Inc. (1990)	Results of Acute Toxicity Testing of Antimony Trichloride Using the Freshwater Species Chironomus tentans, Physa heterostropha, Ictalurus punctatus, Hyalella azteca, Hydra oligactis and Chlorohydra viridissimus	Report Presented to Dr.Rick D.Cardwell, EBASCO Services Inc., Bellevue, WA:24 p.
Antmony	Cypris subglobosa	Ostracod	Not reported	2	No - duration	EC50	Intoxication	Immobile	560000	Short Term	Aquatic Invertebrate	Khangarot,B.S., and S. Das (2009)	Acute Toxicity of Metals and Reference Toxicants to a Freshwater Ostracod, Cypris subglobosa Sowerby, 1840 and Correlation to EC50 Values of Other Test Models	J. Hazard. Mater.172(2/3): 641-649
Antmony	Cypris subglobosa	Ostracod	Not reported	1	No - duration	EC50	Intoxication	Immobile	709000	Short Term	Aquatic Invertebrate	Khangarot,B.S., and S. Das (2009)	Acute Toxicity of Metals and Reference Toxicants to a Freshwater Ostracod, Cypris subglobosa Sowerby, 1840 and Correlation to EC50 Values of Other Test Models	J. Hazard. Mater.172(2/3): 641-649
Antmony	Daphnia magna	Water Flea	Neonate	4	No - duration/lethal endpoint	LC50	Mortality	Mortality	10.1	Lethal < 4 d	Aquatic Invertebrate	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Daphnia magna	Water Flea		30	No - in favour of MATC	NOEC	Reproduction	Reproduction	800	Long Term	Aquatic Invertebrate	Doe et al. (1987)		
Antmony	Daphnia magna	Water Flea		30	No - in favour of MATC	LC50	Mortality	Mortality	1700	Long Term	Aquatic Invertebrate	Doe et al. (1987)		
Antmony	Daphnia magna	Water Flea	Adult(s)	7	No - in favour of MATC	NOEC	Reproduction	Progeny counts/numbers	3900	Long Term	Aquatic Invertebrate	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Daphnia magna	Water Flea	Organisms at different lifestages	28	No - in favour of MATC	NOEC	Reproduction	Progeny counts/numbers	4160	Long Term	Aquatic Invertebrate	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Daphnia magna	Water Flea	Organisms at different lifestages	28	No - in favour of MATC	LC50	Mortality	Mortality	4510	Long Term	Aquatic Invertebrate	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Daphnia magna	Water Flea	Not reported	2	No - duration	NOEC	Mortality	Mortality	5300	Short Term	Aquatic Invertebrate	LeBlanc,G.A. (1980)	Acute Toxicity of Priority Pollutants to Water Flea (Daphnia magna)	Bull. Environ. Contam. Toxicol.24(5): 684-691
Antmony	Daphnia magna	Water Flea	Organisms at different lifestages	28	Yes	MATC	Reproduction	Progeny counts/numbers	5420	Long Term	Aquatic Invertebrate	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Daphnia magna	Water Flea	Adult(s)	7	Yes	MATC	Reproduction	Progeny counts/numbers	5500	Long Term	Aquatic Invertebrate	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Daphnia magna	Water Flea	Organisms at different lifestages	28	No - in favour of MATC	LOEC	Reproduction	Progeny counts/numbers	7050	Long Term	Aquatic Invertebrate	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Daphnia magna	Water Flea	Adult(s)	7	No - in favour of MATC	LOEC	Reproduction	Progeny counts/numbers	7800	Long Term	Aquatic Invertebrate	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Daphnia magna	Water Flea	Neonate	2	No - duration/lethal endpoint	LC50	Mortality	Mortality	10100	Lethal < 4 d	Aquatic Invertebrate	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Daphnia magna	Water Flea	Neonate	4	No - duration/lethal endpoint	LC50	Mortality	Mortality	14000	Lethal = 4 d	Aquatic Invertebrate	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Daphnia magna	Water Flea	Neonate	2	No - duration/lethal endpoint	LC50	Mortality	Mortality	14000	Lethal < 4 d	Aquatic Invertebrate	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Daphnia magna	Water Flea	Neonate	2	No - duration/lethal endpoint	LC50	Mortality	Mortality	14000	Lethal < 4 d	Aquatic Invertebrate	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.

Antmony	Daphnia magna	Water Flea	Adult(s)	7	No - duration/lethal endpoint	LC50	Mortality	Mortality	14500	Lethal = 7 d	Aquatic Invertebrate	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Daphnia magna	Water Flea	Neonate	2	No - duration/lethal endpoint	LC50	Mortality	Mortality	23500	Lethal < 4 d	Aquatic Invertebrate	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Daphnia magna	Water Flea	Not reported	2.6667	No - duration	NOEC	Intoxication	Immobile	37000	Short Term	Aquatic Invertebrate	Anderson,B.G. (1948)	The Apparent Thresholds of Toxicity to Daphnia magna for Chlorides of Various Metals when Added to Lake Erie Water	Trans. Am. Fish. Soc.78:96-113
Antmony	Daphnia magna	Water Flea	Not reported	2	No - duration	EC50	Intoxication	Immobile	423450	Short Term	Aquatic Invertebrate	Khangarot,B.S., and P.K. Ray (1989)	Investigation of Correlation Between Physicochemical Properties of Metals and Their Toxicity to the Water Flea Daphnia magna Straus	Ecotoxicol. Environ. Saf.18(2): 109-120
Antmony	Daphnia magna	Water Flea	Not reported	1	No - duration/lethal endpoint	LC50	Mortality	Mortality	>530000	Lethal < 4 d	Aquatic Invertebrate	LeBlanc,G.A. (1980)	Acute Toxicity of Priority Pollutants to Water Flea (Daphnia magna)	Bull. Environ. Contam. Toxicol.24(5): 684-691
Antmony	Daphnia magna	Water Flea	Not reported	2	No - duration/lethal endpoint	LC50	Mortality	Mortality	>530000	Lethal < 4 d	Aquatic Invertebrate	LeBlanc,G.A. (1980)	Acute Toxicity of Priority Pollutants to Water Flea (Daphnia magna)	Bull. Environ. Contam. Toxicol.24(5): 684-691
Antmony	Daphnia magna	Water Flea	Not reported	1	No - duration	EC50	Intoxication	Immobile	555260	Short Term	Aquatic Invertebrate	Khangarot,B.S., and P.K. Ray (1989)	Investigation of Correlation Between Physicochemical Properties of Metals and Their Toxicity to the Water Flea Daphnia magna Straus	Ecotoxicol. Environ. Saf.18(2): 109-120
Antmony	Fontinalis antipyretica	Moss	Not reported	22	Yes	EC50	Physiology	Net photosynthetic rate	4935	Long Term	Algae	Diaz,S., R. Villares, M.D. Vazquez, and A. Carballeira (2013)	Physiological Effects of Exposure to Arsenic, Mercury, Antimony and Selenium in the Aquatic Moss Fontinalis antipyretica Hedw.	Water Air Soil Pollut.224(8): 14 p.
Antmony	Fontinalis antipyretica	Moss	Not reported	11	Yes	EC50	Physiology	Photosynthesis	5135	Long Term	Algae	Diaz,S., R. Villares, M.D. Vazquez, and A. Carballeira (2013)	Physiological Effects of Exposure to Arsenic, Mercury, Antimony and Selenium in the Aquatic Moss Fontinalis antipyretica Hedw.	Water Air Soil Pollut.224(8): 14 p.
Antmony	Gammarus pseudolimnaeus	Scud	Adult(s)	4	No - duration/lethal endpoint	EC50	Mortality	Mortality	>25700	Lethal = 4 d	Aquatic Invertebrate	Brooke,L.T., D.J. Call, S.H. Poirier, C.A. Lindberg, and T.P. Markee (1986)	Acute Toxicity of Antimony III to Several Species of Freshwater Organisms	Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI:12 p.
Antmony	Gammarus pseudolimnaeus	Scud	Adult(s)	4	No - duration/lethal endpoint	LC50	Mortality	Mortality	>25700	Lethal = 4 d	Aquatic Invertebrate	Brooke,L.T., D.J. Call, S.H. Poirier, C.A. Lindberg, and T.P. Markee (1986)	Acute Toxicity of Antimony III to Several Species of Freshwater Organisms	Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI:12 p.
Antmony	Gastrophryne carolinensis	Eastern Narrow-Mouthed Toad	Not reported	7	Yes (but LC50)	LC50	Mortality	Mortality	300	Long Term	Amphibian	Birge,W.J., J.A. Black, and A.G. Westerman (1979)	Evaluation of Aquatic Pollutants Using Fish and Amphibian Eggs as Bioassay Organisms	In: S.W.Nielsen, G.Migaki, and D.G.Scarpelli (Eds.), Symp.Animals Monitors Environ.Pollut.1977, Storrs, CT12:108-118
Antmony	Gastrophryne carolinensis	Eastern Narrow-Mouthed Toad	Egg(s)	7	Yes (but LC50)	LC50	Mortality	Mortality	300	Long Term	Amphibian	Birge,W.J. (1978)	Aquatic Toxicology of Trace Elements of Coal and Fly Ash	In: J.H.Thorp and J.W.Gibbons (Eds.), Dep.Energy Symp.Ser., Energy and Environmental Stress in Aquatic Systems, Augusta, GA48:219-240
Antmony	Hyalella azteca	Scud	Young organism(s)	7	No - duration/lethal endpoint	LC50	Mortality	Mortality	687	Lethal = 7 d	Aquatic Invertebrate	Borgmann,U., Y. Couillard, P. Doyle, and D.G. Dixon (2005)	Toxicity of Sixty-Three Metals and Metalloids to Hyalella azteca at Two Levels of Water Hardness	Environ. Toxicol. Chem.24(3): 641-652
Antmony	Hyalella azteca	Scud	Young organism(s)	7	No - duration/lethal endpoint	LC50	Mortality	Mortality	>3150	Lethal = 7 d	Aquatic Invertebrate	Borgmann,U., Y. Couillard, P. Doyle, and D.G. Dixon (2005)	Toxicity of Sixty-Three Metals and Metalloids to Hyalella azteca at Two Levels of Water Hardness	Environ. Toxicol. Chem.24(3): 641-652
Antmony	Hyalella azteca	Scud	Juvenile(s)	4	No - duration/lethal endpoint	LC50	Mortality	Mortality	19800	Lethal = 4 d	Aquatic Invertebrate	TAI Environmental Sciences Inc. (1990)	Results of Acute Toxicity Testing of Antimony Trichloride Using the Freshwater Species Chironomus tentans, Physa heterostropha, Ictalurus punctatus, Hyalella azteca, Hydra oligactis and Chlorohydra viridissimus	Report Presented to Dr.Rick D.Cardwell, EBASCO Services Inc., Bellevue, WA:24 p.
Antmony	Hyalella azteca	Scud	Juvenile(s)	4	No - duration/lethal endpoint	LC50	Mortality	Mortality	21600	Lethal = 4 d	Aquatic Invertebrate	TAI Environmental Sciences Inc. (1990)	Results of Acute Toxicity Testing of Antimony Trichloride Using the Freshwater Species Chironomus tentans, Physa heterostropha, Ictalurus punctatus, Hyalella azteca, Hydra oligactis and Chlorohydra viridissimus	Report Presented to Dr.Rick D.Cardwell, EBASCO Services Inc., Bellevue, WA:24 p.
Antmony	Hydra oligactis	Hydra	Not reported	4	No - duration/lethal endpoint	LC50	Mortality	Mortality	1950	Lethal = 4 d	Aquatic Invertebrate	TAI Environmental Sciences Inc. (1990)	Results of Acute Toxicity Testing of Antimony Trichloride Using the Freshwater Species Chironomus tentans, Physa heterostropha, Ictalurus punctatus, Hyalella azteca, Hydra oligactis and Chlorohydra viridissimus	Report Presented to Dr.Rick D.Cardwell, EBASCO Services Inc., Bellevue, WA:24 p.
Antmony	Hydra sp.	Hydra	Adult(s)	4	No - duration	EC50	Morphology	Abnormal	500	Short Term	Aquatic Invertebrate	Brooke,L.T., D.J. Call, S.H. Poirier, C.A. Lindberg, and T.P. Markee (1986)	Acute Toxicity of Antimony III to Several Species of Freshwater Organisms	Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI:12 p.
Antmony	Hydra sp.	Hydra	Adult(s)	2	No - duration	EC50	Morphology	Abnormal	1000	Short Term	Aquatic Invertebrate	Brooke,L.T., D.J. Call, S.H. Poirier, C.A. Lindberg, and T.P. Markee (1986)	Acute Toxicity of Antimony III to Several Species of Freshwater Organisms	Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI:12 p.
Antmony	Hydra sp.	Hydra	Adult(s)	1	No - duration	EC50	Morphology	Abnormal	2000	Short Term	Aquatic Invertebrate	Brooke,L.T., D.J. Call, S.H. Poirier, C.A. Lindberg, and T.P. Markee (1986)	Acute Toxicity of Antimony III to Several Species of Freshwater Organisms	Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI:12 p.
Antmony	Ictalurus punctatus	Channel Catfish		30	Yes	NOEC	Gills, Hematological	Gills, Hematological	1200	Long Term	Fish	Tamulinas (1979)	The effects of antimony-trioxide on channel catfish Ictalurus puctatus	PhD. Texas A&M University
Antmony	Ictalurus punctatus	Channel Catfish		30	Yes	NOEC	Gills, Hematological	Gills, Hematological	4000	Long Term	Fish	Tamulinas (1979)	The effects of antimony-trioxide on channel catfish Ictalurus puctatus	PhD. Texas A&M University
Antmony	Ictalurus punctatus	Channel Catfish	Not reported	4	No - duration	LC50	Mortality	Mortality	24100	Short Term	Fish	TAI Environmental Sciences Inc. (1990)	Results of Acute Toxicity Testing of Antimony Trichloride Using the Freshwater Species Chironomus tentans, Physa heterostropha, Ictalurus punctatus, Hyalella azteca, Hydra oligactis and Chlorohydra viridissimus	Report Presented to Dr.Rick D.Cardwell, EBASCO Services Inc., Bellevue, WA:24 p.

Antmony	Ictalurus punctatus	Channel Catfish	Not reported	4	No - duration	LC50	Mortality	Mortality	24600	Short Term	Fish	TAI Environmental Sciences Inc. (1990)	Results of Acute Toxicity Testing of Antimony Trichloride Using the Freshwater Species Chironomus tentans, Physa heterostropha, Ictalurus punctatus, Hyalella azteca, Hydra oligactis and Chlorohydra viridissimus	Report Presented to Dr.Rick D.Cardwell, EBASCO Services Inc., Bellevue, WA:24 p.
Antmony	Lemna minor	Duckweed	Not reported	4	No - duration	NOEC	Population	Abundance	12500	Short Term	Plant	Brooke,L.T., D.J. Call, S.H. Poirier, C.A. Lindberg, and T.P. Markee (1986)	Acute Toxicity of Antimony III to Several Species of Freshwater Organisms	Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI:12 p.
Antmony	Lemna minor	Duckweed	Not reported	4	No - duration	LOEC	Population	Abundance	25500	Short Term	Plant	Brooke,L.T., D.J. Call, S.H. Poirier, C.A. Lindberg, and T.P. Markee (1986)	Acute Toxicity of Antimony III to Several Species of Freshwater Organisms	Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI:12 p.
Antmony	Lepomis macrochirus	Bluegill	Not reported	4	No - duration	LC50	Mortality	Mortality	>25800	Short Term	Fish	Spehar,R.L. (1987)	Criteria Document Data on Antimony	Aug.27th Memo to C.Stephan, U.S.EPA, Duluth, MN:22 p.
Antmony	Lepomis macrochirus	Bluegill	Young of year	4	No - duration	LC50	Mortality	Mortality	>530000	Short Term	Fish	Buccafusco,R.J., S.J. Ells, and G.A. LeBlanc (1981)	Acute Toxicity of Priority Pollutants to Bluegill (Lepomis macrochirus)	Bull. Environ. Contam. Toxicol.26(4): 446-452
Antmony	Lepomis macrochirus	Bluegill	Young of year	1	No - duration	LC50	Mortality	Mortality	>530000	Short Term	Fish	Buccafusco,R.J., S.J. Ells, and G.A. LeBlanc (1981)	Acute Toxicity of Priority Pollutants to Bluegill (Lepomis macrochirus)	Bull. Environ. Contam. Toxicol.26(4): 446-452
Antmony	Lumbriculus variegatus	Oligochaete, Worm	Not reported	4	No - duration/lethal endpoint	EC50	Mortality	Mortality	>25700	Lethal = 4 d	Aquatic Invertebrate	Brooke,L.T., D.J. Call, S.H. Poirier, C.A. Lindberg, and T.P. Markee (1986)	Acute Toxicity of Antimony III to Several Species of Freshwater Organisms	Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI:12 p.
Antmony	Lumbriculus variegatus	Oligochaete, Worm	Not reported	4	No - duration/lethal endpoint	LC50	Mortality	Mortality	>25700	Lethal = 4 d	Aquatic Invertebrate	Brooke,L.T., D.J. Call, S.H. Poirier, C.A. Lindberg, and T.P. Markee (1986)	Acute Toxicity of Antimony III to Several Species of Freshwater Organisms	Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI:12 p.
Antmony	Macrobrachium nipponense	Oriental River Shrimp	Juvenile(s)	7	Yes - MATC	NOEC	Physiology	Oxygen consumption	400	Long Term	Aquatic Invertebrate	Yang,J.L., T.J. Hu, and H.Y. Lee (2010)	Sublethal Antimony (III) Exposure of Freshwater Swamp Shrimp (Macrobrachium nipponense): Effects on Oxygen Consumption and Hepatopancreatic Histology	J. Water Resour. Prot.2(1): 42-47
Antmony	Macrobrachium nipponense	Oriental River Shrimp	Juvenile(s)	0.0208	No - duration	NOEC	Physiology	Oxygen consumption	400	Short Term	Aquatic Invertebrate	Yang,J.L., T.J. Hu, and H.Y. Lee (2010)	Sublethal Antimony (III) Exposure of Freshwater Swamp Shrimp (Macrobrachium nipponense): Effects on Oxygen Consumption and Hepatopancreatic Histology	J. Water Resour. Prot.2(1): 42-47
Antmony	Macrobrachium nipponense	Oriental River Shrimp	Juvenile(s)	3	No - duration	NOEC	Physiology	Oxygen consumption	400	Short Term	Aquatic Invertebrate	Yang,J.L., T.J. Hu, and H.Y. Lee (2010)	Sublethal Antimony (III) Exposure of Freshwater Swamp Shrimp (Macrobrachium nipponense): Effects on Oxygen Consumption and Hepatopancreatic Histology	J. Water Resour. Prot.2(1): 42-47
Antmony	Macrobrachium nipponense	Oriental River Shrimp	Juvenile(s)	7	Yes - MATC	LOEC	Physiology	Oxygen consumption	800	Long Term	Aquatic Invertebrate	Yang,J.L., T.J. Hu, and H.Y. Lee (2010)	Sublethal Antimony (III) Exposure of Freshwater Swamp Shrimp (Macrobrachium nipponense): Effects on Oxygen Consumption and Hepatopancreatic Histology	J. Water Resour. Prot.2(1): 42-47
Antmony	Macrobrachium nipponense	Oriental River Shrimp	Juvenile(s)	0.0208	No - duration	LOEC	Physiology	Oxygen consumption	800	Short Term	Aquatic Invertebrate	Yang,J.L., T.J. Hu, and H.Y. Lee (2010)	Sublethal Antimony (III) Exposure of Freshwater Swamp Shrimp (Macrobrachium nipponense): Effects on Oxygen Consumption and Hepatopancreatic Histology	J. Water Resour. Prot.2(1): 42-47
Antmony	Macrobrachium nipponense	Oriental River Shrimp	Juvenile(s)	3	No - duration	LOEC	Physiology	Oxygen consumption	800	Short Term	Aquatic Invertebrate	Yang,J.L., T.J. Hu, and H.Y. Lee (2010)	Sublethal Antimony (III) Exposure of Freshwater Swamp Shrimp (Macrobrachium nipponense): Effects on Oxygen Consumption and Hepatopancreatic Histology	J. Water Resour. Prot.2(1): 42-47
Antmony	Macrobrachium nipponense	Oriental River Shrimp	Juvenile(s)	4	No - duration/lethal endpoint	LC50	Mortality	Mortality	1635	Lethal = 4 d	Aquatic Invertebrate	Yang,J.L., T.J. Hu, and H.Y. Lee (2010)	Sublethal Antimony (III) Exposure of Freshwater Swamp Shrimp (Macrobrachium nipponense): Effects on Oxygen Consumption and Hepatopancreatic Histology	J. Water Resour. Prot.2(1): 42-47
Antmony	Macrobrachium nipponense	Oriental River Shrimp	Juvenile(s)	2	No - duration/lethal endpoint	LC50	Mortality	Mortality	2240	Lethal < 4 d	Aquatic Invertebrate	Yang,J.L., T.J. Hu, and H.Y. Lee (2010)	Sublethal Antimony (III) Exposure of Freshwater Swamp Shrimp (Macrobrachium nipponense): Effects on Oxygen Consumption and Hepatopancreatic Histology	J. Water Resour. Prot.2(1): 42-47
Antmony	Macrobrachium nipponense	Oriental River Shrimp	Adult(s)	4	No - duration/lethal endpoint	LC50	Mortality	Mortality	6748	Lethal = 4 d	Aquatic Invertebrate	Yang,J.L., T.J. Hu, and H.Y. Lee (2010)	Sublethal Antimony (III) Exposure of Freshwater Swamp Shrimp (Macrobrachium nipponense): Effects on Oxygen Consumption and Hepatopancreatic Histology	J. Water Resour. Prot.2(1): 42-47
Antmony	Macrobrachium nipponense	Oriental River Shrimp	Adult(s)	2	No - duration/lethal endpoint	LC50	Mortality	Mortality	10083	Lethal < 4 d	Aquatic Invertebrate	Yang,J.L., T.J. Hu, and H.Y. Lee (2010)	Sublethal Antimony (III) Exposure of Freshwater Swamp Shrimp (Macrobrachium nipponense): Effects on Oxygen Consumption and Hepatopancreatic Histology	J. Water Resour. Prot.2(1): 42-47
Antmony	Oncorhynchus mykiss	Rainbow Trout	Not reported	28	No - duration	LC50	Mortality	Mortality	NR	NR	Fish	Birge,W.J., J.A. Black, and A.G. Westerman (1979)	Evaluation of Aquatic Pollutants Using Fish and Amphibian Eggs as Bioassay Organisms	In: S.W.Nielsen, G.Migaki, and D.G.Scarpelli (Eds.), Symp.Animals Monitors Environ.Pollut.1977, Storrs, CT12:108-118
Antmony	Oncorhynchus mykiss	Rainbow Trout		28	Yes	LC10	Mortality	Mortality	157	Long Term	Fish	Birge (1978, 1980)	Aquatic toxicology of trace elements of coal and fly ash.	In Thorp JH, Gibbons JW, editors. Energy and environmental stress in aquatic systems: selected papers from a symposium held at Augusta, Georgia, November 2–4, 1977. Department of Energy Symposium Series 48:219–240.
Antmony	Oncorhynchus mykiss	Rainbow Trout	Egg(s)	28	No - in favour of LC10	LC50	Mortality	Mortality	580	Long Term	Fish	Birge,W.J. (1978)	Aquatic Toxicology of Trace Elements of Coal and Fly Ash	In: J.H.Thorp and J.W.Gibbons (Eds.), Dep.Energy Symp.Ser., Energy and Environmental Stress in Aquatic Systems, Augusta, GA48:219-240
Antmony	Oncorhynchus mykiss	Rainbow Trout	Egg(s)	28	No - in favour of LC10	LC50	Mortality	Mortality	660	Long Term	Fish	Birge,W.J., J.A. Black, A.G. Westerman, and J.E. Hudson (1980)	Aquatic Toxicity Tests on Inorganic Elements Occurring in Oil Shale	In: C.Gale (Ed.), EPA-600/9-80-022, Oil Shale Symposium: Sampling, Analysis and Quality Assurance, March 1979, U.S.EPA, Cincinnati, OH:519-534
Antmony	Oncorhynchus mykiss	Rainbow Trout		30	No - in favour of LC10	LC50	Mortality	Mortality	16000	Long Term	Fish	Doe et al. (1987)	The Acute and Chronic Toxicity of Antimony to Daphnia magna and Rainbow Trout	In Proceedings of the 13th Annual Aquatic Toxicity Workshop Nov. 12-4th. Can. Fish. Aquat.Sci. Tech.Rep. #1575

Antmony	Oncorhynchus mykiss	Rainbow Trout	Juvenile(s)	4	No - duration	EC50	Mortality	Mortality	>25700	Short Term	Fish	Brooke,L.T., D.J. Call, S.H. Poirier, C.A. Lindberg, and T.P. Markee (1986)	Acute Toxicity of Antimony III to Several Species of Freshwater Organisms	Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI:12 p.
Antmony	Oncorhynchus mykiss	Rainbow Trout	Juvenile(s)	4	No - duration	LC50	Mortality	Mortality	>25700	Short Term	Fish	Brooke,L.T., D.J. Call, S.H. Poirier, C.A. Lindberg, and T.P. Markee (1986)	Acute Toxicity of Antimony III to Several Species of Freshwater Organisms	Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI:12 p.
Antmony	Oreochromis mossambicus	Mozambique Tilapia	Larva(e)	2	No - duration	LC50	Mortality	Mortality	35500	Short Term	Fish	Lin,H.C., and P.P. Hwang (1998)	Acute and Chronic Effects of Antimony Chloride (SbCl3) on Tilapia (Oreochromis mossambicus) Larvae	Bull. Environ. Contam. Toxicol.61(1): 129-134
Antmony	Oreochromis mossambicus	Mozambique Tilapia	Larva(e)	4	No - duration	LC50	Mortality	Mortality	35500	Short Term	Fish	Lin,H.C., and P.P. Hwang (1998)	Acute and Chronic Effects of Antimony Chloride (SbCl3) on Tilapia (Oreochromis mossambicus) Larvae	Bull. Environ. Contam. Toxicol.61(1): 129-134
Antmony	Physa heterostropha	Pond Snail, Pneumonate Snail	Juvenile(s)	4	No - duration/lethal endpoint	LC50	Mortality	Mortality	14200	Lethal = 4 d	Aquatic Invertebrate	TAI Environmental Sciences Inc. (1990)	Results of Acute Toxicity Testing of Antimony Trichloride Using the Freshwater Species Chironomus tentans, Physa heterostropha, Ictalurus punctatus, Hyalella azteca, Hydra oligactis and Chlorohydra viridissimus	Report Presented to Dr.Rick D.Cardwell, EBASCO Services Inc., Bellevue, WA:24 p.
Antmony	Physa heterostropha	Pond Snail, Pneumonate Snail	Juvenile(s)	4	No - duration/lethal endpoint	LC50	Mortality	Mortality	19100	Lethal = 4 d	Aquatic Invertebrate	TAI Environmental Sciences Inc. (1990)	Results of Acute Toxicity Testing of Antimony Trichloride Using the Freshwater Species Chironomus tentans, Physa heterostropha, Ictalurus punctatus, Hyalella azteca, Hydra oligactis and Chlorohydra viridissimus	Report Presented to Dr.Rick D.Cardwell, EBASCO Services Inc., Bellevue, WA:24 p.
Antmony	Pimephales promelas	Fathead Minnow	Egg(s)	NR	No - duration	NOEC	Mortality	Hatch	7.5	NR	Fish	LeBlanc,G.A., and J.W. Dean (1984)	Antimony and Thallium Toxicity to Embryos and Larvae of Fathead Minnows (Pimephales promelas)	Bull. Environ. Contam. Toxicol.32(5): 565-569
Antmony	Pimephales promelas	Fathead Minnow	Egg(s)	30	No - in favour of MATC, unbounded NOEC	NOEC	Growth	Length	7.5	Long Term	Fish	LeBlanc,G.A., and J.W. Dean (1984)	Antimony and Thallium Toxicity to Embryos and Larvae of Fathead Minnows (Pimephales promelas)	Bull. Environ. Contam. Toxicol.32(5): 565-569
Antmony	Pimephales promelas	Fathead Minnow	Egg(s)	30	No - in favour of MATC	NOEC	Growth	Wet weight (AQUIRE only)	7.5	Long Term	Fish	LeBlanc,G.A., and J.W. Dean (1984)	Antimony and Thallium Toxicity to Embryos and Larvae of Fathead Minnows (Pimephales promelas)	Bull. Environ. Contam. Toxicol.32(5): 565-569
Antmony	Pimephales promelas	Fathead Minnow	Egg(s)	30	No - in favour of MATC, unbounded NOEC	NOEC	Mortality	Survival	7.5	Long Term	Fish	LeBlanc,G.A., and J.W. Dean (1984)	Antimony and Thallium Toxicity to Embryos and Larvae of Fathead Minnows (Pimephales promelas)	Bull. Environ. Contam. Toxicol.32(5): 565-569
Antmony	Pimephales promelas	Fathead Minnow	Egg(s)	28	No - in favour of MATC	NOEC	Growth	Length	1130	Long Term	Fish	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Pimephales promelas	Fathead Minnow	Egg(s)	28	Yes	MATC	Growth	Length	1620	Long Term	Fish	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Pimephales promelas	Fathead Minnow	Egg(s)	28	No - in favour of MATC	LOEC	Growth	Length	2310	Long Term	Fish	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Pimephales promelas	Fathead Minnow	Egg(s)	28	No - in favour of MATC	NOEC	Growth	Weight	2310	Long Term	Fish	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Pimephales promelas	Fathead Minnow	Egg(s)	28	Yes	MATC	Growth	Weight	3220	Long Term	Fish	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Pimephales promelas	Fathead Minnow	Egg(s)	28	No - in favour of MATC	LOEC	Growth	Weight	4500	Long Term	Fish	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Pimephales promelas	Fathead Minnow	Egg(s)	28	No - mortaility endpoint	NOEC	Mortality	Survival	4500	Long Term	Fish	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Pimephales promelas	Fathead Minnow	Egg(s)	28	No - mortaility endpoint	MATC	Mortality	Survival	6740	Long Term	Fish	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Pimephales promelas	Fathead Minnow	Not reported	4	No - duration	LC50*	Mortality	Mortality	9000	Short Term	Fish	Tarzwell,C.M., and C. Henderson (1960)	Toxicity of Less Common Metals to Fishes	Ind. Wastes5:12-
Antmony	Pimephales promelas	Fathead Minnow	Egg(s)	28	No - mortaility endpoint	LOEC	Mortality	Survival	9310	Long Term	Fish	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Pimephales promelas	Fathead Minnow	Not reported	4	No - duration	EC50	Mortality	Mortality	14400	Short Term	Fish	Brooke,L.T., D.J. Call, S.H. Poirier, C.A. Lindberg, and T.P. Markee (1986)	Acute Toxicity of Antimony III to Several Species of Freshwater Organisms	Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI:12 p.
Antmony	Pimephales promelas	Fathead Minnow	Not reported	4	No - duration	LC50	Mortality	Mortality	14400	Short Term	Fish	Brooke,L.T., D.J. Call, S.H. Poirier, C.A. Lindberg, and T.P. Markee (1986)	Acute Toxicity of Antimony III to Several Species of Freshwater Organisms	Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI:12 p.
Antmony	Pimephales promelas	Fathead Minnow	Not reported	4	No - duration	LC50*	Mortality	Mortality	17000	Short Term	Fish	Tarzwell,C.M., and C. Henderson (1960)	Toxicity of Less Common Metals to Fishes	Ind. Wastes5:12-
Antmony	Pimephales promelas	Fathead Minnow	Not reported	2	No - duration	EC50	Mortality	Mortality	17400	Short Term	Fish	Brooke,L.T., D.J. Call, S.H. Poirier, C.A. Lindberg, and T.P. Markee (1986)	Acute Toxicity of Antimony III to Several Species of Freshwater Organisms	Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI:12 p.
Antmony	Pimephales promelas	Fathead Minnow	Not reported	2	No - duration	LC50	Mortality	Mortality	17400	Short Term	Fish	Brooke,L.T., D.J. Call, S.H. Poirier, C.A. Lindberg, and T.P. Markee (1986)	Acute Toxicity of Antimony III to Several Species of Freshwater Organisms	Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI:12 p.
Antmony	Pimephales promelas	Fathead Minnow	Juvenile(s)	8	No - duration	LC50	Mortality	Mortality	19300	Short Term	Fish	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Pimephales promelas	Fathead Minnow	Not reported	1	No - duration	EC50	Mortality	Mortality	20800	Short Term	Fish	Brooke,L.T., D.J. Call, S.H. Poirier, C.A. Lindberg, and T.P. Markee (1986)	Acute Toxicity of Antimony III to Several Species of Freshwater Organisms	Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI:12 p.
Antmony	Pimephales promelas	Fathead Minnow	Not reported	1	No - duration	LC50	Mortality	Mortality	20800	Short Term	Fish	Brooke,L.T., D.J. Call, S.H. Poirier, C.A. Lindberg, and T.P. Markee (1986)	Acute Toxicity of Antimony III to Several Species of Freshwater Organisms	Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI:12 p.

Antmony	Pimephales promelas	Fathead Minnow	Juvenile(s)	4	No - duration	LC50	Mortality	Mortality	21000	Short Term	Fish	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Pimephales promelas	Fathead Minnow	Juvenile(s)	8	No - duration	LC50	Mortality	Mortality	21000	Short Term	Fish	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Pimephales promelas	Fathead Minnow	Not reported	4	No - duration	LC50	Mortality	Mortality	22000	Short Term	Fish	Stephan,C.E. (1978)	Results of Toxicity Tests	Feb.13th Memo to J.Carroll, U.S.EPA, Washington, DC:2 p.
Antmony	Pimephales promelas	Fathead Minnow	Juvenile(s)	4	No - duration	LC50	Mortality	Mortality	22700	Short Term	Fish	Kimball,G. (1978)	The Effects of Lesser Known Metals and One Organic to Fathead Minnows (Pimephales promelas) and Daphnia magna	Manuscript, Department of Entomology, Fisheries and Wildlife, University of Minnesota, Minneapolis, MN:88 p.
Antmony	Pimephales promelas	Fathead Minnow	Not reported	4	No - duration	LC50*	Mortality	Mortality	>80000	Short Term	Fish	Tarzwell,C.M., and C. Henderson (1960)	Toxicity of Less Common Metals to Fishes	Ind. Wastes5:12-
Antmony	Pimephales promelas	Fathead Minnow	Not reported	4	No - duration	LC50*	Mortality	Mortality	>80000	Short Term	Fish	Tarzwell,C.M., and C. Henderson (1960)	Toxicity of Less Common Metals to Fishes	Ind. Wastes5:12-
Antmony	Pimephales promelas	Fathead Minnow	Not reported	4	No - duration	LOEC	Mortality	Mortality	833000	Short Term	Fish	Curtis,M.W., and C.H. Ward (1981)	Aquatic Toxicity of Forty Industrial Chemicals: Testing in Support of Hazardous Substance Spill Prevention Regulation	J. Hydrol.51:359-367
Antmony	Pimephales promelas	Fathead Minnow	Not reported	4	No - duration	NOEC	Mortality	Mortality	<833000	Short Term	Fish	Curtis,M.W., and C.H. Ward (1981)	Aquatic Toxicity of Forty Industrial Chemicals: Testing in Support of Hazardous Substance Spill Prevention Regulation	J. Hydrol.51:359-367
Antmony	Pseudokirchneriella subcapitata	Green Algae	Not reported	4	Yes	NOEC	Population	Chlorophyll A concentration	200	Long Term	Algae	U.S. EPA (1978)	In-Depth Studies on Health and Environmental Impacts of Selected Water Pollutants	U.S.EPA Contract No.68-01-4646, Duluth, MN:9 p.
Antmony	Pseudokirchneriella subcapitata	Green Algae	Not reported	3	No - in favour of NOEC	EC50	Population	Chlorophyll A concentration	730	Long Term	Algae	U.S. EPA (1978)	In-Depth Studies on Health and Environmental Impacts of Selected Water Pollutants	U.S.EPA Contract No.68-01-4646, Duluth, MN:9 p.
Antmony	Pseudokirchneriella subcapitata	Green Algae	Not reported	4	No - in favour of NOEC	EC50	Population	Chlorophyll A concentration	740	Long Term	Algae	U.S. EPA (1978)	In-Depth Studies on Health and Environmental Impacts of Selected Water Pollutants	U.S.EPA Contract No.68-01-4646, Duluth, MN:9 p.
Antmony	Pseudokirchneriella subcapitata	Green Algae	Not reported	2	No - in favour of NOEC	EC50	Population	Chlorophyll A concentration	740	Long Term	Algae	U.S. EPA (1978)	In-Depth Studies on Health and Environmental Impacts of Selected Water Pollutants	U.S.EPA Contract No.68-01-4646, Duluth, MN:9 p.
Antmony	Pseudokirchneriella subcapitata	Green Algae	Not reported	4	No - in favour of NOEC	EC50	Population	Abundance	760	Long Term	Algae	U.S. EPA (1978)	In-Depth Studies on Health and Environmental Impacts of Selected Water Pollutants	U.S.EPA Contract No.68-01-4646, Duluth, MN:9 p.
Antmony	Pseudokirchneriella subcapitata	Green Algae	Not reported	1	No - duration	EC50	Population	Chlorophyll A concentration	>1000	Short Term	Algae	U.S. EPA (1978)	In-Depth Studies on Health and Environmental Impacts of Selected Water Pollutants	U.S.EPA Contract No.68-01-4646, Duluth, MN:9 p.
Antmony	Pycnopsyche sp.	Caddisfly	Not reported	4	No - duration/lethal endpoint	EC50	Mortality	Mortality	>25700	Lethal = 4 d	Aquatic Invertebrate	Brooke,L.T., D.J. Call, S.H. Poirier, C.A. Lindberg, and T.P. Markee (1986)	Acute Toxicity of Antimony III to Several Species of Freshwater Organisms	Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI:12 p.
Antmony	Pycnopsyche sp.	Caddisfly	Not reported	4	No - duration/lethal endpoint	LC50	Mortality	Mortality	>25700	Lethal = 4 d	Aquatic Invertebrate	Brooke,L.T., D.J. Call, S.H. Poirier, C.A. Lindberg, and T.P. Markee (1986)	Acute Toxicity of Antimony III to Several Species of Freshwater Organisms	Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI:12 p.
Antmony	Salmo trutta	Brown Trout	Not reported	9	No - endpoint	LOEC	Accumulation	Residue	NR	NR	Fish	Heier,L.S., I.B. Lien, A.E. Stromseng, M. Ljones, B.O. Rosseland, K.E. Tollefsen, and B. Salbu (2009)	Speciation of Lead, Copper, Zinc and Antimony in Water Draining a Shooting Range-Time Dependant Metal Accumulation and Biomarker Responses in Brown Trout (Salmo trutta L.)	Sci. Total Environ.407:4047-4055
Antmony	Salmo trutta	Brown Trout	Not reported	9	No - endpoint	LOEC	Accumulation	Residue	NR	NR	Fish	Heier,L.S., I.B. Lien, A.E. Stromseng, M. Ljones, B.O. Rosseland, K.E. Tollefsen, and B. Salbu (2009)	Speciation of Lead, Copper, Zinc and Antimony in Water Draining a Shooting Range-Time Dependant Metal Accumulation and Biomarker Responses in Brown Trout (Salmo trutta L.)	Sci. Total Environ.407:4047-4055
Antmony	Salmo trutta	Brown Trout	Not reported	11	No - endpoint	LOEC	Accumulation	Residue	NR	NR	Fish	Heier,L.S., I.B. Lien, A.E. Stromseng, M. Ljones, B.O. Rosseland, K.E. Tollefsen, and B. Salbu (2009)	Speciation of Lead, Copper, Zinc and Antimony in Water Draining a Shooting Range-Time Dependant Metal Accumulation and Biomarker Responses in Brown Trout (Salmo trutta L.)	Sci. Total Environ.407:4047-4055
Antmony	Tetrahymena pyriformis	Ciliate	Exponential growth phase (log)	1.5	No - duration	IC50	Population	Population growth rate	6000	Short Term	Aquatic Invertebrate	Sauvant,M.P., D. Pepin, J. Bohatier, and C.A. Groliere (1995)	Microplate Technique for Screening and Assessing Cytotoxicity of Xenobiotics with Tetrahymena pyriformis	Ecotoxicol. Environ. Saf.32(2): 159-165
Antmony	Tetrahymena pyriformis	Ciliate	Exponential growth phase (log)	0.375	No - duration	IC50	Population	Population growth rate	16000	Short Term	Aquatic Invertebrate	Sauvant,M.P., D. Pepin, J. Bohatier, and C.A. Groliere (1995)	Microplate Technique for Screening and Assessing Cytotoxicity of Xenobiotics with Tetrahymena pyriformis	Ecotoxicol. Environ. Saf.32(2): 159-165
Antmony	Tetrahymena pyriformis	Ciliate	Not reported	0.375	No - duration	IC50	Population	Population growth rate	20000	Short Term	Aquatic Invertebrate	Sauvant,M.P., D. Pepin, C.A. Groliere, and J. Bohatier (1995)	Effects of Organic and Inorganic Substances on the Cell Proliferation of L-929 Fibroblasts and Tetrahymena pyriformis GL Protozoa Used for Toxicological Bioassays	Bull. Environ. Contam. Toxicol.55(2): 171-178
Antmony	Tetrahymena pyriformis	Ciliate	Not reported	0.25	No - duration	IC50	Population	Population growth rate	38000	Short Term	Aquatic Invertebrate	Sauvant,M.P., D. Pepin, C.A. Groliere, and J. Bohatier (1995)	Effects of Organic and Inorganic Substances on the Cell Proliferation of L-929 Fibroblasts and Tetrahymena pyriformis GL Protozoa Used for Toxicological Bioassays	Bull. Environ. Contam. Toxicol.55(2): 171-178
Antmony	Tetrahymena pyriformis	Ciliate	Not reported	0.125	No - duration	IC50	Population	Population growth rate	60000	Short Term	Aquatic Invertebrate	Sauvant,M.P., D. Pepin, C.A. Groliere, and J. Bohatier (1995)	Effects of Organic and Inorganic Substances on the Cell Proliferation of L-929 Fibroblasts and Tetrahymena pyriformis GL Protozoa Used for Toxicological Bioassays	Bull. Environ. Contam. Toxicol.55(2): 171-178
Antmony	Tubifex tubifex	Tubificid Worm	Not reported	1	No - duration	EC50	Intoxication	Immobile	108000	Short Term	Aquatic Invertebrate	Khangarot,B.S. (1991)	Toxicity of Metals to a Freshwater Tubificid Worm, Tubifex tubifex (Muller)	Bull. Environ. Contam. Toxicol.46:906-912
Antmony	Tubifex tubifex	Tubificid Worm	Not reported	4	Yes (but immobility)	EC50	Intoxication	Immobile	678000	Long Term	Aquatic Invertebrate	Khangarot,B.S. (1991)	Toxicity of Metals to a Freshwater Tubificid Worm, Tubifex tubifex (Muller)	Bull. Environ. Contam. Toxicol.46:906-912
Antmony	Tubifex tubifex	Tubificid Worm	Not reported	2	No - duration	EC50	Intoxication	Immobile	920000	Short Term	Aquatic Invertebrate	Khangarot,B.S. (1991)	Toxicity of Metals to a Freshwater Tubificid Worm, Tubifex tubifex (Muller)	Bull. Environ. Contam. Toxicol.46:906-912

Chemical	CAS Number	Chemical Name	Species Scientific Name	Species Common Name	Organism Lifestage	Exposure Type	Chemical Analysis	Media Type	Test Location	Observed Duration Mean (Days)	Observed Duration Units (Days)	Endpoint	Trend	Effect	Effect Measurement	Conc 1 Type (ug/L)	Conc 1 Mean (ug/L)	Conc 1 Units (ug/L)	pH Mean	pH Min	pH Max	Hardness Mean	Hardness Min	Hardness Max	Hardness Units	Reference Number	Author	Title	Source	Publication Year	Comment
Arsenic	1303282	Arsenic pentoxide	Morone saxatilis	Striped Bass	-	S	M	FW	LAB	4	d	LC50	NR	mortality	mortality	T	30500	ug/L				475			mg/L CaCO3	11334	Palawski,D., J.B. Hunn, and F.J. Dwyer	Sensitivity of Young Striped Bass to Organic and Inorganic Contaminants in Fresh and Saline Waters	Trans. Am. Fish. Soc.114(5): 748-753	1985	test duration
Arsenic	1303282	Arsenic pentoxide	Morone saxatilis	Striped Bass	-	S	M	FW	LAB	4	d	LC50	NR	mortality	mortality	T	40500	ug/L				285			mg/L CaCO3	11334	Palawski,D., J.B. Hunn, and F.J. Dwyer	Sensitivity of Young Striped Bass to Organic and Inorganic Contaminants in Fresh and Saline Waters	Trans. Am. Fish. Soc.114(5): 748-753	1985	test duration
Arsenic	1303282	Arsenic pentoxide	Pimephales promelas	Fathead Minnow	-	S	M	FW	LAB	4	d	LC50	NR	mortality	mortality	T	42000	ug/L				285			mg/L CaCO3	11334	Palawski,D., J.B. Hunn, and F.J. Dwyer	Sensitivity of Young Striped Bass to Organic and Inorganic Contaminants in Fresh and Saline Waters	Trans. Am. Fish. Soc.114(5): 748-753	1985	test duration
Arsenic	1303282	Arsenic pentoxide	Oncorhynchus mykiss	Rainbow Trout	-	S	M	FW	LAB	4	d	LC50	NR	mortality	mortality	T	28000	ug/L				285			mg/L CaCO3	11334	Palawski,D., J.B. Hunn, and F.J. Dwyer	Sensitivity of Young Striped Bass to Organic and Inorganic Contaminants in Fresh and Saline Waters	Trans. Am. Fish. Soc.114(5): 748-753	1985	test duration
Arsenic	1303339	Arsenic trisulfide (As2S3)	Pimephales promelas	Fathead Minnow	-	S	M	FW	LAB	2	d	LC50	NR	mortality	mortality	T	392400*	ug/L		7.2	7.9		40	48	mg/L CaCO3	875	Curtis,M.W., T.L. Copeland, and C.H. Ward	Acute Toxicity of 12 Industrial Chemicals to Freshwater and Saltwater Organisms	Water Res.13(2): 137-141	1979	test duration
Arsenic	1303339	Arsenic trisulfide (As2S3)	Pimephales promelas	Fathead Minnow	-	S	M	FW	LAB	4	d	LC50	NR	mortality	mortality	T	82300*	ug/L		7.2	7.9		40	48	mg/L CaCO3	875	Curtis,M.W., T.L. Copeland, and C.H. Ward	Acute Toxicity of 12 Industrial Chemicals to Freshwater and Saltwater Organisms	Water Res.13(2): 137-141	1979	test duration
Arsenic	1327533	Arsenic oxide	Daphnia magna	Water Flea	neonate	R	M	FW	LAB	21	d	LC50	INC	mortality	mortality	D	5800	ug/L	8.1			225			mg/L CaCO3	45212	Enserink,E.L., J.L. Maas-Diepeveen, and C.J. Van Leeuwen	Combined Effects of Metals: An Ecotoxicological Evaluation	Water Res.25(6): 679-687	1991	drop in favour of IC10
Arsenic	1327533	Arsenic oxide	Coregonus hoyi	Bloater	fry	R	M	FW	LAB	14	d	LC50	NR	mortality	mortality	T	5100	ug/L					40	48	mg/L CaCO3	457	Passino,D.R.M., and J.M. Kramer	Toxicity of Arsenic and PCBs to Fry of Deepwater Ciscoes (Coregonus)	Bull. Environ. Contam. Toxicol.24(4): 527-534	1980	
Arsenic	1327533	Arsenic oxide	Coregonus hoyi	Bloater	fry	R	M	FW	LAB	5	d	LC50	NR	mortality	mortality	T	11000	ug/L					40	48	mg/L CaCO3	457	Passino,D.R.M., and J.M. Kramer	Toxicity of Arsenic and PCBs to Fry of Deepwater Ciscoes (Coregonus)	Bull. Environ. Contam. Toxicol.24(4): 527-534	1980	
Arsenic	1327533	Arsenic oxide	Coregonus hoyi	Bloater	fry	S	M	FW	LAB	4	d	LC50	NR	mortality	mortality	T	13000*	ug/L					40	48	mg/L CaCO3	457	Passino,D.R.M., and J.M. Kramer	Toxicity of Arsenic and PCBs to Fry of Deepwater Ciscoes (Coregonus)	Bull. Environ. Contam. Toxicol.24(4): 527-534	1980	test duration
Arsenic	1327533	Arsenic oxide	Coregonus hoyi	Bloater	fry	S	M	FW	LAB	4	d	LC50	NR	mortality	mortality	T	20000*	ug/L					40	48	mg/L CaCO3	457	Passino,D.R.M., and J.M. Kramer	Toxicity of Arsenic and PCBs to Fry of Deepwater Ciscoes (Coregonus)	Bull. Environ. Contam. Toxicol.24(4): 527-534	1980	test duration
Arsenic	1327533	Arsenic oxide	Oncorhynchus mykiss	Rainbow Trout	mix of lifestages	F	M	FW	LAB	6	d	LC50	NR	mortality	mortality	T	13300	ug/L	8.03						NR	6329	Dixon,D.G., and J.B. Sprague	Acclimation-Induced Changes in Toxicity of Arsenic and Cyanide to Rainbow Trout, Salmo gairdneri Richardson	J. Fish Biol.18(5): 579-589	1981	
Arsenic	1327533	Arsenic oxide	Oncorhynchus mykiss	Rainbow Trout	-	F	M	FW	LAB	6	d	LC50	NR	mortality	mortality	T	10800	ug/L							NR	395	McGeachy,S.M., and D.G. Dixon	The Impact of Temperature on the Acute Toxicity of Arsenate and Arsenite to Rainbow Trout (Salmo gairdneri)	Ecotoxicol. Environ. Saf.17(1): 86-93	1989	
Arsenic	1327533	Arsenic oxide	Oncorhynchus mykiss	Rainbow Trout	-	F	M	FW	LAB	6	d	LC50	NR	mortality	mortality	T	12600	ug/L							NR	395	McGeachy,S.M., and D.G. Dixon	The Impact of Temperature on the Acute Toxicity of Arsenate and Arsenite to Rainbow Trout (Salmo gairdneri)	Ecotoxicol. Environ. Saf.17(1): 86-93	1989	
Arsenic	1327533	Arsenic oxide	Tanytarsus dissimilis	Midge	instar	S	M	FW	LAB	2	d	LC50	NR	mortality	mortality	T	36700*	ug/L		7.2	7.7	46.6	44.6	47.5	mg/L CaCO3	10417	Holcombe,G.W., G.L. Phipps, and J.T. Fiandt	Toxicity of Selected Priority Pollutants to Various Aquatic Organisms	Ecotoxicol. Environ. Saf.7(4): 400-409	1983	test duration
Arsenic	1327533	Arsenic oxide	Aplexa hypnorum	Snail	adult	S	M	FW	LAB	4	d	LC50	NR	mortality	mortality	T	9280*	ug/L		7.4	7.7	49.5	45.6	53.4	mg/L CaCO3	10417	Holcombe,G.W., G.L. Phipps, and J.T. Fiandt	Toxicity of Selected Priority Pollutants to Various Aquatic Organisms	Ecotoxicol. Environ. Saf.7(4): 400-409	1983	test duration
Arsenic	1327533	Arsenic oxide	Potamopyrgus antipodarum	Snail	adult	F	M	FW	LAB	2	d	EC50	INC	intoxication	imobilization	T	34600	ug/L							NR	7583	Golding,L.A., M.H. Timperley, and C.W. Evans	Non-lethal Responses of the Freshwater Snail Potamopyrgus antipodarum to Dissolved Arsenic	Environ. Monit. Assess.47(3): 239-254	1997	test duration
Arsenic	1327533	Arsenic oxide	Potamopyrgus antipodarum	Snail	adult	F	M	FW	LAB	3	d	EC50	INC	intoxication	imobilization	T	24200	ug/L							NR	7583	Golding,L.A., M.H. Timperley, and C.W. Evans	Non-lethal Responses of the Freshwater Snail Potamopyrgus antipodarum to Dissolved Arsenic	Environ. Monit. Assess.47(3): 239-254	1997	test duration
Arsenic	1327533	Arsenic oxide	Potamopyrgus antipodarum	Snail	adult	F	M	FW	LAB	4	d	EC50	INC	intoxication	imobilization	T	19400	ug/L							NR	7583	Golding,L.A., M.H. Timperley, and C.W. Evans	Non-lethal Responses of the Freshwater Snail Potamopyrgus antipodarum to Dissolved Arsenic	Environ. Monit. Assess.47(3): 239-254	1997	test duration
Arsenic	1327533	Arsenic oxide	Potamopyrgus antipodarum	Snail	adult	F	M	FW	LAB	4	d	EC50	INC	intoxication	imobilization	T	9507	ug/L							NR	7583	Golding,L.A., M.H. Timperley, and C.W. Evans	Non-lethal Responses of the Freshwater Snail Potamopyrgus antipodarum to Dissolved Arsenic	Environ. Monit. Assess.47(3): 239-254	1997	test duration
Arsenic	7440382	Arsenic	Hyalella azteca	Scud	young organism	S	M	FW	LAB	7	d	LC50	INC	mortality	mortality	T	494	ug/L	7.39	6.44	8.52	18*			mg/L	80935	Borgmann,U., Y. Couillard, P. Doyle, and D.G. Dixon	Toxicity of Sixty-Three Metals and Metalloids to Hyalella azteca at Two Levels of Water Hardness	Environ. Toxicol. Chem.24(3): 641-652	2005	
Arsenic	7631892	Arsenic acid (H3AsO4), Sodium salt	Morone saxatilis	Striped Bass	prolarva	F	M	FW	LAB	4	d	LC50	INC	mortality	mortality	T	18690	ug/L		7.5	7.7				NR	18109	Klauda,R.J.	Acute and Chronic Effects of Waterborne Arsenic and Selenium on the Early Life Stages of Striped Bass (Morone saxatilis)	Rep.No.JHU/APL PPRP-98, Rep.to Maryland Power Plant Siting Program, John Hopkins University, Laurel, MD:209 p.	1986	test duration
Arsenic	7631892	Arsenic acid (H3AsO4), Sodium salt	Morone saxatilis	Striped Bass	larva	F	M	FW	LAB	4	d	LC50	INC	mortality	mortality	T	7280	ug/L		7.5	7.7				NR	18109	Klauda,R.J.	Acute and Chronic Effects of Waterborne Arsenic and Selenium on the Early Life Stages of Striped Bass (Morone saxatilis)	Rep.No.JHU/APL PPRP-98, Rep.to Maryland Power Plant Siting Program, John Hopkins University, Laurel, MD:209 p.	1986	test duration
Arsenic	7631892	Arsenic acid (H3AsO4), Sodium salt	Oncorhynchus mykiss	Rainbow Trout	young of year	F	M	FW	LAB	4	d	LC50	INC	mortality	mortality	T	10800	ug/L		6.4	8.3				NR	861	Hale,J.G.	Toxicity of Metal Mining Wastes	Bull. Environ. Contam. Toxicol.17(1): 66-73	1977	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Bosmina longirostris	Water Flea	neonate	S	M	FW	LAB	4	d	EC50	NR	intoxication	imobilization	T	850	ug/L	6.8			120			mg/L CaCO3	10658	Passino,D.R.M., and A.J. Novak	Toxicity of Arsenate and DDT to the Cladoceran Bosmina longirostris	Bull. Environ. Contam. Toxicol.33(3): 325-329	1984	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Daphnia pulex	Water Flea	-	S	M	FW	LAB	2	d	EC50	NR	intoxication	imobilization	T	49600	ug/L	6.8			120			mg/L CaCO3	10658	Passino,D.R.M., and A.J. Novak	Toxicity of Arsenate and DDT to the Cladoceran Bosmina longirostris	Bull. Environ. Contam. Toxicol.33(3): 325-329	1984	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Hyalella azteca	Scud	young organism	S	M	FW	LAB	7	d	LC50	INC	mortality	mortality	T	483	ug/L	8.21	7.23	8.83	124*			mg/L	80935	Borgmann,U., Y. Couillard, P. Doyle, and D.G. Dixon	Toxicity of Sixty-Three Metals and Metalloids to Hyalella azteca at Two Levels of Water Hardness	Environ. Toxicol. Chem.24(3): 641-652	2005	
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Hyalella azteca	Scud	young organism	S	M	FW	LAB	7	d	LC50	INC	mortality	mortality	T	581	ug/L	7.39	6.44	8.52	18*			mg/L	80935	Borgmann,U., Y. Couillard, P. Doyle, and D.G. Dixon	Toxicity of Sixty-Three Metals and Metalloids to Hyalella azteca at Two Levels of Water Hardness	Environ. Toxicol. Chem.24(3): 641-652	2005	
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Phoxinus phoxinus	Minnow	-	S	M	FW	LAB	0.6667	d	EC50*	NR	behavior	equilibrium	T	234000	ug/L	8.2			27.8			mg/L CaCO3	7995	Grindley,J.	Toxicity to Rainbow Trout and Minnows of Some Substances Known to be Present in Waste Water Discharged to Rivers	Ann. Appl. Biol.33:103-112	1946	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Pimephales promelas	Fathead Minnow	-	R	M	FW	LAB	1	d	LC50	INC	mortality	mortality	T	20000	ug/L	8.1*	7.9*	8.4*	140*	139*	140*	mg/L CaCO3	77828	Buhl,K.J.	The Relative Toxicity of Waterborne Inorganic Contaminants to the Rio Grande Silvery Minnow (Hybognathus amarus) and Fathead Minnow (Pimephales promelas) in a Water Quality Simulating that in the Rio Grande, New Mexico	Final Rep.to U.S.Fish and Wildl.Serv., Study No.2F33-9620003, U.S.Geol.Surv., Columbia Environ.Res.Ctr., Yankton Field Res.Stn., Yankton, SD:75 p.	2002	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Pimephales promelas	Fathead Minnow	-	R	M	FW	LAB	2	d	LC50	INC	mortality	mortality	T	19100	ug/L	8.1*	7.9*	8.4*	140*	139*	140*	mg/L CaCO3	77828	Buhl,K.J.	The Relative Toxicity of Waterborne Inorganic Contaminants to the Rio Grande Silvery Minnow (Hybognathus amarus) and Fathead Minnow (Pimephales promelas) in a Water Quality Simulating that in the Rio Grande, New Mexico	Final Rep.to U.S.Fish and Wildl.Serv., Study No.2F33-9620003, U.S.Geol.Surv., Columbia Environ.Res.Ctr., Yankton Field Res.Stn., Yankton, SD:75 p.	2002	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Pimephales promelas	Fathead Minnow	-	R	M	FW	LAB	3	d	LC50	INC	mortality	mortality	T	19100	ug/L	8.1*	7.9*	8.4*	140*	139*	140*	mg/L CaCO3	77828	Buhl,K.J.	The Relative Toxicity of Waterborne Inorganic Contaminants to the Rio Grande Silvery Minnow (Hybognathus amarus) and Fathead Minnow (Pimephales promelas) in a Water Quality Simulating that in the Rio Grande, New Mexico	Final Rep.to U.S.Fish and Wildl.Serv., Study No.2F33-9620003, U.S.Geol.Surv., Columbia Environ.Res.Ctr., Yankton Field Res.Stn., Yankton, SD:75 p.	2002	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Pimephales promelas	Fathead Minnow	-	R	M	FW	LAB	4	d	LC50	INC	mortality	mortality	T	17900	ug/L	8.1*	7.9*	8.4*	140*	139*	140*	mg/L CaCO3	77828	Buhl,K.J.	The Relative Toxicity of Waterborne Inorganic Contaminants to the Rio Grande Silvery Minnow (Hybognathus amarus) and Fathead Minnow (Pimephales promelas) in a Water Quality Simulating that in the Rio Grande, New Mexico	Final Rep.to U.S.Fish and Wildl.Serv., Study No.2F33-9620003, U.S.Geol.Surv., Columbia Environ.Res.Ctr., Yankton Field Res.Stn., Yankton, SD:75 p.	2002	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Hybognathus amarus	Rio Grande Silvery Minnow	-	R	M	FW	LAB	1	d	EC50	INC	mortality	mortality	T	41500	ug/L	8.1*	7.9*	8.4*	140*	139*	140*	mg/L CaCO3	77828	Buhl,K.J.	The Relative Toxicity of Waterborne Inorganic Contaminants to the Rio Grande Silvery Minnow (Hybognathus amarus) and Fathead Minnow (Pimephales promelas) in a Water Quality Simulating that in the Rio Grande, New Mexico	Final Rep.to U.S.Fish and Wildl.Serv., Study No.2F33-9620003, U.S.Geol.Surv., Columbia Environ.Res.Ctr., Yankton Field Res.Stn., Yankton, SD:75 p.	2002	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Hybognathus amarus	Rio Grande Silvery Minnow	-	R	M	FW	LAB	1	d	LC50	INC	mortality	mortality	T	41500	ug/L	8.1*	7.9*	8.4*	140*	139*	140*	mg/L CaCO3	77828	Buhl,K.J.	The Relative Toxicity of Waterborne Inorganic Contaminants to the Rio Grande Silvery Minnow (Hybognathus amarus) and Fathead Minnow (Pimephales promelas) in a Water Quality Simulating that in the Rio Grande, New Mexico	Final Rep.to U.S.Fish and Wildl.Serv., Study No.2F33-9620003, U.S.Geol.Surv., Columbia Environ.Res.Ctr., Yankton Field Res.Stn., Yankton, SD:75 p.	2002	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Hybognathus amarus	Rio Grande Silvery Minnow	-	R	M	FW	LAB	2	d	LC50	INC	mortality	mortality	T	39500	ug/L	8.1*	7.9*	8.4*	140*	139*	140*	mg/L CaCO3	77828	Buhl,K.J.	The Relative Toxicity of Waterborne Inorganic Contaminants to the Rio Grande Silvery Minnow (Hybognathus amarus) and Fathead Minnow (Pimephales promelas) in a Water Quality Simulating that in the Rio Grande, New Mexico	Final Rep.to U.S.Fish and Wildl.Serv., Study No.2F33-9620003, U.S.Geol.Surv., Columbia Environ.Res.Ctr., Yankton Field Res.Stn., Yankton, SD:75 p.	2002	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Hybognathus amarus	Rio Grande Silvery Minnow	-	R	M	FW	LAB	3	d	LC50	INC	mortality	mortality	T	38300	ug/L	8.1*	7.9*	8.4*	140*	139*	140*	mg/L CaCO3	77828	Buhl,K.J.	The Relative Toxicity of Waterborne Inorganic Contaminants to the Rio Grande Silvery Minnow (Hybognathus amarus) and Fathead Minnow (Pimephales promelas) in a Water Quality Simulating that in the Rio Grande, New Mexico	Final Rep.to U.S.Fish and Wildl.Serv., Study No.2F33-9620003, U.S.Geol.Surv., Columbia Environ.Res.Ctr., Yankton Field Res.Stn., Yankton, SD:75 p.	2002	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Hybognathus amarus	Rio Grande Silvery Minnow	-	R	M	FW	LAB	4	d	LC50	INC	mortality	mortality	T	34300	ug/L	8.1*	7.9*	8.4*	140*	139*	140*	mg/L CaCO3	77828	Buhl,K.J.	The Relative Toxicity of Waterborne Inorganic Contaminants to the Rio Grande Silvery Minnow (Hybognathus amarus) and Fathead Minnow (Pimephales promelas) in a Water Quality Simulating that in the Rio Grande, New Mexico	Final Rep.to U.S.Fish and Wildl.Serv., Study No.2F33-9620003, U.S.Geol.Surv., Columbia Environ.Res.Ctr., Yankton Field Res.Stn., Yankton, SD:75 p.	2002	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	1	d	LC50	NR	mortality	mortality	T	150000	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	1	d	LC50	NR	mortality	mortality	T	40000	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	1	d	LC50	NR	mortality	mortality	T	56000	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	1	d	LC50	NR	mortality	mortality	T	62000	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	1	d	LC50	NR	mortality	mortality	T	84000	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	1	d	LC50	NR	mortality	mortality	T	95000	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	2	d	LC50	NR	mortality	mortality	T	21000	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	2	d	LC50	NR	mortality	mortality	T	26000	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	2	d	LC50	NR	mortality	mortality	T	32000	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	2	d	LC50	NR	mortality	mortality	T	44000	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	2	d	LC50	NR	mortality	mortality	T	57000	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	2	d	LC50	NR	mortality	mortality	T	78000	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	3	d	LC50	NR	mortality	mortality	T	11000	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	3	d	LC50	NR	mortality	mortality	T	16000	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	3	d	LC50	NR	mortality	mortality	T	21000	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	3	d	LC50	NR	mortality	mortality	T	26000	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	3	d	LC50	NR	mortality	mortality	T	29000	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	4	d	LC50	NR	mortality	mortality	T	13000	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	4	d	LC50	NR	mortality	mortality	T	16000	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	4	d	LC50	NR	mortality	mortality	T	18000	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	4	d	LC50	NR	mortality	mortality	T	6600	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Philodina roseola	Rotifer	adult	S	M	FW	LAB	4	d	LC50	NR	mortality	mortality	T	8200	ug/L							NR	2236	Schaefer,E.D., and W.O. Pipes	Temperature and the Toxicity of Chromate and Arsenate to the Rotifer, Philodina roseola	Water Res.7(12): 1781-1790	1973	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Potamopyrgus antipodarum	Snail	adult	F	M	FW	LAB	2	d	EC50	INC	intoxication	imobilization	T	325000	ug/L							NR	7583	Golding,L.A., M.H. Timperley, and C.W. Evans	Non-lethal Responses of the Freshwater Snail Potamopyrgus antipodarum to Dissolved Arsenic	Environ. Monit. Assess.47(3): 239-254	1997	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Potamopyrgus antipodarum	Snail	adult	F	M	FW	LAB	3	d	EC50	INC	intoxication	imobilization	T	135000	ug/L							NR	7583	Golding,L.A., M.H. Timperley, and C.W. Evans	Non-lethal Responses of the Freshwater Snail Potamopyrgus antipodarum to Dissolved Arsenic	Environ. Monit. Assess.47(3): 239-254	1997	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Potamopyrgus antipodarum	Snail	adult	F	M	FW	LAB	4	d	EC50	INC	intoxication	imobilization	T	111000	ug/L							NR	7583	Golding,L.A., M.H. Timperley, and C.W. Evans	Non-lethal Responses of the Freshwater Snail Potamopyrgus antipodarum to Dissolved Arsenic	Environ. Monit. Assess.47(3): 239-254	1997	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Potamopyrgus antipodarum	Snail	adult	F	M	FW	LAB	NR	d	EC50	INC	intoxication	imobilization	T	7444	ug/L							NR	7583	Golding,L.A., M.H. Timperley, and C.W. Evans	Non-lethal Responses of the Freshwater Snail Potamopyrgus antipodarum to Dissolved Arsenic	Environ. Monit. Assess.47(3): 239-254	1997	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Ambystoma opacum	Marbled Salamander	eggs	R	M	FW	LAB	8	d	LC50	NR	mortality	mortality	T	4450	ug/L		7.2	7.8		93	105	mg/L CaCO3	6199	Birge,W.J., J.E. Hudson, J.A. Black, and A.G. Westerman	Embryo-Larval Bioassays on Inorganic Coal Elements and In Situ Biomonitoring of Coal-Waste Effluents	In: Symp., U.S.Fish Wildl.Serv., Dec.3-6, 1978, Surface Mining Fish Wildl.needs in Eastern U.S., WV:97-104	1978	
Arsenic	7784465	Arsenenous acid, Sodium salt	Gastrophryne carolinensis	Eastern Narrow-Mouthed Toad	eggs	R	M	FW	LAB	7	d	LC50	INC	mortality	mortality	T	40	ug/L	7.4			195			mg/L CaCO3	5305	Birge,W.J.	Aquatic Toxicology of Trace Elements of Coal and Fly Ash	In: J.H.Thorp and J.W.Gibbons (Eds.), Dep.Energy Symp.Ser., Energy and Environmental Stress in Aquatic Systems, Augusta, GA48:219-240	1978	species geographic location
Arsenic	7784465	Arsenenous acid, Sodium salt	Ceriodaphnia dubia	Water Flea	-	R	M	FW	LAB	7	d	EC50	DEC	reproduction	progeny counts	D	1259	ug/L	8.2	8	8.5	100			mg/L CaCO3	12093	Spehar,R.L., and J.T. Fiandt	Acute and Chronic Effects of Water Quality Criteria-Based Metal Mixtures on Three Aquatic Species	Environ. Toxicol. Chem.5(10): 917-931	1986	
Arsenic	7784465	Arsenenous acid, Sodium salt	Daphnia magna	Water Flea	instar	S	M	FW	LAB	2	d	EC50	INC	intoxication	imobilization	T	4830	ug/L	8.1			48.7			mg/L CaCO3	10579	Call,D.J., L.T. Brooke, N. Ahmad, and J.E. Richter	Toxicity and Metabolism Studies with EPA (Environmental Protection Agency) Priority Pollutants and Related Chemicals in Freshwater Organisms	EPA 600/3-83-095, U.S.EPA, Duluth, MN:120 p.	1983	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Daphnia magna	Water Flea	-	S	M	FW	LAB	1	d	EC50	INC	intoxication	imobilization	T	2160	ug/L		7.2	8.1		46.3	49.9	mg/L CaCO3	10695	Lima,A.R., C. Curtis, D.E. Hammermeister, T.P. Markee, C.E. Northcott, and L.T. Brooke	Acute and Chronic Toxicities of Arsenic(III) to Fathead Minnows, Flagfish, Daphnids, and an Amphipod	Arch. Environ. Contam. Toxicol.13(5): 595-601	1984	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Daphnia magna	Water Flea	-	S	M	FW	LAB	1	d	EC50	INC	intoxication	imobilization	T	7250	ug/L		7.2	8.1		46.3	49.9	mg/L CaCO3	10695	Lima,A.R., C. Curtis, D.E. Hammermeister, T.P. Markee, C.E. Northcott, and L.T. Brooke	Acute and Chronic Toxicities of Arsenic(III) to Fathead Minnows, Flagfish, Daphnids, and an Amphipod	Arch. Environ. Contam. Toxicol.13(5): 595-601	1984	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Daphnia magna	Water Flea	-	S	M	FW	LAB	2	d	EC50	INC	intoxication	imobilization	T	1500	ug/L		7.2	8.1		46.3	49.9	mg/L CaCO3	10695	Lima,A.R., C. Curtis, D.E. Hammermeister, T.P. Markee, C.E. Northcott, and L.T. Brooke	Acute and Chronic Toxicities of Arsenic(III) to Fathead Minnows, Flagfish, Daphnids, and an Amphipod	Arch. Environ. Contam. Toxicol.13(5): 595-601	1984	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Daphnia magna	Water Flea	-	S	M	FW	LAB	2	d	EC50	INC	intoxication	imobilization	T	4630	ug/L		7.2	8.1		46.3	49.9	mg/L CaCO3	10695	Lima,A.R., C. Curtis, D.E. Hammermeister, T.P. Markee, C.E. Northcott, and L.T. Brooke	Acute and Chronic Toxicities of Arsenic(III) to Fathead Minnows, Flagfish, Daphnids, and an Amphipod	Arch. Environ. Contam. Toxicol.13(5): 595-601	1984	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Daphnia magna	Water Flea	-	S	M	FW	LAB	3	d	EC50	INC	intoxication	imobilization	T	1500	ug/L		7.2	8.1		46.3	49.9	mg/L CaCO3	10695	Lima,A.R., C. Curtis, D.E. Hammermeister, T.P. Markee, C.E. Northcott, and L.T. Brooke	Acute and Chronic Toxicities of Arsenic(III) to Fathead Minnows, Flagfish, Daphnids, and an Amphipod	Arch. Environ. Contam. Toxicol.13(5): 595-601	1984	test duration

Arsenic	7784465	Arsenenous acid, Sodium salt	Daphnia magna	Water Flea	-	S	M	FW	LAB	3	d	EC50	INC	intoxication	imobilization	T	4630	ug/L		7.2	8.1		46.3	49.9	mg/L CaCO3	10695	Lima,A.R., C. Curtis, D.E. Hammermeister, T.P. Markee, C.E. Northcott, and L.T. Brooke	Acute and Chronic Toxicities of Arsenic(III) to Fathead Minnows, Flagfish, Daphnids, and an Amphipod	Arch. Environ. Contam. Toxicol.13(5): 595-601	1984	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Daphnia magna	Water Flea	-	S	M	FW	LAB	4	d	EC50	INC	intoxication	imobilization	T	1500	ug/L		7.2	8.1		46.3	49.9	mg/L CaCO3	10695	Lima,A.R., C. Curtis, D.E. Hammermeister, T.P. Markee, C.E. Northcott, and L.T. Brooke	Acute and Chronic Toxicities of Arsenic(III) to Fathead Minnows, Flagfish, Daphnids, and an Amphipod	Arch. Environ. Contam. Toxicol.13(5): 595-601	1984	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Daphnia magna	Water Flea	-	S	M	FW	LAB	4	d	EC50	INC	intoxication	imobilization	T	4340	ug/L		7.2	8.1		46.3	49.9	mg/L CaCO3	10695	Lima,A.R., C. Curtis, D.E. Hammermeister, T.P. Markee, C.E. Northcott, and L.T. Brooke	Acute and Chronic Toxicities of Arsenic(III) to Fathead Minnows, Flagfish, Daphnids, and an Amphipod	Arch. Environ. Contam. Toxicol.13(5): 595-601	1984	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Gammarus pseudolimnaeus	Scud	-	F	M	FW	LAB	1.7917	d	EC50	INC	intoxication	imobilization	T	1990	ug/L		7.2	8.1		46.3	49.9	mg/L CaCO3	10695	Lima,A.R., C. Curtis, D.E. Hammermeister, T.P. Markee, C.E. Northcott, and L.T. Brooke	Acute and Chronic Toxicities of Arsenic(III) to Fathead Minnows, Flagfish, Daphnids, and an Amphipod	Arch. Environ. Contam. Toxicol.13(5): 595-601	1984	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Gammarus pseudolimnaeus	Scud	-	F	M	FW	LAB	2.6667	d	EC50	INC	intoxication	imobilization	T	1020	ug/L		7.2	8.1		46.3	49.9	mg/L CaCO3	10695	Lima,A.R., C. Curtis, D.E. Hammermeister, T.P. Markee, C.E. Northcott, and L.T. Brooke	Acute and Chronic Toxicities of Arsenic(III) to Fathead Minnows, Flagfish, Daphnids, and an Amphipod	Arch. Environ. Contam. Toxicol.13(5): 595-601	1984	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Gammarus pseudolimnaeus	Scud	-	F	M	FW	LAB	4	d	EC50	INC	intoxication	imobilization	T	874	ug/L		7.2	8.1		46.3	49.9	mg/L CaCO3	10695	Lima,A.R., C. Curtis, D.E. Hammermeister, T.P. Markee, C.E. Northcott, and L.T. Brooke	Acute and Chronic Toxicities of Arsenic(III) to Fathead Minnows, Flagfish, Daphnids, and an Amphipod	Arch. Environ. Contam. Toxicol.13(5): 595-601	1984	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Ceriodaphnia dubia	Water Flea	-	S	M	FW	LAB	2	d	LC50	INC	mortality	mortality	D	1448	ug/L	8.2	8	8.5	100			mg/L CaCO3	12093	Spehar,R.L., and J.T. Fiandt	Acute and Chronic Effects of Water Quality Criteria-Based Metal Mixtures on Three Aquatic Species	Environ. Toxicol. Chem.5(10): 917-931	1986	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Gammarus pseudolimnaeus	Scud	-	F	M	FW	LAB	1.8125	d	LC50	NR	mortality	mortality	T	1990	ug/L	7.7			46.3			mg/L CaCO3	10579	Call,D.J., L.T. Brooke, N. Ahmad, and J.E. Richter	Toxicity and Metabolism Studies with EPA (Environmental Protection Agency) Priority Pollutants and Related Chemicals in Freshwater Organisms	EPA 600/3-83-095, U.S.EPA, Duluth, MN:120 p.	1983	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Gammarus pseudolimnaeus	Scud	-	F	M	FW	LAB	3	d	LC50	NR	mortality	mortality	T	875	ug/L	7.7			46.3			mg/L CaCO3	10579	Call,D.J., L.T. Brooke, N. Ahmad, and J.E. Richter	Toxicity and Metabolism Studies with EPA (Environmental Protection Agency) Priority Pollutants and Related Chemicals in Freshwater Organisms	EPA 600/3-83-095, U.S.EPA, Duluth, MN:120 p.	1983	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Gammarus pseudolimnaeus	Scud	-	F	M	FW	LAB	4	d	LC50	NR	mortality	mortality	T	875	ug/L	7.7			46.3			mg/L CaCO3	10579	Call,D.J., L.T. Brooke, N. Ahmad, and J.E. Richter	Toxicity and Metabolism Studies with EPA (Environmental Protection Agency) Priority Pollutants and Related Chemicals in Freshwater Organisms	EPA 600/3-83-095, U.S.EPA, Duluth, MN:120 p.	1983	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Ceriodaphnia dubia	Water Flea	-	R	M	FW	LAB	7	d	MATC	DEC	reproduction	progeny counts	D	1140	ug/L	8.2	8	8.5	100			mg/L CaCO3	12093	Spehar,R.L., and J.T. Fiandt	Acute and Chronic Effects of Water Quality Criteria-Based Metal Mixtures on Three Aquatic Species	Environ. Toxicol. Chem.5(10): 917-931	1986	
Arsenic	7784465	Arsenenous acid, Sodium salt	Notemigonus crysoleucas	Golden Shiner	-	F	M	FW	LAB	4	d	EC50	NR	avoidance	chemical avoidance	T	28	ug/L							NR	3286	Hartwell,S.I., J.H. Jin, D.S. Cherry, and J.,Jr. Cairns	Toxicity Versus Avoidance Response of Golden Shiner, Notemigonus crysoleucas, to Five Metals	J. Fish Biol.35(3): 447-456	1989	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Esox masquinongy	Muskellunge	fry	S	M	FW	LAB	4	d	LC50	NR	mortality	mortality	T	16000	ug/L		7.6	7.8				NR	8449	Spotila,J.R., and F.V. Paladino	Toxicity of Arsenic to Developing Muskellunge Fry (Esox masquinongy)	Comp. Biochem. Physiol. C Comp. Pharmacol.62(1): 67-69	1979	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Esox masquinongy	Muskellunge	fry	S	M	FW	LAB	4	d	LC50	NR	mortality	mortality	T	2600	ug/L		7.8	7.9				NR	8449	Spotila,J.R., and F.V. Paladino	Toxicity of Arsenic to Developing Muskellunge Fry (Esox masquinongy)	Comp. Biochem. Physiol. C Comp. Pharmacol.62(1): 67-69	1979	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Esox masquinongy	Muskellunge	swim-up	S	M	FW	LAB	4	d	LC50	NR	mortality	mortality	T	1100	ug/L		7.2	7.7				NR	8449	Spotila,J.R., and F.V. Paladino	Toxicity of Arsenic to Developing Muskellunge Fry (Esox masquinongy)	Comp. Biochem. Physiol. C Comp. Pharmacol.62(1): 67-69	1979	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Micropterus salmoides	Largemouth Bass	eggs	R	M	FW	LAB	8	d	LC50	NR	mortality	mortality	T	42100	ug/L		7.2	7.8		93	105	mg/L CaCO3	6199	Birge,W.J., J.E. Hudson, J.A. Black, and A.G. Westerman	Embryo-Larval Bioassays on Inorganic Coal Elements and In Situ Biomonitoring of Coal-Waste Effluents	In: Symp., U.S.Fish Wildl.Serv., Dec.3-6, 1978, Surface Mining Fish Wildl.needs in Eastern U.S., WV:97-104	1978	
Arsenic	7784465	Arsenenous acid, Sodium salt	Notropis hudsonius	Spottail Shiner	juveniles	S	M	FW	LAB	1	d	LC50	INC	mortality	mortality	T	45000	ug/L	7.8						NR	10290	Boschetti,M.M., and T.F. McLoughlin	Toxicity of Sodium Arsenite to Minnows	Sanitalk5:14-18	1957	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Notropis hudsonius	Spottail Shiner	juveniles	S	M	FW	LAB	2	d	LC50	INC	mortality	mortality	T	29000	ug/L	7.8						NR	10290	Boschetti,M.M., and T.F. McLoughlin	Toxicity of Sodium Arsenite to Minnows	Sanitalk5:14-18	1957	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Notropis hudsonius	Spottail Shiner	juveniles	S	M	FW	LAB	3	d	LC50	INC	mortality	mortality	T	27000	ug/L	7.8						NR	10290	Boschetti,M.M., and T.F. McLoughlin	Toxicity of Sodium Arsenite to Minnows	Sanitalk5:14-18	1957	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Jordanella floridae	Flagfish	embryo	F	M	FW	LAB	31	d	EC50	INC	mortality	mortality	T	14200	ug/L		7.2	8.1		46.3	49.9	mg/L CaCO3	10695	Lima,A.R., C. Curtis, D.E. Hammermeister, T.P. Markee, C.E. Northcott, and L.T. Brooke	Acute and Chronic Toxicities of Arsenic(III) to Fathead Minnows, Flagfish, Daphnids, and an Amphipod	Arch. Environ. Contam. Toxicol.13(5): 595-601	1984	
Arsenic	7784465	Arsenenous acid, Sodium salt	Jordanella floridae	Flagfish	-	F	M	FW	LAB	4	d	EC50	NR	behavior	equilibrium	T	14200	ug/L	7.2	7	7.4	50.1	49	57	mg/L CaCO3	5940	Call,D.J., L.T. Brooke, and N. Ahmad	Estimates of "No Effect" Concentrations of Selected Pesticides in Freshwater Organisms	Third Quarterly Prog.Rep.to EPA, EPA Coop.Agreement No.CR 806864030, Univ.of Wisconsin, Superior, WI:37 p.	1980	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Jordanella floridae	Flagfish	-	F	M	FW	LAB	4	d	EC50	NR	behavior	equilibrium	T	14200	ug/L	7.2	7	7.4	50.1	49	57	mg/L CaCO3	5940	Call,D.J., L.T. Brooke, and N. Ahmad	Estimates of "No Effect" Concentrations of Selected Pesticides in Freshwater Organisms	Third Quarterly Prog.Rep.to EPA, EPA Coop.Agreement No.CR 806864030, Univ.of Wisconsin, Superior, WI:37 p.	1980	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Pimephales promelas	Fathead Minnow	-	F	M	FW	LAB	32	d	EC50	DEC	growth	weight	D	7079	ug/L	7.4	6	8.1	43.9			mg/L CaCO3	12093	Spehar,R.L., and J.T. Fiandt	Acute and Chronic Effects of Water Quality Criteria-Based Metal Mixtures on Three Aquatic Species	Environ. Toxicol. Chem.5(10): 917-931	1986	
Arsenic	7784465	Arsenenous acid, Sodium salt	Jordanella floridae	Flagfish	fry	F	M	FW	LAB	1	d	LC50	INC	mortality	mortality	T	18300	ug/L		7.2	8.1		46.3	49.9	mg/L CaCO3	10695	Lima,A.R., C. Curtis, D.E. Hammermeister, T.P. Markee, C.E. Northcott, and L.T. Brooke	Acute and Chronic Toxicities of Arsenic(III) to Fathead Minnows, Flagfish, Daphnids, and an Amphipod	Arch. Environ. Contam. Toxicol.13(5): 595-601	1984	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Jordanella floridae	Flagfish	fry	F	M	FW	LAB	1.2083	d	LC50	NR	mortality	mortality	T	69800	ug/L							NR	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Jordanella floridae	Flagfish	fry	F	M	FW	LAB	2	d	LC50	INC	mortality	mortality	T	16200	ug/L		7.2	8.1		46.3	49.9	mg/L CaCO3	10695	Lima,A.R., C. Curtis, D.E. Hammermeister, T.P. Markee, C.E. Northcott, and L.T. Brooke	Acute and Chronic Toxicities of Arsenic(III) to Fathead Minnows, Flagfish, Daphnids, and an Amphipod	Arch. Environ. Contam. Toxicol.13(5): 595-601	1984	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Jordanella floridae	Flagfish	fry	F	M	FW	LAB	2.7917	d	LC50	NR	mortality	mortality	T	60800	ug/L							NR	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Jordanella floridae	Flagfish	fry	F	M	FW	LAB	3	d	LC50	INC	mortality	mortality	T	15900	ug/L		7.2	8.1		46.3	49.9	mg/L CaCO3	10695	Lima,A.R., C. Curtis, D.E. Hammermeister, T.P. Markee, C.E. Northcott, and L.T. Brooke	Acute and Chronic Toxicities of Arsenic(III) to Fathead Minnows, Flagfish, Daphnids, and an Amphipod	Arch. Environ. Contam. Toxicol.13(5): 595-601	1984	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Jordanella floridae	Flagfish	fry	F	M	FW	LAB	3.875	d	LC50	NR	mortality	mortality	T	40400	ug/L							NR	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Jordanella floridae	Flagfish	fry	F	M	FW	LAB	3.875	d	LC50	NR	mortality	mortality	T	49600	ug/L							NR	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Jordanella floridae	Flagfish	fry	F	M	FW	LAB	3.875	d	LC50	NR	mortality	mortality	T	55500	ug/L							NR	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Jordanella floridae	Flagfish	fry	F	M	FW	LAB	4	d	LC50	INC	mortality	mortality	T	14400	ug/L		7.2	8.1		46.3	49.9	mg/L CaCO3	10695	Lima,A.R., C. Curtis, D.E. Hammermeister, T.P. Markee, C.E. Northcott, and L.T. Brooke	Acute and Chronic Toxicities of Arsenic(III) to Fathead Minnows, Flagfish, Daphnids, and an Amphipod	Arch. Environ. Contam. Toxicol.13(5): 595-601	1984	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Lepomis macrochirus	Bluegill	juveniles	F	M	FW	LAB	1.7917	d	LC50	NR	mortality	mortality	T	60800	ug/L	7.98			140			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Lepomis macrochirus	Bluegill	juveniles	F	M	FW	LAB	10	d	LC50	NR	mortality	mortality	T	47800	ug/L	7.82			147			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	
Arsenic	7784465	Arsenenous acid, Sodium salt	Lepomis macrochirus	Bluegill	juveniles	F	M	FW	LAB	11	d	LC50	NR	mortality	mortality	T	42200	ug/L	7.82			147			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	
Arsenic	7784465	Arsenenous acid, Sodium salt	Lepomis macrochirus	Bluegill	juveniles	F	M	FW	LAB	12	d	LC50	NR	mortality	mortality	T	37000	ug/L	7.82			147			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	
Arsenic	7784465	Arsenenous acid, Sodium salt	Lepomis macrochirus	Bluegill	juveniles	F	M	FW	LAB	14	d	LC50	NR	mortality	mortality	T	31600	ug/L	7.82			147			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	
Arsenic	7784465	Arsenenous acid, Sodium salt	Lepomis macrochirus	Bluegill	juveniles	F	M	FW	LAB	2	d	LC50	NR	mortality	mortality	T	56900	ug/L	7.98			140			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Lepomis macrochirus	Bluegill	juveniles	F	M	FW	LAB	2.7917	d	LC50	NR	mortality	mortality	T	47500	ug/L	7.98			140			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Lepomis macrochirus	Bluegill	juveniles	F	M	FW	LAB	3.2083	d	LC50	NR	mortality	mortality	T	44500	ug/L	7.98			140			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Lepomis macrochirus	Bluegill	juveniles	F	M	FW	LAB	3.8333	d	LC50	NR	mortality	mortality	T	33300	ug/L	7.98			140			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Lepomis macrochirus	Bluegill	juveniles	F	M	FW	LAB	4	d	LC50	NR	mortality	mortality	T	31200	ug/L	7.98			140			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Lepomis macrochirus	Bluegill	juveniles	F	M	FW	LAB	4	d	LC50	NR	mortality	mortality	T	72000	ug/L	7.82			147			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Lepomis macrochirus	Bluegill	juveniles	F	M	FW	LAB	5	d	LC50	NR	mortality	mortality	T	67300	ug/L	7.82			147			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	
Arsenic	7784465	Arsenenous acid, Sodium salt	Lepomis macrochirus	Bluegill	juveniles	F	M	FW	LAB	7	d	LC50	NR	mortality	mortality	T	61700	ug/L	7.82			147			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	
Arsenic	7784465	Arsenenous acid, Sodium salt	Pimephales promelas	Fathead Minnow	fry	F	M	FW	LAB	1	d	LC50	INC	mortality	mortality	T	18900	ug/L		7.2	8.1		46.3	49.9	mg/L CaCO3	10695	Lima,A.R., C. Curtis, D.E. Hammermeister, T.P. Markee, C.E. Northcott, and L.T. Brooke	Acute and Chronic Toxicities of Arsenic(III) to Fathead Minnows, Flagfish, Daphnids, and an Amphipod	Arch. Environ. Contam. Toxicol.13(5): 595-601	1984	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Pimephales promelas	Fathead Minnow	fry	F	M	FW	LAB	2	d	LC50	INC	mortality	mortality	T	15900	ug/L		7.2	8.1		46.3	49.9	mg/L CaCO3	10695	Lima,A.R., C. Curtis, D.E. Hammermeister, T.P. Markee, C.E. Northcott, and L.T. Brooke	Acute and Chronic Toxicities of Arsenic(III) to Fathead Minnows, Flagfish, Daphnids, and an Amphipod	Arch. Environ. Contam. Toxicol.13(5): 595-601	1984	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Pimephales promelas	Fathead Minnow	fry	F	M	FW	LAB	3	d	LC50	INC	mortality	mortality	T	14700	ug/L		7.2	8.1		46.3	49.9	mg/L CaCO3	10695	Lima,A.R., C. Curtis, D.E. Hammermeister, T.P. Markee, C.E. Northcott, and L.T. Brooke	Acute and Chronic Toxicities of Arsenic(III) to Fathead Minnows, Flagfish, Daphnids, and an Amphipod	Arch. Environ. Contam. Toxicol.13(5): 595-601	1984	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Pimephales promelas	Fathead Minnow	fry	F	M	FW	LAB	4	d	LC50	INC	mortality	mortality	T	14100	ug/L		7.2	8.1		46.3	49.9	mg/L CaCO3	10695	Lima,A.R., C. Curtis, D.E. Hammermeister, T.P. Markee, C.E. Northcott, and L.T. Brooke	Acute and Chronic Toxicities of Arsenic(III) to Fathead Minnows, Flagfish, Daphnids, and an Amphipod	Arch. Environ. Contam. Toxicol.13(5): 595-601	1984	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Pimephales promelas	Fathead Minnow	juveniles	F	M	FW	LAB	0.5833	d	LC50	NR	mortality	mortality	T	45300	ug/L	7.77			149			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Pimephales promelas	Fathead Minnow	juveniles	F	M	FW	LAB	0.6667	d	LC50	NR	mortality	mortality	T	41700	ug/L	7.77			149			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Pimephales promelas	Fathead Minnow	juveniles	F	M	FW	LAB	1	d	LC50	NR	mortality	mortality	T	36200	ug/L	7.77			149			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Pimephales promelas	Fathead Minnow	juveniles	F	M	FW	LAB	11.7917	d	LC50	NR	mortality	mortality	T	21700	ug/L	7.77			149			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	
Arsenic	7784465	Arsenenous acid, Sodium salt	Pimephales promelas	Fathead Minnow	juveniles	F	M	FW	LAB	14	d	LC50	NR	mortality	mortality	T	18200	ug/L	7.77			149			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	
Arsenic	7784465	Arsenenous acid, Sodium salt	Pimephales promelas	Fathead Minnow	juveniles	F	M	FW	LAB	2	d	LC50	NR	mortality	mortality	T	31300	ug/L	7.77			149			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Pimephales promelas	Fathead Minnow	juveniles	F	M	FW	LAB	3	d	LC50	NR	mortality	mortality	T	29200	ug/L	7.77			149			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Pimephales promelas	Fathead Minnow	juveniles	F	M	FW	LAB	4	d	LC50	INC	mortality	mortality	T	23600	ug/L	7.8*			45*			mg/L CaCO3	15031	Broderius,S.J., M.D. Kahl, and M.D. Hoglund	Use of Joint Toxic Response to Define the Primary Mode of Toxic Action for Diverse Industrial Organic Chemicals	Environ. Toxicol. Chem.14(9): 1591-1605	1995	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Pimephales promelas	Fathead Minnow	juveniles	F	M	FW	LAB	4	d	LC50	NR	mortality	mortality	T	27000	ug/L	7.77			149			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Pimephales promelas	Fathead Minnow	juveniles	F	M	FW	LAB	7.7917	d	LC50	NR	mortality	mortality	T	24900	ug/L	7.77			149			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	
Arsenic	7784465	Arsenenous acid, Sodium salt	Pimephales promelas	Fathead Minnow	-	F	M	FW	LAB	4	d	LC50	INC	mortality	mortality	D	12600	ug/L	7.4	6	8.1	43.9			mg/L CaCO3	12093	Spehar,R.L., and J.T. Fiandt	Acute and Chronic Effects of Water Quality Criteria-Based Metal Mixtures on Three Aquatic Species	Environ. Toxicol. Chem.5(10): 917-931	1986	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Salvelinus fontinalis	Brook Trout	adult	F	M	FW	LAB	0.9167	d	LC50	NR	mortality	mortality	T	54100	ug/L	7.75			152			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Salvelinus fontinalis	Brook Trout	adult	F	M	FW	LAB	1	d	LC50	NR	mortality	mortality	T	53900	ug/L	7.75			152			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Salvelinus fontinalis	Brook Trout	adult	F	M	FW	LAB	1.25	d	LC50	NR	mortality	mortality	T	40800	ug/L	7.75			152			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Salvelinus fontinalis	Brook Trout	adult	F	M	FW	LAB	1.2917	d	LC50	NR	mortality	mortality	T	42200	ug/L	7.75			152			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Salvelinus fontinalis	Brook Trout	adult	F	M	FW	LAB	10.9167	d	LC50	NR	mortality	mortality	T	18000	ug/L	7.75			152			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	
Arsenic	7784465	Arsenenous acid, Sodium salt	Salvelinus fontinalis	Brook Trout	adult	F	M	FW	LAB	2	d	LC50	NR	mortality	mortality	T	27800	ug/L	7.75			152			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Salvelinus fontinalis	Brook Trout	adult	F	M	FW	LAB	3.875	d	LC50	NR	mortality	mortality	T	25800	ug/L	7.75			152			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Salvelinus fontinalis	Brook Trout	adult	F	M	FW	LAB	6	d	LC50	NR	mortality	mortality	T	20000	ug/L	7.75			152			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	
Arsenic	7784465	Arsenenous acid, Sodium salt	Salvelinus fontinalis	Brook Trout	adult	F	M	FW	LAB	6.8333	d	LC50	NR	mortality	mortality	T	19400	ug/L	7.75			152			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	
Arsenic	7784465	Arsenenous acid, Sodium salt	Pimephales promelas	Fathead Minnow	embryo	F	M	FW	LAB	30	d	MATC	DEC	mortality	survival	T	11000	ug/L	7.17			49.13			mg/L CaCO3	150898	Call,D.J., and D.L. Geiger	Subchronic Toxicities of Industrial and Agricultural Chemicals to Fathead Minnows (Pimephales promelas). Volume I	Center for Lake Superior Environmental Studies, University of Wisconsin, Superior, WI:318 p.	1992	
Arsenic	7784465	Arsenenous acid, Sodium salt	Pimephales promelas	Fathead Minnow	embryo	F	M	FW	LAB	NR	ht	MATC	DEC	development	normal	T	16500	ug/L	7.17			49.13			mg/L CaCO3	150898	Call,D.J., and D.L. Geiger	Subchronic Toxicities of Industrial and Agricultural Chemicals to Fathead Minnows (Pimephales promelas). Volume I	Center for Lake Superior Environmental Studies, University of Wisconsin, Superior, WI:318 p.	1992	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Pimephales promelas	Fathead Minnow	embryo	F	M	FW	LAB	30	d	MATC	DEC	growth	length	T	1500	ug/L	7.17			49.13			mg/L CaCO3	150898	Call,D.J., and D.L. Geiger	Subchronic Toxicities of Industrial and Agricultural Chemicals to Fathead Minnows (Pimephales promelas). Volume I	Center for Lake Superior Environmental Studies, University of Wisconsin, Superior, WI:318 p.	1992	
Arsenic	7784465	Arsenenous acid, Sodium salt	Pimephales promelas	Fathead Minnow	embryo	F	M	FW	LAB	30	d	MATC	DEC	growth	weight	T	1500	ug/L	7.17			49.13			mg/L CaCO3	150898	Call,D.J., and D.L. Geiger	Subchronic Toxicities of Industrial and Agricultural Chemicals to Fathead Minnows (Pimephales promelas). Volume I	Center for Lake Superior Environmental Studies, University of Wisconsin, Superior, WI:318 p.	1992	
Arsenic	7784465	Arsenenous acid, Sodium salt	Oncorhynchus mykiss	Rainbow Trout	eggs	R	M	FW	LAB	28	d	LC50	INC	mortality	mortality	T	540	ug/L	7.4			104			mg/L CaCO3	5305	Birge,W.J.	Aquatic Toxicology of Trace Elements of Coal and Fly Ash	In: J.H.Thorp and J.W.Gibbons (Eds.), Dep.Energy Symp.Ser., Energy and Environmental Stress in Aquatic Systems, Augusta, GA48:219-240	1978	

Arsenic	7784465	Arsenenous acid, Sodium salt	Oncorhynchus mykiss	Rainbow Trout	eggs	R	M	FW	LAB	28	d	LC50	NR	mortality	mortality	T	540	ug/L		7.2	7.8		93	105	mg/L CaCO3	6199	Birge,W.J., J.E. Hudson, J.A. Black, and A.G. Westerman	Embryo-Larval Bioassays on Inorganic Coal Elements and In Situ Biomonitoring of Coal-Waste Effluents	In: Symp., U.S.Fish Wildl.Serv., Dec.3-6, 1978, Surface Mining Fish Wildl.needs in Eastern U.S., WV:97-104	1978	
Arsenic	7784465	Arsenenous acid, Sodium salt	Oncorhynchus mykiss	Rainbow Trout	-	F	M	FW	LAB	6	d	LC50	NR	mortality	mortality	T	13900	ug/L							NR	395	McGeachy,S.M., and D.G. Dixon	The Impact of Temperature on the Acute Toxicity of Arsenate and Arsenite to Rainbow Trout (Salmo gairdneri)	Ecotoxicol. Environ. Saf.17(1): 86-93	1989	
Arsenic	7784465	Arsenenous acid, Sodium salt	Oncorhynchus mykiss	Rainbow Trout	-	F	M	FW	LAB	6	d	LC50	NR	mortality	mortality	T	27430	ug/L							NR	395	McGeachy,S.M., and D.G. Dixon	The Impact of Temperature on the Acute Toxicity of Arsenate and Arsenite to Rainbow Trout (Salmo gairdneri)	Ecotoxicol. Environ. Saf.17(1): 86-93	1989	
Arsenic	7784465	Arsenenous acid, Sodium salt	Carassius auratus	Goldfish	eggs	R	M	FW	LAB	7	d	LC50	INC	mortality	mortality	T	490	ug/L	7.4			195			mg/L CaCO3	5305	Birge,W.J.	Aquatic Toxicology of Trace Elements of Coal and Fly Ash	In: J.H.Thorp and J.W.Gibbons (Eds.), Dep.Energy Symp.Ser., Energy and Environmental Stress in Aquatic Systems, Augusta, GA48:219-240	1978	
Arsenic	7784465	Arsenenous acid, Sodium salt	Carassius auratus	Goldfish	juveniles	F	M	FW	LAB	0.25	d	LC50	NR	mortality	mortality	T	211200	ug/L	7.61			148			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Carassius auratus	Goldfish	juveniles	F	M	FW	LAB	0.75	d	LC50	NR	mortality	mortality	T	103100	ug/L	7.61			148			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Carassius auratus	Goldfish	juveniles	F	M	FW	LAB	1	d	LC50	NR	mortality	mortality	T	89600	ug/L	7.61			148			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Carassius auratus	Goldfish	juveniles	F	M	FW	LAB	1.5	d	LC50	NR	mortality	mortality	T	60800	ug/L	7.61			148			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Carassius auratus	Goldfish	juveniles	F	M	FW	LAB	10	d	LC50	NR	mortality	mortality	T	33100	ug/L	7.61			148			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	
Arsenic	7784465	Arsenenous acid, Sodium salt	Carassius auratus	Goldfish	juveniles	F	M	FW	LAB	14	d	LC50	NR	mortality	mortality	T	32100	ug/L	7.61			148			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	
Arsenic	7784465	Arsenenous acid, Sodium salt	Carassius auratus	Goldfish	juveniles	F	M	FW	LAB	2	d	LC50	NR	mortality	mortality	T	54600	ug/L	7.61			148			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Carassius auratus	Goldfish	juveniles	F	M	FW	LAB	3	d	LC50	NR	mortality	mortality	T	50000	ug/L	7.61			148			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Carassius auratus	Goldfish	juveniles	F	M	FW	LAB	4	d	LC50	NR	mortality	mortality	T	44900	ug/L	7.61			148			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	test duration
Arsenic	7784465	Arsenenous acid, Sodium salt	Carassius auratus	Goldfish	juveniles	F	M	FW	LAB	7	d	LC50	NR	mortality	mortality	T	36200	ug/L	7.61			148			mg/L CaCO3	838	Cardwell,R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur	Acute Toxicity of Selected Toxicants to Six Species of Fish	EPA-600/3-76-008, U.S.EPA, Duluth, MN:125 p.	1976	
Arsenic	13464374	Arsenous acid, Trisodium salt	Simocephalus serrulatus	Water Flea	-	NR	M	FW	LAB	2	d	EC50	INC	mortality	mortality	T	1400	ug/L							NR	10337	Cope,O.B.	Contamination of the Freshwater Ecosystem by Pesticides	J. Appl. Ecol.3:33-44	1966	test duration
Arsenic	13464374	Arsenous acid, Trisodium salt	Daphnia pulex	Water Flea	-	NR	M	FW	LAB	2	d	EC50	INC	mortality	mortality	T	1800	ug/L							NR	10337	Cope,O.B.	Contamination of the Freshwater Ecosystem by Pesticides	J. Appl. Ecol.3:33-44	1966	test duration
Arsenic	13464374	Arsenous acid, Trisodium salt	Lepomis macrochirus	Bluegill	-	NR	M	FW	LAB	2	d	EC50	INC	mortality	mortality	T	44000	ug/L							NR	10337	Cope,O.B.	Contamination of the Freshwater Ecosystem by Pesticides	J. Appl. Ecol.3:33-44	1966	test duration
Arsenic	13464374	Arsenous acid, Trisodium salt	Oncorhynchus mykiss	Rainbow Trout	-	NR	M	FW	LAB	2	d	EC50	INC	mortality	mortality	T	36500	ug/L							NR	10337	Cope,O.B.	Contamination of the Freshwater Ecosystem by Pesticides	J. Appl. Ecol.3:33-44	1966	test duration
Arsenic	13464374	Arsenous acid, Trisodium salt	Pteronarcys californica	Stonefly	nymphs	NR	M	FW	LAB	2	d	EC50	INC	mortality	mortality	T	80000	ug/L							NR	10337	Cope,O.B.	Contamination of the Freshwater Ecosystem by Pesticides	J. Appl. Ecol.3:33-44	1966	test duration
Arsenic		Arsenite	Oncorhynchus mykiss	Rainbow Trout				FW	LAB	6	d	LC50					18500	ug/L	7.8			380			mg/L CaCO3		Rankin and Dixon			1994	
Arsenic		Arsenite	Oncorhynchus mykiss	Rainbow Trout				FW	LAB	181	d	Chronic Toxicity Threshold			growth and eating		4900	ug/L	7.8			380			mg/L CaCO3		Rankin and Dixon			1994	
Arsenic		sodium arsenite	Gammarus fossarum	Amphipod				FW	LAB	10	d	LC50					200	ug/L									Canivet, Chambon, Gibert			2001	
Arsenic		sodium arsenite	Niphargus rhenorhodanensis	Amphipod				FW	LAB	10	d	LC50					3970	ug/L									Canivet, Chambon, Gibert			2001	
Arsenic		sodium arsenite	Asellus aquaticus	Isopod				FW	LAB	10	d	LC50					2310	ug/L									Canivet, Chambon, Gibert			2001	
Arsenic		sodium arsenite	Heptagenia sulphurea	Insect				FW	LAB	10	d	LC50					1600	ug/L									Canivet, Chambon, Gibert			2001	test species
Arsenic		sodium arsenite	Hydropsiche pellucidula	Insect				FW	LAB	10	d	LC50					2400	ug/L									Canivet, Chambon, Gibert			2001	test species
Arsenic		sodium arsenite	Physa fontinalis	Snail				FW	LAB	10	d	LC50					2200	ug/L									Canivet, Chambon, Gibert			2001	
Arsenic		Arsenic oxide	Daphnia magna	Water Flea				FW	LAB	21	d	IC10					1300	ug/L									Tisler and Zagorc-Koncan 2002			2002	
Arsenic		Arsenic oxide	Daphnia magna	Water Flea				FW	LAB	21	d	IC25					1900	ug/L									Tisler and Zagorc-Koncan 2002			2002	drop in favour of IC10
Arsenic		Arsenic oxide	Brachydanio rerio	Zebrafish						1	d	LC10					27300	ug/L									Tisler and Zagorc-Koncan 2002			2002	test duration
Arsenic		Arsenic oxide	Brachydanio rerio	Zebrafish						2	d	LC10					24500	ug/L									Tisler and Zagorc-Koncan 2002			2002	test duration
Arsenic		Arsenic oxide	Brachydanio rerio	Zebrafish						3	d	LC10					22200	ug/L									Tisler and Zagorc-Koncan 2002			2002	test duration
Arsenic		Arsenic oxide	Brachydanio rerio	Zebrafish						4	d	LC10					21900	ug/L									Tisler and Zagorc-Koncan 2002			2002	test duration
Arsenic		Arsenic oxide	Oncorhynchus mykiss	Rainbow Trout						2	d	LC10					15500	ug/L									Tisler and Zagorc-Koncan 2002			2002	test duration
Arsenic		Arsenic oxide	Oncorhynchus mykiss	Rainbow Trout						3	d	LC10					13400	ug/L									Tisler and Zagorc-Koncan 2002			2002	test duration
Arsenic		Arsenic oxide	Oncorhynchus mykiss	Rainbow Trout						4	d	LC10					12100	ug/L									Tisler and Zagorc-Koncan 2002			2002	test duration
Arsenic		Arsenic oxide	Brachydanio rerio	Zebrafish						1	d	LC50					34900	ug/L									Tisler and Zagorc-Koncan 2002			2002	test duration
Arsenic		Arsenic oxide	Brachydanio rerio	Zebrafish						2	d	LC50					32700	ug/L									Tisler and Zagorc-Koncan 2002			2002	test duration
Arsenic		Arsenic oxide	Brachydanio rerio	Zebrafish						3	d	LC50					28500	ug/L									Tisler and Zagorc-Koncan 2002			2002	test duration
Arsenic		Arsenic oxide	Brachydanio rerio	Zebrafish						4	d	LC50					28100	ug/L									Tisler and Zagorc-Koncan 2002			2002	test duration
Arsenic		Arsenic oxide	Oncorhynchus mykiss	Rainbow Trout						2	d	LC50					23200	ug/L									Tisler and Zagorc-Koncan 2002			2002	test duration
Arsenic		Arsenic oxide	Oncorhynchus mykiss	Rainbow Trout						3	d	LC50					17700	ug/L									Tisler and Zagorc-Koncan 2002			2002	test duration
Arsenic		Arsenic oxide	Oncorhynchus mykiss	Rainbow Trout						4	d	LC50					15300	ug/L									Tisler and Zagorc-Koncan 2002			2002	test duration
Arsenic		Arsenic oxide	Brachydanio rerio	Zebrafish						1	d	LC90					44800	ug/L									Tisler and Zagorc-Koncan 2002			2002	test duration
Arsenic		Arsenic oxide	Brachydanio rerio	Zebrafish						2	d	LC90					43600	ug/L									Tisler and Zagorc-Koncan 2002			2002	test duration
Arsenic		Arsenic oxide	Brachydanio rerio	Zebrafish						3	d	LC90					36700	ug/L									Tisler and Zagorc-Koncan 2002			2002	test duration
Arsenic		Arsenic oxide	Brachydanio rerio	Zebrafish						4	d	LC90					36000	ug/L									Tisler and Zagorc-Koncan 2002			2002	test duration
Arsenic		Arsenic oxide	Oncorhynchus mykiss	Rainbow Trout						2	d	LC90					34700	ug/L									Tisler and Zagorc-Koncan 2002			2002	test duration
Arsenic		Arsenic oxide	Oncorhynchus mykiss	Rainbow Trout						3	d	LC90					23400	ug/L									Tisler and Zagorc-Koncan 2002			2002	test duration
Arsenic		Arsenic oxide	Oncorhynchus mykiss	Rainbow Trout						4	d	LC90					19400	ug/L									Tisler and Zagorc-Koncan 2002			2002	test duration
Arsenic	7778430	Arsenic acid (H3AsO4), Disodium salt	Scenedesmus acutus var. acutus	Green Algae	-	S	U	FW	LAB	14	d	EC50	NR	growth	general	T	48	ug/L	7				16	17	mg/L CaCO3	5342	Vocke,R.W., K.L. Sears, J.J. O'Toole, and R.B. Wildman	Growth Responses of Selected Freshwater Algae to Trace Elements and Scrubber Ash Slurry Generated by Coal-Fired Power Plants	Water Res.14(2): 141-150	1980	

Chemical		Reference	Test Species	Taxa Group	Arsenic Species	Test Duration (days)	Bioligical Measurement	Endpoint	Effect concentration (ug/L)
Arsenic		Chen CY, Sillett KB, Folt CL, Whittemore SL, Barchowsky A. 1999. Molecular and demographic measures of arsenic stress in Daphnia pulex. Hydrobiologia 401: 229-238.	*Daphnia pulex*	Water Flea	As(V)	26	Reproduction	LOEC	10
Arsenic		Levy JL, Stauber JL, Adams M, Maher W, Kirby JK, Jolley DF. 2005. Toxicity, biotransformation, and mode of action of arsenic in two freshwater microalgae (Chlorella sp. and Monoraphidium arcuatum). Environ ToxicolChem 24: 2630-2639.	*Monoraphidium arcuatum*	Freshwater Algae	As(V)	3	Growth	MATC	56.2
			Chlorella sp.12	Green Algae	As(V)	3	Growth	MATC	1243
Arsenic		Spehar RL, Fiandt JT, Anderson RL, DeFoe DL. 1980. Comparative toxicity of arsenic compounds and their accumulation in invertebrates and fish. Arch Environ Contam Toxicol 9: 53-63.	*Gammarus pseudolimnaeus*	Scud	As(III)	14	Survival	LC_{15}	88
			Pteronarcys dorsata	Stonefly	As(III)	28	Survival	NOEC	961
			Helisorna campanulata	Snail	As(V)	28	Survival	LC_{10}	973
			Stagnicola emarginata	Snail	As(V)	28	Survival	LC_{10}	973
Arsenic		Planas D, Healey FP. 1978. Effects of arsenate on growth and phosphorus metabolism of	*Melosira granulata*	Algae	As(V)	8-24	Yield	IC_{35}/LOE C	75
			Ochromonas valesiaca	Algae	As(V)	8-24	Yield	IC_{20}/LOE C	75

CAS Number	Chemical Name	Species Scientific Name	Species Common Name	Species Group	Organism Lifestage	Observed Duration Mean	Observed Duration Units (Days)	Endpoint	Conc 1 Mean (ug/L)	Hardness Mean	Hardness Units	Alkalinity Mean	Alkalinity Units	pH Mean	Reference Number	Author	Title	Source	Publication Year	Status
	Sodium sulfate	Brachionus calyciflorus	Rotifer		<4-hr old	2	d	EC10	703000	40						Elphick et al. 2011	keep: considered chronic based on lifecycle			
	Sodium sulfate	Brachionus calyciflorus	Rotifer		<4-hr old	2	d	EC25	997000	40						Elphick et al. 2011	keep: considered chronic based on lifecycle			
	Sodium sulfate	Brachionus calyciflorus	Rotifer		<4-hr old	2	d	EC50	1214000	40						Elphick et al. 2011	keep: considered chronic based on lifecycle			drop: in favour of EC10/25
	Sodium sulfate	Ceriodaphnia dubia	Water Flea		<24-hr old	7	d	EC10	137000	40						Elphick et al. 2011				
	Sodium sulfate	Ceriodaphnia dubia	Water Flea		<24-hr old	7	d	EC25	246000	40						Elphick et al. 2011				
	Sodium sulfate	Ceriodaphnia dubia	Water Flea		<24-hr old	7	d	EC50	465000	40						Elphick et al. 2011				drop: in favour of EC10/25
		Ceriodaphnia dubia	Water Flea			7	d	IC25	496000	44		101				Lasier and Hardin (2010)				
		Ceriodaphnia dubia	Water Flea			7	d	IC25	625000	45		44				Lasier and Hardin (2010)				
		Ceriodaphnia dubia	Water Flea			7	d	IC50	715000	44		101				Lasier and Hardin (2010)				drop: in favour of EC10/25
		Ceriodaphnia dubia	Water Flea			7	d	IC50	766000	45		44				Lasier and Hardin (2010)				drop: in favour of EC10/25
	Sodium sulfate	Ceriodaphnia dubia	Water Flea		<24-hr old	7	d	EC50	914000	40						Elphick et al. 2011				drop: in favour of EC10/25
	Sodium sulfate	Fontinalis antipyretica	Aquatic moss		--	21	d	EC10	53000	15						Elphick et al. 2011				BC indigenous aquatic moss
	Sodium sulfate	Fontinalis antipyretica	Aquatic moss		--	21	d	EC25	176000	15						Elphick et al. 2011				BC indigenous aquatic moss
	Sodium sulfate	Fontinalis antipyretica	Aquatic moss		--	21	d	EC10	297000	15						Elphick et al. 2011				BC indigenous aquatic moss
	Sodium sulfate	Fontinalis antipyretica	Aquatic moss		--	21	d	EC50	298000	15						Elphick et al. 2011				drop: in favour of EC10/25
	Sodium sulfate	Fontinalis antipyretica	Aquatic moss		--	21	d	EC10	531000	15						Elphick et al. 2011				BC indigenous aquatic moss
	Sodium sulfate	Fontinalis antipyretica	Aquatic moss		--	21	d	EC10	716000	15						Elphick et al. 2011				BC indigenous aquatic moss
	Sodium sulfate	Fontinalis antipyretica	Aquatic moss		--	21	d	EC25	820000	15						Elphick et al. 2011				BC indigenous aquatic moss
	Sodium sulfate	Fontinalis antipyretica	Aquatic moss		--	21	d	EC25	828000	15						Elphick et al. 2011				BC indigenous aquatic moss
	Sodium sulfate	Fontinalis antipyretica	Aquatic moss		--	21	d	EC25	849000	15						Elphick et al. 2011				BC indigenous aquatic moss
	Sodium sulfate	Fontinalis antipyretica	Aquatic moss		--	21	d	EC50	1029000	15						Elphick et al. 2011				drop: in favour of EC10/25
	Sodium sulfate	Fontinalis antipyretica	Aquatic moss		--	21	d	EC50	2522000	15						Elphick et al. 2011				drop: in favour of EC10/25
	Sodium sulfate	Fontinalis antipyretica	Aquatic moss		--	21	d	EC50	2575000	15						Elphick et al. 2011				drop: in favour of EC10/25
		Hyalella azteca	Scud			4	d	LC50	193000	25						Pacific Environmental Science Centre (2007); UNPUBLISHED DATA				
		Hyalella azteca	Scud			4	d	LC50	205000	25						Pacific Environmental Science Centre (1996)				
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	569000	25	mg/L CaCO3		NR		97393	Davies,T.D., and K.J. Hall	Acute Toxicity of Sodium Sulphate to	Environ. Toxicol. Chem.26(6): 1243-1247	2007	
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	1448000	50	mg/L CaCO3		NR		97393	Davies,T.D., and K.J. Hall	Acute Toxicity of Sodium Sulphate to	Environ. Toxicol. Chem.26(6): 1243-1247	2007	
7778189	(1:1)	Lepomis macrochirus	Bluegill	Fish; Standard Test Species	NR	4	d	LC50	2980000	10	mg/L CaCO3		NR		5683	Academy of Natural Sciences	Chemicals Commonly Found in Industrial	Health Service Grant, Acad.of Nat.Sci.,	1960	drop: duration
7757826	Sulfuric acid disodium salt	Lepomis macrochirus	Bluegill	Fish; Standard Test Species	NR	4	d	LC50	13500000	10	mg/L CaCO3		NR		5683	Academy of Natural Sciences	Chemicals Commonly Found in Industrial	Health Service Grant, Acad.of Nat.Sci.,	1960	drop: duration
	Sodium sulfate	Oncorhynchus kisutch	Coho salmon		early life stage salmo	10	d	EC10	941000	15						Elphick et al. 2011				
	Sodium sulfate	Oncorhynchus kisutch	Coho salmon		early life stage salmo	10	d	EC25	1264000	15						Elphick et al. 2011				
	Sodium sulfate	Oncorhynchus kisutch	Coho salmon		early life stage salmo	10	d	EC50	1755000	15						Elphick et al. 2011				drop: in favour of EC10/25
	Sodium sulfate	Oncorhynchus mykiss	Rainbow Trout		early life stage salmo	31	d	EC10	356000	15						Elphick et al. 2011				
	Sodium sulfate	Oncorhynchus mykiss	Rainbow Trout		early life stage salmo	31	d	EC25	501000	15						Elphick et al. 2011				
	Sodium sulfate	Oncorhynchus mykiss	Rainbow Trout		early life stage salmo	31	d	EC50	734000	15						Elphick et al. 2011				drop: in favour of EC10/25
	Na2SO4	Oncorhynchus mykiss	Rainbow Trout			7	d	EC50	1105000	25						Singleton 2000, BCMELP				drop: in favour of EC10/25
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC10	388000	40						Elphick et al. 2011				
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC10	559000	40						Elphick et al. 2011				
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC25	752000	40						Elphick et al. 2011				
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC25	933000	40						Elphick et al. 2011				
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC50	1244000	40						Elphick et al. 2011				drop: in favour of EC10/25
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC50	1649000	40						Elphick et al. 2011				drop: in favour of EC10/25
	Sodium sulfate	Pseudacris regilla	Pacific Tree Frog		tadpoles	21	d	EC10	719000	15						Elphick et al. 2011				
	Sodium sulfate	Pseudacris regilla	Pacific Tree Frog		tadpoles	21	d	EC25	1190000	15						Elphick et al. 2011				
	Sodium sulfate	Pseudacris regilla	Pacific Tree Frog		tadpoles	21	d	EC10	1342000	15						Elphick et al. 2011				
	Sodium sulfate	Pseudacris regilla	Pacific Tree Frog		tadpoles	21	d	EC25	1560000	15						Elphick et al. 2011				
	Sodium sulfate	Pseudacris regilla	Pacific Tree Frog		tadpoles	21	d	EC50	1850000	15						Elphick et al. 2011				drop: in favour of EC10/25
	Sodium sulfate	Pseudacris regilla	Pacific Tree Frog		tadpoles	21	d	EC50	1853000	15						Elphick et al. 2011				drop: in favour of EC10/25
	Sodium sulfate	Pseudokirchneriella subcapitata	Algae		--	3	d	EC10	700000	10						Elphick et al. 2011				keep: chronic considering life cycle
	Sodium sulfate	Pseudokirchneriella subcapitata	Algae		--	3	d	EC25	1112000	10						Elphick et al. 2011				keep: chronic considering life cycle
	Sodium sulfate	Pseudokirchneriella subcapitata	Algae		--	3	d	EC50	1430000	10						Elphick et al. 2011				drop: in favour of EC10/25

CAS Number	Chemical Name	Species Scientific Name	Species Common Name	Species Group	Organism Lifestage	Observed Duration Mean	Observed Duration Units (Days)	Endpoint	Conc 1 Mean (ug/L)	Hardness Mean	Hardness Units	Alkalinity Mean	Alkalinity Units	pH Mean	Reference Number	Author	Title	Source	Publication Year	Status
	Sodium sulfate	Brachionus calyciflorus			<4-hr old	2	d	EC10	245000	80						Elphick et al. 2011	keep: considered chronic based on lifecycle			
	Sodium sulfate	Brachionus calyciflorus			<4-hr old	2	d	EC25	1824000	80						Elphick et al. 2011	keep: considered chronic based on lifecycle			
	Sodium sulfate	Brachionus calyciflorus			<4-hr old	2	d	EC50	2200000	80						Elphick et al. 2011	keep: considered chronic based on lifecycle			drop: in favour of EC10/25
	Sodium sulfate	Ceriodaphnia dubia	Water Flea		<24-hr old	7	d	EC10	622000	80						Elphick et al. 2011				
	Sodium sulfate	Ceriodaphnia dubia	Water Flea		<24-hr old	7	d	EC25	855000	80						Elphick et al. 2011				
		Ceriodaphnia dubia	Water Flea			7	d	IC25	1060000	93		66				Lasier and Hardin (2010)				
	Sodium sulfate	Ceriodaphnia dubia	Water Flea		<24-hr old	7	d	EC50	1129000	80						Elphick et al. 2011				drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Ceriodaphnia dubia	Water Flea	Crustaceans; Standard Test Species	NE	7	d	EC50	1148000	92	mg/L CaCO3	62*	CaCO3	8.0*	114662	Soucek,D.J.	the Freshwater Crustacean, Ceriodaphnia	Ecotoxicology16(3): 317-325	2007	drop: in favour of EC10/25
		Ceriodaphnia dubia	Water Flea			7	d	IC50	1252000	93		66				Lasier and Hardin (2010)				drop: in favour of EC10/25
	Sodium sulfate	Ceriodaphnia dubia	Water Flea		<24-hr old	7	d	EC50	1267000	80						Elphick et al. 2011				drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Ceriodaphnia dubia	Water Flea	Crustaceans; Standard Test Species	NE	7	d	EC50	1458000	92	mg/L CaCO3	62*	CaCO3	8.0*	114662	Soucek,D.J.	the Freshwater Crustacean, Ceriodaphnia	Ecotoxicology16(3): 317-325	2007	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Ceriodaphnia dubia	Water Flea	Crustaceans; Standard Test Species	NE	7	d	LC50	1955980	105	mg/L CaCO3	76*	CaCO3		116817	Aquatic Toxicology Group	Toxicity Testing	Noranda Mining and Exploration Inc., Brenda	1998	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Ceriodaphnia dubia	Water Flea	Crustaceans; Standard Test Species	NE	7	d	LC50	2049000	92	mg/L CaCO3	62*	CaCO3	8.0*	114662	Soucek,D.J.	the Freshwater Crustacean, Ceriodaphnia	Ecotoxicology16(3): 317-325	2007	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Ceriodaphnia dubia	Water Flea	Crustaceans; Standard Test Species	NE	7	d	IC50	2061180	105	mg/L CaCO3	76*	CaCO3		116817	Aquatic Toxicology Group	Toxicity Testing	Noranda Mining and Exploration Inc., Brenda	1998	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Ceriodaphnia dubia	Water Flea	Crustaceans; Standard Test Species	NE	7	d	LC50	2442000	92	mg/L CaCO3	62*	CaCO3	8.0*	114662	Soucek,D.J.	the Freshwater Crustacean, Ceriodaphnia	Ecotoxicology16(3): 317-325	2007	drop: in favour of EC10/25
	Na2SO4	Daphnia magna	Water Flea			21	d	IC25	833000	100						Singleton 2000, BCMELP				
	Sodium sulfate	Hyalella azteca	Scud		--	14	d	EC10	380000	80						Elphick et al. 2011				
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	IN	4	d	LC50	512000	94	mg/L CaCO3		NR	7.9*	116417	Soucek,D.J., and A.J. Kennedy	Acclimation on the Acute Toxicity of Sulfate	Environ. Toxicol. Chem.24(5): 1204-1210	2005	drop: in favour of EC10/25
	Sodium sulfate	Hyalella azteca	Scud		--	14	d	EC25	1056000	80						Elphick et al. 2011				
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	IN	4	d	LC50	1387000	100	mg/L CaCO3		NR		116831	Illinois National History Survey	Chronic Toxicity of Sulfate to Freshwater	U.S.EPA, Region 5, Chicago, IL by Illinois	2005	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	1433000	98	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	1438000	100	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	IN	4	d	LC50	1470000	100	mg/L CaCO3		NR		116831	Illinois National History Survey	Chronic Toxicity of Sulfate to Freshwater	U.S.EPA, Region 5, Chicago, IL by Illinois	2005	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	1480000	100	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	IN	4	d	LC50	1562000	100	mg/L CaCO3		NR		116831	Illinois National History Survey	Chronic Toxicity of Sulfate to Freshwater	U.S.EPA, Region 5, Chicago, IL by Illinois	2005	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	IN	4	d	LC50	1563000	100	mg/L CaCO3		NR		116831	Illinois National History Survey	Chronic Toxicity of Sulfate to Freshwater	U.S.EPA, Region 5, Chicago, IL by Illinois	2005	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	1580000	75	mg/L CaCO3		NR		97393	Davies,T.D., and K.J. Hall	Acute Toxicity of Sodium Sulphate to	Environ. Toxicol. Chem.26(6): 1243-1247	2007	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	1616000	96	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	1621000	98	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	1679000	98	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	1684000	100	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	IN	4	d	LC50	1691000	100	mg/L CaCO3		NR		116831	Illinois National History Survey	Chronic Toxicity of Sulfate to Freshwater	U.S.EPA, Region 5, Chicago, IL by Illinois	2005	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	1767000	96	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	1779000	96	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	IN	4	d	LC50	1799000	100	mg/L CaCO3		NR		116831	Illinois National History Survey	Chronic Toxicity of Sulfate to Freshwater	U.S.EPA, Region 5, Chicago, IL by Illinois	2005	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	1820000	100	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	1830000	100	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	IN	4	d	LC50	1854000	100	mg/L CaCO3		NR		116831	Illinois National History Survey	Chronic Toxicity of Sulfate to Freshwater	U.S.EPA, Region 5, Chicago, IL by Illinois	2005	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	1879000	98	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	1901000	100	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	IN	4	d	LC50	1938000	100	mg/L CaCO3		NR		116831	Illinois National History Survey	Chronic Toxicity of Sulfate to Freshwater	U.S.EPA, Region 5, Chicago, IL by Illinois	2005	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	2000000	106	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	2002000	100	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	2002000	102	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: in favour of EC10/25
	Sodium sulfate	Hyalella azteca	Scud		--	96 hr or 14 d		EC10	2069000	80						Elphick et al. 2011				
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	2101000	102	mg/L CaCO3		NR		97393	Davies,T.D., and K.J. Hall	Acute Toxicity of Sodium Sulphate to	Environ. Toxicol. Chem.26(6): 1243-1247	2007	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	2240000	102	mg/L CaCO3		NR		97393	Davies,T.D., and K.J. Hall	Acute Toxicity of Sodium Sulphate to	Environ. Toxicol. Chem.26(6): 1243-1247	2007	drop: in favour of EC10/25
	Sodium sulfate	Hyalella azteca	Scud		--	96 hr or 14 d		EC25	2246000	80						Elphick et al. 2011				
	Sodium sulfate	Hyalella azteca	Scud		--	14	d	EC50	2412000	80						Elphick et al. 2011				drop: in favour of EC10/25
	Sodium sulfate	Hyalella azteca	Scud		--	96 hr or 14 d		EC50	2461000	80						Elphick et al. 2011				drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	2725000	102	mg/L CaCO3		NR		97393	Davies,T.D., and K.J. Hall	Acute Toxicity of Sodium Sulphate to	Environ. Toxicol. Chem.26(6): 1243-1247	2007	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	IN	4	d	LC50	2855000	107	mg/L CaCO3		NR	7.9	116417	Soucek,D.J., and A.J. Kennedy	Acclimation on the Acute Toxicity of Sulfate	Environ. Toxicol. Chem.24(5): 1204-1210	2005	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	3144000	123	mg/L CaCO3		NR		97393	Davies,T.D., and K.J. Hall	Acute Toxicity of Sodium Sulphate to	Environ. Toxicol. Chem.26(6): 1243-1247	2007	drop: in favour of EC10/25
		Hyalella azteca	Scud			4	d	LC50	3711000	100						Pacific Environmental Science Centre (1996)				drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Lampsilis siliquoidea	Lamp-Mussel	Molluscs	JV	4	d	LC50	1727000	100	mg/L CaCO3		NR		116831	Illinois National History Survey	Chronic Toxicity of Sulfate to Freshwater	U.S.EPA, Region 5, Chicago, IL by Illinois	2005	drop: duration
7757826	Sulfuric acid disodium salt	Lampsilis siliquoidea	Lamp-Mussel	Molluscs	JV	4	d	LC50	1822000	100	mg/L CaCO3		NR		116831	Illinois National History Survey	Chronic Toxicity of Sulfate to Freshwater	U.S.EPA, Region 5, Chicago, IL by Illinois	2005	drop: duration
7757826	Sulfuric acid disodium salt	Lampsilis siliquoidea	Lamp-Mussel	Molluscs	JV	4	d	LC50	3377000	100	mg/L CaCO3		NR		116831	Illinois National History Survey	Chronic Toxicity of Sulfate to Freshwater	U.S.EPA, Region 5, Chicago, IL by Illinois	2005	drop: duration
7757826	Sulfuric acid disodium salt	Oncorhynchus mykiss	Rainbow Trout	Threatened and Endangered Species	EG	7	d	EC50	1477430	105	mg/L CaCO3	76*	CaCO3		116817	Aquatic Toxicology Group	Toxicity Testing	Noranda Mining and Exploration Inc., Brenda	1998	drop: in favour of EC10/25
	Na2SO4	Oncorhynchus mykiss	Rainbow Trout			7	d	EC25	1280000	100						Singleton 2000, BC Research				
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC10	1342000	80						Elphick et al. 2011				
7757826	Sulfuric acid disodium salt	Pimephales promelas	Fathead Minnow	Fish; Standard Test Species	LV	7	d	LC50	1355480	105	mg/L CaCO3	76*	CaCO3		116817	Aquatic Toxicology Group	Toxicity Testing	Noranda Mining and Exploration Inc., Brenda	1998	drop: in favour of EC10/25
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC10	1555000	80						Elphick et al. 2011				
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC25	1950000	80						Elphick et al. 2011				
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC25	2183000	80						Elphick et al. 2011				
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC50	2591000	80						Elphick et al. 2011				drop: in favour of EC10/25
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC50	2938000	80						Elphick et al. 2011				drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Pimephales promelas	Fathead Minnow	Fish; Standard Test Species	LV	7	d	IC50	3449810	105	mg/L CaCO3	76*	CaCO3		116817	Aquatic Toxicology Group	Toxicity Testing	Noranda Mining and Exploration Inc., Brenda	1998	drop: in favour of EC10/25
	Sodium sulfate	Pseudacris regilla	Pacific Tree Frog		tadpoles	21	d	EC10	985000	80						Elphick et al. 2011				
	Sodium sulfate	Pseudacris regilla	Pacific Tree Frog		tadpoles	21	d	EC25	1205000	80						Elphick et al. 2011				
	Sodium sulfate	Pseudacris regilla	Pacific Tree Frog		tadpoles	21	d	EC10	1252000	80						Elphick et al. 2011				
	Sodium sulfate	Pseudacris regilla	Pacific Tree Frog		tadpoles	21	d	EC25	1348000	80						Elphick et al. 2011				
	Sodium sulfate	Pseudacris regilla	Pacific Tree Frog		tadpoles	21	d	EC50	1507000	80						Elphick et al. 2011				drop: in favour of EC10/25
	Sodium sulfate	Pseudacris regilla	Pacific Tree Frog		tadpoles	21	d	EC50	1510000	80						Elphick et al. 2011				drop: in favour of EC10/25
	Sodium sulfate	Pseudokirchneriella subcapitata	Algae		--	3	d	EC10	1345000	80						Elphick et al. 2011				keep: chronic considering life cycle
	Sodium sulfate	Pseudokirchneriella subcapitata	Algae		--	3	d	EC25	1763000	80						Elphick et al. 2011				keep: chronic considering life cycle
	Sodium sulfate	Pseudokirchneriella subcapitata	Algae		--	3	d	EC50	2742000	80						Elphick et al. 2011				drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Sphaerium simile	Grooved Fingernail Clam	Molluscs	JV	4	d	LC50	2078000	94	mg/L CaCO3		NR	7.9*	116417	Soucek,D.J., and A.J. Kennedy	Acclimation on the Acute Toxicity of Sulfate	Environ. Toxicol. Chem.24(5): 1204-1210	2005	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Sphaerium simile	Grooved Fingernail Clam	Molluscs	NR	4	d	LC50	2186000	84	mg/L CaCO3		NR		116831	Illinois National History Survey	Chronic Toxicity of Sulfate to Freshwater	U.S.EPA, Region 5, Chicago, IL by Illinois	2005	drop: duration
7757826	Sulfuric acid disodium salt	Sphaerium simile	Grooved Fingernail Clam	Molluscs	NR	4	d	LC50	2200000	93	mg/L CaCO3		NR		116831	Illinois National History Survey	Chronic Toxicity of Sulfate to Freshwater	U.S.EPA, Region 5, Chicago, IL by Illinois	2005	drop: duration
7757826	Sulfuric acid disodium salt	Sphaerium simile	Grooved Fingernail Clam	Molluscs	NR	4	d	LC50	2650000	90	mg/L CaCO3		NR		116831	Illinois National History Survey	Chronic Toxicity of Sulfate to Freshwater	U.S.EPA, Region 5, Chicago, IL by Illinois	2005	drop: duration

CAS Number	Chemical Name	Species Scientific Name	Species Common Name	Species Group	Organism Lifestage	Observed Duration Mean	Observed Duration Units (Days)	Endpoint	Conc 1 Mean (ug/L)	Hardness Mean	Hardness Units	Alkalinity Mean	Alkalinity Units	pH Mean	Reference Number	Author	Title	Source	Publication Year	Status
	Sodium sulfate	Brachionus calyciflorus			<4-hr old	2	d	EC10	678000	160						Elphick et al. 2011	keep: considered chronic based on lifecycle			
	Sodium sulfate	Brachionus calyciflorus			<4-hr old	2	d	EC25	1292000	160						Elphick et al. 2011	keep: considered chronic based on lifecycle			
	Sodium sulfate	Brachionus calyciflorus			<4-hr old	2	d	EC50	1800000	160						Elphick et al. 2011	keep: considered chronic based on lifecycle			drop: in favour of EC10/25
	Sodium sulfate	Ceriodaphnia dubia	Water Flea		<24-hr old	7	d	EC10	1174000	160						Elphick et al. 2011				
	Sodium sulfate	Ceriodaphnia dubia	Water Flea		<24-hr old	7	d	EC25	1212000	160						Elphick et al. 2011				
	Sodium sulfate	Ceriodaphnia dubia	Water Flea		<24-hr old	7	d	EC50	1257000	160						Elphick et al. 2011				drop: in favour of EC10/25
	Sodium sulfate	Ceriodaphnia dubia	Water Flea		<24-hr old	7	d	EC50	1551000	160						Elphick et al. 2011				drop: in favour of EC10/25
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC10	2491000	160						Elphick et al. 2011				
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC25	3077000	160						Elphick et al. 2011				
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC10	3231000	160						Elphick et al. 2011				
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC25	3801000	160						Elphick et al. 2011				
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC50	3892000	160						Elphick et al. 2011				drop: in favour of EC10/25
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC50	4553000	160						Elphick et al. 2011				drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	2203000	192	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: duration
7757826	Sulfuric acid disodium salt	Sphaerium simile	Grooved Fingernail Clam	Molluscs	NR	4	d	LC50	2190000	193	mg/L CaCO3		NR		116831	Illinois National History Survey	Chronic Toxicity of Sulfate to Freshwater	U.S.EPA, Region 5, Chicago, IL by Illinois	2005	drop: duration
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	2740000	194	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: duration
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	2955000	196	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: duration
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	5259000	250	mg/L CaCO3		NR		97393	Davies,T.D., and K.J. Hall	Acute Toxicity of Sodium Sulphate to	Environ. Toxicol. Chem.26(6): 1243-1247	2007	drop: duration
		Hyalella azteca	Scud			4	d	LC50	6787000	250						Pacific Environmental Science Centre (1996)				drop: duration
	Na2SO4	Daphnia magna	Water Flea			21	d	IC25	1476000	250						Singleton 2000, BCMELP				
	Na2SO4	Oncorhynchus mykiss	Rainbow Trout			7	d	EC50	3116000	250						Singleton 2000, BCMELP				

CAS Number	Chemical Name	Species Scientific Name	Species Common Name	Species Group	Organism Lifestage	Observed Duration Mean (Days)	Observed Duration Units (Days)	Endpoint	Conc 1 Mean (ug/L)	Hardness Mean	Hardness Units	Alkalinity Mean	Alkalinity Units	pH Mean	Reference Number	Author	Title	Source	Publication Year	Status
	Sodium sulfate	Brachionus calyciflorus			<4-hr old	2	d	EC10	844000	320						Elphick et al. 2011	keep: considered chronic based on lifecycle			
	Sodium sulfate	Brachionus calyciflorus			<4-hr old	2	d	EC25	1027000	320						Elphick et al. 2011	keep: considered chronic based on lifecycle			
	Sodium sulfate	Brachionus calyciflorus			<4-hr old	2	d	EC50	1800000	320						Elphick et al. 2011	keep: considered chronic based on lifecycle			drop: in favour of EC10/25
	Sodium sulfate	Ceriodaphnia dubia	Water Flea		<24-hr old	7	d	EC10	402000	320						Elphick et al. 2011				
	Sodium sulfate	Ceriodaphnia dubia	Water Flea		<24-hr old	7	d	EC25	542000	320						Elphick et al. 2011				
	Sodium sulfate	Ceriodaphnia dubia	Water Flea		<24-hr old	7	d	EC50	843000	320						Elphick et al. 2011				drop: in favour of EC10/25
	Sodium sulfate	Ceriodaphnia dubia	Water Flea		<24-hr old	7	d	EC50	1619000	320						Elphick et al. 2011				drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	2121000	296	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: duration
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	2724000	392	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: duration
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	2840000	292	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: duration
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	3462000	292	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: duration
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	3796000	482	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: duration
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	4046000	396	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: duration
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	4145000	486	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: duration
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	4336000	396	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: duration
7757826	Sulfuric acid disodium salt	Hyalella azteca	Scud	Crustaceans; Standard Test Species	NR	4	d	LC50	4345000	482	mg/L CaCO3		NR		96313	Soucek,D.J.	Regulated Acute Effects of Sodium Sulfate	Environ. Toxicol. Chem.26(4): 773-779	2007	drop: duration
7757826	Sulfuric acid disodium salt	Lampsilis siliquoidea	Lamp-Mussel	Molluscs	JV	4	d	LC50	3525000	300	mg/L CaCO3		NR		116831	Illinois National History Survey	Chronic Toxicity of Sulfate to Freshwater	U.S.EPA, Region 5, Chicago, IL by Illinois	2005	drop: duration
7757826	Sulfuric acid disodium salt	Lampsilis siliquoidea	Lamp-Mussel	Molluscs	JV	4	d	LC50	3729000	500	mg/L CaCO3		NR		116831	Illinois National History Survey	Chronic Toxicity of Sulfate to Freshwater	U.S.EPA, Region 5, Chicago, IL by Illinois	2005	drop: duration
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC10	1323000	320						Elphick et al. 2011				
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC10	2451000	320						Elphick et al. 2011				
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC25	3463000	320						Elphick et al. 2011				
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC25	5250000	320						Elphick et al. 2011				
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC50	5250000	320						Elphick et al. 2011				drop: in favour of EC10/25
	Sodium sulfate	Pimephales promelas	Fathead Minnow		24-hr post hatch	7	d	EC50	5250000	320						Elphick et al. 2011				drop: in favour of EC10/25
7487889	Sulfuric acid magnesium salt (1:1)	Pimephales promelas	Fathead Minnow	Fish; Standard Test Species	LV	4	d	LC50	7900000	563	mg/L CaCO3	157*	mg/L CaCO3	8.3*	116913	D.B. McWhorter, and H.L. Bergman	Shale Leachates from Piceance Basin,	Environ. Toxicol. Chem.4:559-572	1985	drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Pimephales promelas	Fathead Minnow	Fish; Standard Test Species	LV	4	d	LC50	15200000	563	mg/L CaCO3	157*	mg/L CaCO3	8.3*	116913	D.B. McWhorter, and H.L. Bergman	Shale Leachates from Piceance Basin,	Environ. Toxicol. Chem.4:559-572	1985	drop: in favour of EC10/25
	Sodium sulfate	Pseudokirchneriella subcapitata	Algae		--	3	d	EC10	1377000	320						Elphick et al. 2011				keep: chronic considering life cycle
	Sodium sulfate	Pseudokirchneriella subcapitata	Algae		--	3	d	EC25	1727000	320						Elphick et al. 2011				keep: chronic considering life cycle
	Sodium sulfate	Pseudokirchneriella subcapitata	Algae		--	3	d	EC50	2518000	320						Elphick et al. 2011				drop: in favour of EC10/25
7757826	Sulfuric acid disodium salt	Sphaerium simile	Grooved Fingernail Clam	Molluscs	NR	4	d	LC50	2590000	280	mg/L CaCO3		NR		116831	Illinois National History Survey	Chronic Toxicity of Sulfate to Freshwater	U.S.EPA, Region 5, Chicago, IL by Illinois	2005	drop: duration
7757826	Sulfuric acid disodium salt	Sphaerium simile	Grooved Fingernail Clam	Molluscs	NR	4	d	LC50	2926000	269	mg/L CaCO3		NR		116831	Illinois National History Survey	Chronic Toxicity of Sulfate to Freshwater	U.S.EPA, Region 5, Chicago, IL by Illinois	2005	drop: duration

ATTACHMENT L.2

CCME 2011 FACTSHEET FOR CHLORIDE

Canadian Water Quality Guidelines for the Protection of Aquatic Life

CHLORIDE

The chloride ion (Cl^-) is the negatively charged chlorine atom (Cl) (CAS No. 7782-50-5, atomic mass 35.45 g/mol) formed when the chlorine atom picks up one electron. The chlorine atom is a halogen (boiling point of 33.9°C), and never exists in free form in the environment (Nagpal *et al*., 2003). The chloride ion commonly occurs as a salt. Some common chloride salts include NaCl, KCl, $MgCl_2$ (for de-icing of roads and walkways), $CaCl_2$ (used as a dust suppressant on roads), $AlCl_2$ (used in municipal drinking water and wastewater treatment facilities for removal of suspended particles and bacteria from the water), as well as $FeCl_3$ (used at municipal wastewater treatment plants to enhance the removal of phosphorus). Chloride-containing compounds are highly soluble in water (e.g. solubility of NaCl is 35.7g/100g water at 0°C), hence they easily dissociate and tend to remain in their ionic forms (e.g. Na^+ and Cl^-) once dissolved in water. The chloride ion is highly mobile and concentrations in water are not affected by chemical reactions. Hence chloride does not biodegrade, readily precipitate, volatilize, or bioaccumulate. The chloride ion does not adsorb readily onto mineral surfaces and therefore concentrations remain high in surface water and sediment pore water, and low in sediment (Mayer *et al* 1999; Evans and Frick 2001; WHO 2003). Overall, inorganic chloride is generally considered to be a hydrologically and chemically inert substance. However, research by Oberg (2006) has revealed that a large portion of inorganic chloride that is deposited in terrestrial environments is transformed to organic chloride (chlorinated organic matter) in soil or vegetation (with the reverse occurring as well whereby chlorinated organic matter converts to inorganic chloride), although the underlying mechanisms are not fully understood.

It is advised to read the section "Guidance on the Use of Guidelines" found on page 11 of this factsheet before applying the above noted guidelines.

Sources to the environment: The chloride ion is naturally occurring, and therefore detection of increased levels of chloride in surface waters does not necessarily imply an anthropogenic source (although chloride is often used as an indicator of increasing urbanization in a watershed). Natural sources of chloride in aquatic systems include naturally-occurring saline lakes and groundwater discharges from saline aquifers. Canada has many known naturally occurring salt deposits. Major salt deposits (marine evaporite) are found in Nova Scotia, New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan and Alberta (Dumont 2008; CANMET 1991). Other natural sources include volcanic emanations, sea spray, seawater intrusion

Table 1. Canadian Water Quality Guideline for the Chloride ion[a] for the protection of aquatic life.

	Long-Term Exposure[b] (mg Cl^-/L)	Short-Term Exposure[c] (mg Cl^-/L)
Freshwater	120[d]	640
Marine	NRG	NRG

NRG = no recommended guideline.

[a]Chloride toxicity to freshwater organisms was evaluated using tests with both $CaCl_2$ and NaCl salts.

[b]Derived with mostly no- and some low-effect data and are intended to protect against negative effects to aquatic ecosystem structure and function during indefinite exposures (e.g. abide by the guiding principle as per CCME 2007).

[c]Derived with severe-effects data (such as lethality) and are not intended to protect all components of aquatic ecosystem structure and function but rather to protect most species against lethality during severe but transient events (e.g. inappropriate application or disposal of the substance of concern).

[d]The long-term CWQG may not be protective of certain species of endangered and special concern freshwater mussels (as designated by the Committee on the Status of Endangered Wildlife in Canada, or COSEWIC). This specifically applies to two species; the wavy-rayed lampmussel (*Lampsilis fasciola*) (COSEWIC 2010a) and the northern riffleshell mussel (*Epioblasma torulosa rangiana*) (COSEWIC 2010b) (Table 2). The wavy-rayed lampmussel is indigenous to the lower Great Lakes and associated tributaries, specifically western Lake Erie, the Detroit River, Lake St. Clair and several southwestern Ontario streams. The northern riffleshell mussel is indigenous to the Ausable, Grand, Sydenham and Thames Rivers in Ontario, as well as the Lake St. Clair delta. Discussion with provincial regulators should occur if there is a need to develop more protective site specific values.

Table 2. 24h EC_{10} values (survival of glochidia) for 2 species of COSEWIC assessed freshwater mussels

COSEWIC Assessed Species	24h EC_{10} (mg Cl^-/L).	95% Confidence Intervals
Lampsilis fasciola Wavy-rayed lampmussel (COSEWIC special concern)	24 (Bringolf, 2010)	-79[1], 127
Epioblasma torulosa rangiana Northern riffleshell mussel (COSEWIC endangered)	42 (Gillis, 2009)	24, 57

[1] The negative lower fiducial limit is an artefact of the statistics. Biologically this can be interpreted as meaning that a 10% effect can be observed between a concentration of 0 and the upper 95% confidence limit. Therefore, the effect is not significantly different from the control (no-effect concentration) and could be due to natural variability.

in coastal areas (NRC 1977), as well as wildfires and logging (remobilization of major ions in lake watersheds impacted by these perturbations) (Pinel-Alloul *et al* 2002). Seawater salt concentrations are approximately 35,000 mg/L of which approximately 55% is chloride, which equates to 19,250 mg Cl^-/L (Evans and Frick 2001). Chloride compounds from anthropogenic sources enter the aquatic ecosystem through various pathways, such as wastewater effluents, stream inflow, road or overland runoff, groundwater inputs, and leaching from contaminated soils (Evans and Frick, 2001). A major non-industrial anthropogenic source of chloride to densely populated regions of Canada (e.g. southern Ontario and Quebec) is the application and storage of road salt for snow and ice control in the winter (97% of road salt used in Canada is in the form of NaCl, 2.9% in the form of $CaCl_2$, and 0.1% as $MgCl_2$ and KCl) (Chapra *et al.*, 2009; L. Trudell, Environment Canada, pers. comm.). Road salt is the single largest source of chloride entering Lake Ontario from local sources (Evans and Frick 2001), and is also a significant source of chloride loading into Lake Simcoe in Ontario (Winter *et al.*, 2011). During the 1997 to 1998 winter, Morin and Perchanok (2000) estimated that 2,950,728 tonnes of chloride was released into the Canadian environment as a result of road salt (as NaCl) and dust suppressant (as $CaCl_2$) application. The provinces with the most chloride use on roadways were Ontario (1,148,570 tonnes) and Quebec (950,444 tonnes). However, Nova Scotia was found to have the highest loading per unit area of the province (230,182 tonnes) (Morin and Perchanok 2000). In comparison, the estimated discharge of chloride into Ontario waters in 2008 from municipal wastewater treatment plant effluent was 175,000 tonnes (M. Manoharan, Ontario Ministry of the Environment, pers. comm.). An often unquantified but likely significant use of road salt is private de-icing operations such as applications onto sidewalks, driveways, and parking lots (Perera *et al* 2009; Chapra *et al* 2009). Elevated concentrations of chloride associated with de-icing have been documented in groundwater, wetlands, streams, and ponds adjacent to snow dumps and salt-storage areas, and also those draining major roadways and urban areas in Canada (Evans and Frick 2001). Other anthropogenic sources include disposal of snow cleared from roadways, application of chloride brine solutions for dust suppression in the summer, water softeners, industrial effluent, domestic sewage, landfill leachate, irrigation drainage (Evans and Frick 2001), and industrial site drainage. Chloride (from inorganic salts) is not tracked by Environment Canada's National Pollutant Release Inventory. Ontario tracks chloride releases from a small number of sectors (e.g. electric power generation, industrial minerals, inorganic chemical, metal mining) covered under MISA (Municipal/Industrial Strategy for Abatement) regulations, but not from other industries (Chapra *et al* 2009).

Ambient Concentrations: Ambient chloride concentrations in the Atlantic region (Newfoundland and Labrador, Nova Scotia, New Brunswick and Prince Edward Island) of Canada are normally <10 mg/L in inland lakes, with concentrations as high as 20 to 40 mg/L in lakes located closer to coastal areas (Mayer *et al* 1999; Evans and Frick 2001; D. Parent, Environment Canada, pers. comm.). Unimpacted lakes on the Canadian shield of Canada's central region (Quebec and Ontario) have measured chloride concentrations of <1 to 7 mg/L, with higher concentrations (10 to 30 mg/L) measured in the lower Great Lakes and the St. Lawrence River (Evans and Frick 2001). Chloride concentrations above background are commonly detected in densely populated areas (e.g. small urban watersheds) where road densities are high, and in fact, chloride concentrations are a commonly used indicator of increasing urbanization. Monitoring of Sheridan Creek in Ontario (pre-1980 to 2007), located in a fully-developed urban area containing a dense road network, measured chloride ranging from 14.5 to 5,320 mg Cl^-/L (median of 292 mg Cl^-/L) (OMOE 2009). Real-time monitoring of a Lake Ontario tributary (Cooksville Creek) in a highly urbanized watershed (Mississauga, Ontario) showed chloride levels exceeding that of seawater, with measurements made in February 2011 reporting chloride as high as 20,000 mg/L (K. vander Linden, Credit Valley Conservation Authority, pers. comm.). In the case of Canada's prairie region (Manitoba, Saskatchewan, and Alberta), low chloride concentrations (<5 mg/L) are reported in lakes located in the northern portions of the provinces, outside of the Interior Plains region. The Interior Plains region, which covers the southern portion of the prairie provinces, is an area with naturally elevated salinity (high total dissolved solids) (CEPA 1999). This salinity is usually due to high concentrations of sodium (mean range of 92 to 31,311 mg/L), bicarbonate (mean range of 427 to 16,352 mg/L) and sulphate (mean range of 2,305 to 108,069 mg/L), although chloride concentrations (mean range of 71 to 3,793 mg/L) are still significantly higher than other areas (Last and Ginn, 2005). For the Pacific region (British Columbia), the chloride concentration in unimpacted water bodies is <5 mg/L. However, several lakes in the southern interior plateau had measured chloride concentrations >100 mg/L (Evans and Frick 2001). Water quality monitoring data in the Yukon showed that dissolved chloride concentrations are low, ranging from 0.1 to 4.6 mg/L (Environment Canada 2009).

Chloride and Salinity of Canadian Surface Waters: Salinity is a measure of the total salt composition of water, with freshwater lakes being dominated by the cations Ca^{2+}, Mg^{2+}, K^+ and Na^+ and the anions HCO_3^-, CO_3^{2-}, SO_4^{2-} and Cl^- (Wetzel 1983). Water is classified according to salinity. Freshwater lakes are those with less than 500 mg/L salinity. The salinity of sub-saline lakes ranges from 500 to 3,000 mg/L, and the salinity of saline lakes exceeds 3,000 mg/L (Evans and Frick 2001). When chloride salts are added to freshwater systems (e.g. through the application of road salt), the salts dissolve and dissociate into respective ions and directly increase the salinity of the receiving system (Evans and Frick 2001). Salinity is a key factor in controlling survival and distribution of both freshwater invertebrates and fish (Holland *et al* 2010). Naturally saline lakes within Canada (commonly dominated by SO_4/CO_3 and relatively rarely by Cl) are systems with naturally low biodiversity (Derry *et al* 2003). Most freshwater organisms found within these systems are stenohaline (have a narrow range of tolerance to changes in salinity), although some organisms are euryhaline (able to tolerate and adapt to a wide range of salinities) (Derry *et al* 2003; Holland *et al* 2010).

Assessment of Road Salt under the Canadian Environmental Protection Act: The Priority Substances List Assessment Report for Road Salts was published on December 1, 2001 (Environment Canada 2001). The report concluded that road salts that contain inorganic chloride salts with or without ferrocyanide salts (anti-caking agent) have adverse impacts on the environment and are therefore toxic under subsections 64(*a*) and (*b*) of the *Canadian Environmental Protection Act, 1999* (CEPA 1999). This decision has led to the publication in April 2004 of a Code of Practice for the Environmental Management of Road Salts. This Code of Practice is aimed at helping municipalities and other road authorities better manage their use of road salts in a way that reduces the harm they cause to the environment while still maintaining road safety.

Several studies have indicated that even when road salt application decreases, surface water monitoring of chloride concentrations does not show an associated decrease in chloride concentration (Meriano *et al* 2009; Kilgour *et al* 2009). This is attributed to subsurface storage of chloride and the lag effect of chloride entering surface water systems, resulting in increased baseflow[1] chloride concentrations. Sensitive species located in surface waters within rapidly-urbanizing watersheds or fully-developed watersheds are at risk of being adversely impacted by increased baseflow chloride levels. Increased chloride in surface water has also been linked to reducing the vertical mixing of surface waters by way of changing the density gradient in lakes. This phenomenon is referred to as meromixis (layers of water that do not experience complete overturn or complete vertical mixing). One of the outcomes of stable stratification of deep and surface water layers is that the deep layer (monimolimnion) can become quite depleted of oxygen. The concentration of dissolved oxygen in the monimolimnion of a meromictic lake can be less than 1 mg/L, while the surface layer (mixolimnion) may have concentrations of 10 mg/L or higher (Lampert *et al.* 1997). Low dissolved oxygen concentrations in the monimolimnion will limit the survival of aquatic life in this layer. In addition to chloride (saline) input, other variables are also involved in inducing chemical-based density stratification between lower and upper water layers leading to a resistance of vertical mixing (e.g. lake morphometry, water residence time, watershed topography and wind fetch) (Wetzel 2001).

Toxicity: Chloride toxicity tests have been conducted through the addition of chloride salts such as sodium

[1] Streamflow which is not a direct result of rainfall or melting snow. Baseflow is the streamflow which is sustained primarily through ground-water discharges.

chloride, calcium chloride, magnesium chloride and potassium chloride. Results of tests with potassium and magnesium chloride suggest toxic effects observed are due to the potassium and magnesium cation, rather than the chloride anion. Conversely, it has been observed that the toxic effects of calcium chloride and sodium chloride are likely due to the chloride anion. Generally speaking, the effect concentrations resulting from exposures to KCl and $MgCl_2$ salts are lower (e.g. more toxic) than the effect concentrations resulting from exposures to $CaCl_2$ and NaCl salts (when effect concentrations are assessed on a chloride anion basis). For example, the fathead minnow 96-h LC50 effect concentration resulting from exposure to a KCl salt, a $MgCl_2$ salt, a $CaCl_2$ salt and a NaCl salt was 419 mg Cl/L, 1579 mg Cl/L, 2958 mg Cl/L and 3876 mg Cl/L, respectively (Mount et al., 1997). Therefore, the approximate order of chloride salt toxicity to freshwater organisms is KCl > $MgCl_2$ > $CaCl_2$ > NaCl (Mount *et al* 1997). Based on these observations, chloride toxicity to freshwater organisms was only evaluated using tests with $CaCl_2$ and NaCl in order to ensure that the effect concentrations utilized for chloride guideline derivation were derived from tests where effects were based on the chloride anion, and not on associated cations.

Freshwater organisms are generally hyperosmotic (internal solute or salt concentration is higher when compared to the surrounding water) and thereby have to continuously excrete water (with some solute loss) to maintain equilibrium (Holland *et al* 2010). Freshwater organisms therefore have to take up ions to replace the ones lost, which can result in elevated energy expenditures until a threshold of intolerance is reached (Holland *et al* 2010). Increasing chloride in surface waters results in increased salinity, thereby affecting the ability of some organisms (stenohaline more so than euryhaline) to effectively osmoregulate, which could in turn affect endocrine balance, oxygen consumption following chronic exposures, and overall changes in physiological processes (Holland *et al* 2010). In both invertebrates and fish, the main site of osmoregulation is the gill, which is also the site of active uptake of lost salts. The sodium pump (Na^++K^+-ATPase) is the main mechanism for moving ions across gills in aquatic animals. The mechanism of osmoregulation used is dependent on the life stage of the organism. For example pre-larval fish osmoregulate largely through the skin, whereas larval stages regulate through the gills (Varsamos and Charmantier, 2005). Insects possess a network of Malpighian tubules lined with secretory cells extending throughout much of the body cavity which is involved in the reabsorption of ions (Dettner and Peters 1999). In the case of spotted salamander (*Ambystoma maculatum*) egg clutches, disruption in osmoregulation has not been determined but is likely related to chemical changes in the egg capsule (perivitelline) membrane, as has been documented in egg clutches exposed to highly acidic conditions (Karraker and Gibbs 2011). As with exposure to acid, high chloride concentrations may result in making the egg capsule membrane more rigid, reducing permeability, and therefore impacting the ability for water uptake (Karraker and Gibbs 2011).

Toxicity Modifying Factors: Some studies have indicated that increased hardness may have an ameliorating effect on the toxicity of chloride. One long-term study by Elphick *et al.* (2011) assessed the effect of hardness (10, 20, 40, 80, 160, 320 mg/L as $CaCO_3$) on sodium chloride toxicity to the water flea *Ceriodaphnia dubia* during a 7-day exposure. An approximate 4-fold difference was observed in the 7-day $IC_{25/50}$ (reproduction) effect concentrations, and a 9-fold difference in 7-day LC_{50} concentrations over the hardness range tested. Gillis (2011) exposed glochidia of the freshwater mussel *Lampsilis siliquoidea* to water of varying hardness (47, 99, 172, 322 mg/L as $CaCO_3$). An approximate 2.5-fold difference in 24-hour EC_{50} (glochidia survival) values was observed over the hardness range tested. GLEC and INHS (2008) also conducted some short-term exposures indicating the existence of a hardness-chloride toxicity relationship for the water flea *Ceriodaphnia dubia*, the fingernail clam *Sphaerium simile*, the oligochaete *Tubifex tubifex* and the aquatic snail *Gyraulus parvus*. Insufficient data were available to develop a hardness relationship for chronic toxicity and thus, a hardness-based CWQG was not developed. CCME will re-visit the chloride guidelines when sufficient studies are available. Jurisdictions may choose to derive site-specific hardness-adjusted water quality criteria (or objectives) where appropriate.

Water Quality Guideline Derivation: Both the freshwater short and long-term Canadian water quality guideline (CWQG) for the chloride ion for the protection of aquatic life were developed based on the CCME protocol (CCME 2007) with the statistical (Type A) approach.

Short-term Freshwater Quality Guidelines: Short-term exposure guidelines are derived with severe-effects data (such as lethality) of defined short-term exposure periods (24 to 96-hour). These guidelines identify estimators of severe effects to the aquatic ecosystem and are intended to give guidance on the impacts of severe but transient situations (e.g., spill events to aquatic receiving environments and infrequent releases of short-lived/non-persistent substances). Short-term benchmark concentrations *do not* provide guidance on protective levels of a substance in the aquatic environment, as short-term benchmark concentrations are levels that *do not* protect against adverse effects.

The minimum data requirements for the Type A short-term benchmark concentration approach were met and a total of 51 data points (14 of which are EC_{50} values) were used in the derivation of the value (Table 3). Each species for which appropriate short-term toxicity data were available was ranked according to sensitivity. Intra-species variability was accounted for by taking the geometric mean of the studies considered to represent the most sensitive lifestage and endpoint.

The log-Normal model provided the best fit of the five models (Normal, Logistic, Weibull, Gompertz, Fisher-Tippett) tested (Figure 1). The equation of the Normal model is:

$$f(x) = \frac{1}{2}\left(1 + erf\left(\frac{x-\mu}{\sigma\sqrt{2}}\right)\right)$$

where, for the fitted model: x = log (concentration) of chloride (mg/L), y is the proportion of species affected, μ = 3.4390, σ = 0.3841 and *erf* is the error function (a.k.a. the Gauss error function). The short-term SSD is shown in Figure 1 and summary statistics are presented in Table 4. The 5th percentile on the short-term SSD is 640 mg Cl^-/L which is essentially within the range of the data (to which the model was fit). Therefore the 5th percentile and its fiducial limits (FL) (boundaries within which a parameter is considered to be located) are interpolations.

Two data points fall below the short-term SSD 5th percentile value of 640 mg Cl^-/L. This includes the 24-hour EC_{50} of 244 mg Cl^-/L for the mantle lure spawning freshwater mussel (glochidia lifestage) *Epioblasma torulosa rangiana* (COSEWIC endangered) (Gillis, 2011), and the 48-hour EC50 (immobilization) of 621 mg Cl^-/L for the water flea *Daphnia magna* (Khangarot and Ray, 1989). Two other COSEWIC assessed species of freshwater mussels are also represented on the short-term SSD, with all data points above the 5th percentile value. This includes the glochidia 24-hour EC_{50} of 746 mg Cl^-/L for the COSEWIC special concern wavy-rayed lampmussel (*Lampsilis fasciola*) (Valenti *et al* 2007; Gillis 2011; Bringolf *et al* 2007), and the juvenile 96-hour EC_{50} of 1,815 mg Cl^-/L for the COSEWIC endangered rainbow mussel (*Villosa iris*) (Wang and Ingersoll 2010). Both *L. fasciola* and *V. iris* are mantle lure spawners. Based on the short-term SSD, short-term exposures to levels of chloride exceeding the benchmark concentration of 640 mg Cl^-/L *may* pose the greatest hazard to the glochidia life stage of certain freshwater mussel species and to *Daphnia magna*. Note that meeting the proposed long-term guideline will protect from severe effects.

It is worth noting that glochidia of the COSEWIC special concern mussel *Lampsilis fasciola* are significantly more sensitive when tested in reconstituted laboratory water compared to natural river waters. Two separate tests derived 24-hour EC_{50} values of 113 mg Cl^-/L and 285 mg Cl^-/L for *L. fasciola* when conducted in moderately hard reconstituted water (99 mg/L as $CaCO_3$) (Gillis 2011). In comparison, the 24-hour EC_{50} values for *L. fasciola* tested in water collected from 4 different rivers in Ontario, Canada were 1,559 mg Cl^-/L (Grand River, hardness 278 mg/L as $CaCO_3$), 1,313 mg Cl^-/L (Sydenham River, hardness 292 mg/L as $CaCO_3$), 1,391 mg Cl^-/L (Maitland River, hardness 322 mg/L as $CaCO_3$) and 1,265 mg Cl^-/L (Thames River, hardness 306 mg/L as $CaCO_3$) (Gillis 2011). The ameliorating effect of natural water chemistry was attributed to more than just a difference in water hardness. A separate test looking at the impact of water hardness on chloride toxicity was conducted with *Lampsilis siliquoidea* (Gillis 2011). Resulting 24-hour EC_{50} values were 763, 1430, 1962 and 1870 mg Cl^-/L in soft (47 mg/L as $CaCO_3$), moderately hard (99 mg/L as $CaCO_3$), hard (172 mg/L as $CaCO_3$) and very hard (322 mg/L as $CaCO_3$) reconstituted water, respectively. The 4-fold difference in 24-hour EC_{50} values obtained for *L. fasciola* in natural river water, when compared to reconstituted water, is much larger than would be expected from hardness alone (as determined with *L. siliquoidea*), implying that other water chemistry variables are contributing to the reduction of chloride toxicity in natural waters. Short-term benchmark concentrations (as well as long-term CWQGs) are derived using laboratory-based studies which use reconstituted water to ensure consistency and the ability to compare results between studies. One disadvantage of using reconstituted waters is that results may not necessarily reflect organism responses in natural waters. Natural waters, on the other hand, contain variable water chemistry in addition to other potential contaminants resulting in variable toxic impacts to

Table 3. Endpoints used to determine the freshwater short-term CWQG for the chloride ion.

Species	Endpoint	Concentration (mg Cl^-/L)	Reference
Fish			
Pimephales promelas Fathead minnow	96-hour LC_{50} (geomean)	4,223	Mount *et al* 1997; Birge *et al* 1985
Lepomis macrochirus Bluegill sunfish	96-hour LC_{50} (geomean)	5,272	Birge *et al.* 1985; Trama 1954
Cyprinella leedsi Bannerfin shiner	96-hour LC_{50}	6,070	Environ 2009
Oncorhynchus mykiss Rainbow trout	96-hour LC_{50} (geomean)	8,634	Elphick *et al* 2011; Vosyliene *et al.* 2006
Gambusia affinis Mosquito fish	96-hour LC_{50}	9,099	Al-Daham & Bhatti 1977
Gasterosteus aculeatus Threespine stickleback	96-hour LC_{50}	10,200	Garibay & Hall 2004
Anguilla rostrata American eel	96-hour LC_{50}	13,012	Hinton and Eversol 1979
Amphibians			
Ambystoma maculatum Spotted salamander	96-hour LC_{50}	1,178	Collins & Russell 2009
Pseudacris triseriata feriarum Chorus frog	96-hour LC_{50}	2,320	Garibay & Hall 2004
Lithibates sylvatica (previously *Rana sylvatica*) Wood frog	96-hour LC_{50} (geomean)	2,716	Sanzo & Hecnar, 2006; Collins & Russell 2009; Jackman 2010
Pseudacris crucifer Spring peeper	96-hour LC_{50}	2,830	Collins & Russell 2009
Rana clamitans Green frog	96-hour LC_{50}	3,109	Collins & Russell 2009
Rana temporaria Common frog	96-hour LC_{50}	3,140	Viertel 1999
Lithibates pipiens (previously *Rana pipiens*) Leopard frog	96-hour LC_{50}	3,385	Jackman 2010
Bufo americanus American toad	96-hour LC_{50}	3,926	Collins & Russell 2009
Rana catesbeiana Bullfrog	96-hour LC_{50}	5,846	Environ 2009
Invertebrates			
Epioblasma torulosa rangiana Northern riffleshell mussel (COSEWIC[a] endangered)	24-hour EC_{50} (survival of glochidia)	244	Gillis 2011
Daphnia magna Water flea	48-hour EC_{50} (immobilization)	621	Khangarot and Ray 1989
Lampsilis siliquoidea Freshwater mussel	24-hour EC_{50} (survival of glochidia) (geomean)	709	Bringolf *et al* 2007; Gillis 2011
Lampsilis fasciola Wavy-rayed lampmussel (COSEWIC[a] special concern)	24-hour EC_{50} (survival of glochidia) (geomean)	746	Valenti *et al.* 2007; Bringolf *et al* 2007; Gillis 2011
Lampsilis cardium Plain pocketbook	24-hour EC_{50} (survival of glochidia)	817	Gillis 2011
Sphaerium simile Fingernail clam	96-hour LC_{50} (geomean)	902	GLEC & INHS 2008
Ceriodaphnia dubia	48-hour LC_{50}	1,080	Valenti *et al* 2007;

Species	Endpoint	Concentration (mg Cl⁻/L)	Reference
Water flea	(geomean)		Hoke *et al* 1992; Mount *et al* 1997; GLEC & INHS 2008; Elphick *et al* 2011; Cowgill & Milazzo 1990
Daphnia ambigua Water flea	48-hour EC_{50} (immobilization)	1,213	Harmon *et al* 2003
Daphnia pulex Water flea	48-hour LC_{50} (geomean)	1,248	Palmer *et al* 2004 ; Birge *et al* 1985
Elliptio lanceolata Yellow lance mussel	96-hour LC_{50}	1,274	Wang & Ingersoll 2010
Brachionus patulus Rotifer	24-hour LC_{50}	1,298	Peredo-Alvarez *et al* 2003
Hyalella azteca Amphipod	96-hour LC_{50}	1,382	Elphick *et al* 2011
Elliptio complanata Freshwater mussel	24-hour EC_{50} (survival of glochidia)	1,620	Bringolf *et al* 2007
Epioblasma brevidens Cumberlandian combshell (endangered in USA)	24-hour EC_{50} (survival of glochidia)	1,626	Valenti *et al* 2007
Epioblasma capsaeformis Oyster mussel (endangered in USA)	24-hour EC_{50} (survival of glochidia)	1,644	Valenti *et al* 2007
Villosa constricta Freshwater mussel	24-hour EC_{50} (survival of glochidia)	1,674	Bringolf *et al* 2007
Villosa iris Rainbow mussel (COSEWIC[a] endangered)	96-hour EC_{50} (geomean)	1,815	Wang & Ingersoll 2010
Musculium transversum Fingernail clam	96-hour LC_{50}	1,930	US EPA 2010
Villosa delumbis Freshwater mussel	24-hour EC_{50} (survival of glochidia)	2,008	Bringolf *et al* 2007
Brachionus calyciflorus Rotifer	24-hour LC_{50} (geomean)	2,026	Elphick et al 2011; Peredo-Alvarez *et al* 2003; Calleja *et al* 1994
Physa gyrina Snail	96-hour LC_{50}	2,540	Birge *et al.* 1985
Lirceus fontinalis Isopod	96-hour LC_{50}	2,950	Birge *et al.* 1985
Gyraulus parvus Snail	96-hour LC_{50} (geomean)	3,043	GLEC & INHS 2008
Baetis tricaudatus Mayfly	48-hour EC_{50} (immobilization) (geomean)	3,266	Lowell *et al* 1995
Chironomus dilutus / tentans Midge	96-hour LC_{50}	3,761	Wang & Ingersoll 2010
Lumbriculus variegates Oligochaete	96-hour LC_{50} (geomean)	4,094	Elphick *et al* 2011; Environ 2009
Nephelopsis obscura Leech	96-hour LC_{50}	4,310	Environ 2009
Hexagenia sp. Mayfly	48-hour LC_{50}	4,671	Wang & Ingersoll 2010
Chironomus attenatus Midge	48-hour LC_{50}	4,850	Thornton & Sauer 1972
Daphnia hyalina Water flea[b]	48-hour LC_{50}	5,308	Baudouin & Scoppa 1974
Lepidostoma sp.	96-hour LC_{50}	6,000	Williams *et al* 1999

Species	Endpoint	Concentration (mg Cl^-/L)	Reference
Caddisfly			
Tubifex tubifex Oligochaete	96-hour LC_{50} (geomean)	6,119	Elphick *et al* 2011; Wang & Ingersoll 2010; GLEC & INHS 2008
Chironomus riparius Midge	48-hour LC_{50}	6,912	Wang & Ingersoll 2010
Eudiaptomus padanus padanus Copepod[b]	48-hour LC_{50}	7,077	Baudouin & Scoppa 1974
Cyclops abyssorum prealpinus Copepod[b]	48-hour LC_{50}	12,385	Baudouin & Scoppa 1974

[a]Committee on the Status of Endangered Wildlife in Canada; Canadian occurrence in Ontario.
[b]Based on testing with $CaCl_2$ salt (all others based on testing with NaCl salt).

biotic receptors. Therefore, short-term benchmark concentrations (as well as long-term CWQGs) may be relatively conservative values.

Therefore, the s hort-term exposure benchmark concentration indicating the potential for severe effects (e.g. lethality or immobilization) to senstive freshwater life during transient events is 640 mg Cl^-/L for the chloride ion.

Table 4. Short-term freshwater CWQG for the chloride ion using the SSD method.

	Concentration
SSD 5th percentile	**640 mg Cl^-/L**
SSD 5th percentile, 90% LFL (5%)	605 mg Cl^-/L
SSD 5th percentile, 90% UFL (95%)	680 mg Cl^-/L

Long-term Freshwater Quality Guideline: Long-term exposure guidelines identify benchmarks in the aquatic ecosystem that are intended to protect all forms of aquatic life for indefinite exposure periods. Long-term exposure guidelines are derived using long-term data (≥7-day exposures for fish and invertebrates, ≥24-hour for aquatic plants and algae).

The minimum data requirements for the Type A guideline approach were met and a total of 28 data points were used in the derivation of the guideline (Table 5). Each species for which appropriate long-term toxicity data was available was ranked according to sensitivity. All datapoints were taken from single studies, therefore none of the concentrations listed in Table 5 are geometric means.

The log-Logistic model provided the best fit of the five models (Normal, Logistic, Weibull, Gompertz, Fisher-Tippett) tested (Figure 3). The equation of the Logistic model is:

$$y = 1/[1+e^{-((x-\mu)/\sigma)}]$$

where for the fitted model: x = log (concentration) of chloride (mg/L), y is the proportion of species affected, μ = 2.93 and σ = 0.29. The long-term SSD is shown in Figure 2 and summary statistics are presented in Table 6. The 5th percentile on the long-term SSD is 120 mg Cl^-/L which is within the range of the data (to which the model was fit). Therefore the 5th percentile and its fiducial limits (FL) (boundaries within which a parameter is considered to be located) are interpolations.

Two data points fall below the long-term SSD 5th percentile value of 120 mg Cl^-/L. These include the 24-hour EC_{10}s of 24 mg Cl^-/L (Bringolf 2010) and 42 mg Cl^-/L (Gillis 2009) for two species of mantle lure spawning freshwater mussels (glochidia lifestage), including *Lampsilis fasciola* (COSEWIC special concern) and *Epioblasma torulosa rangiana* (COSEWIC endangered), respectively. The CCME guideline derivation protocol (CCME 2007) provides the option of implementing the Protection Clause in situations where a data point for a species at risk, a species of commercial or recreational importance, or an ecologically important species falls below the 5th percentile (CWQG) value on the long-term SSD. In areas where the COSEWIC special concern mussel (*L. fasciola*) or the COSEWIC endangered mussel (*E. torulosa rangiana*) are present, the protection clause can

Table 5. Endpoints used in the SSD to determine the long-term CWQG for the chloride ion where freshwater mussels are present.

Species	Endpoint	Concentration (mg Cl^-/L)	Reference
Fish			
Pimephales promelas Fathead minnow	33-day LC_{10} (survival)	598	Birge *et al* 1985 In: Elphick *et al* 2010
Salmo trutta fario Brown trout	8-day NOEC (survival)	607	Camargo & Tarazona 1991
Oncorhynchus mykiss Rainbow trout	7-day EC_{25} (embryo viability)	989	Beak 1999
Amphibians			
Xenopus laevis African clawed frog	7-day LC_{10} (survival)	1,307	Beak 1999
Rana pipiens Northern leopard frog	108-day MATC (survival)	3,431	Doe 2010
Invertebrates			
Lampsilis fasciola Wavy-rayed lampmussel (COSEWIC special concern)[a]	24-hour EC_{10} (glochidia survival)	24	Bringolf *et al* 2007
Epioblasma torulosa rangiana Northern riffleshell mussel (COSEWIC[a] endangered)	24-hour EC_{10} (glochidia survival)	42	Gillis 2009
Musculium securis Fingernail clam	60-80 day LOEC (reduced natality[b])	121	Mackie 1978
Daphnia ambigua Water flea	10-day EC_{10} (mortality and reproduction)	259	Harmon *et al* 2003
Daphnia pulex Water flea	21-day IC_{10} (reproduction)	368	Birge *et al* 1985 In: Elphick *et al* 2011
Elliptio complanata Freshwater mussel	24-hour EC_{10} (glochidia survival)	406	Bringolf *et al* 2007
Daphnia magna Water flea	21-day EC_{25} (reproduction)	421	Elphick *et al* 2011
Hyalella azteca Amphipod	28-day EC_{25} (growth, dry weight)	421	Bartlett 2009
Ceriodaphnia dubia Water flea	7-day IC_{25} (reproduction)	454	Elphick *et al* 2011
Tubifex tubifex Oligochaete	28-day IC_{10} (reproduction)	519	Elphick *et al* 2011
Villosa delumbis Freshwater mussel	24-hour EC_{10} (glochidia survival)	716	Bringolf *et al* 2007
Villosa constricta Freshwater mussel	24-hour EC_{10} (glochidia survival)	789	Bringolf *et al* 2007
Lumbriculus variegates Oligochaete	28-day EC_{25} (reproduction)	825	Elphick *et al* 2011
Brachionus calyciflorus Rotifer	48-hour IC_{10} (reproduction)	1,241	Elphick *et al* 2011
Lampsilis siliquoidea Freshwater mussel	96-hour EC_{10} (survival of juveniles)	1,474	Bringolf *et al* 2007
Gammarus pseudopinmaeus Amphipod	60-day NOEC (survival)	2,000	Williams *et al* 1999
Physa sp. Snail	60-day NOEC (survival)	2,000	Williams *et al* 1999

Species	Endpoint	Concentration (mg Cl^-/L)	Reference
Stenonema modestum Mayfly	14-day MATC (development)	2,047	Diamond *et al* 1992
Chironomus tentans Midge	20-day IC_{10} (growth, biomass)	2,316	Elphick *et al* 2011
Aquatic Plants and Algae			
Lemna minor Duckweed	96-hour MATC (frond production)	1,171	Taraldson & Norberg-King 1990
Chlorella minutissimo Algae	28-day MATC (growth)	6,066	Kessler 1974
Chlorella zofingiensis Algae	28-day MATC (growth)	6,066	Kessler 1974
Chlorella emersonii Algae	8-14day MATC (growth inhibition)	6,824	Setter *et al* 1982

[a]Committee on the Status of Endangered Wildlife in Canada; Canadian occurrence in Ontario.
[b]Natality is "a measure of population increase under an actual specific environmental condition varying with the size and composition of the population and the physical environmental conditions" (Mackie 1978).

be implemented, resulting in a guideline value ranging from 24 to 42 mg Cl^-/L. In all other areas where non-endangered freshwater mussels are present, the long-term SSD 5th percentile value of 120 mg Cl^-/L should be used as the guideline value. As was discussed earlier, mussel toxicity data that were used for long-term CWQG derivation (as well as short-term benchmark concentration) commonly relied on exposures in reconstituted water. Therefore by design, CWQGs will likely be conservative values.

One long-term study that was not added to the long-term SSD dataset used road salt in place of NaCl salt, and is worth discussing here. The study involved exposing egg clutches of the spotted salamander (*Ambystoma maculatum*) to three chloride concentration treatments: 1 mg/L (chloride measured in vernal pools >200m from a highway), 145 mg/L (mean chloride measured in vernal pools within 200m of a highway), and 945 mg/L (maximum chloride measured in vernal pools within 200m of a highway) (Karraker and Gibbs 2011). Egg clutches were exposed to these chloride concentrations for a 9 day period, after which they were transferred to control water for another 9 day period and were weighed at day 3, 6, and 9 following transfer into clean water. The transfer into clean water was intended to mimic the dilution that occurs in vernal breeding pools following spring rainfall. Over the entire 18 day test period, clutches in the 1 mg/L treatment increased in mass by an average 25%, those in the 145 mg/L treatment lost an average mass of 2%, while clutches in the 945 mg/L treatment lost an average mass of 45%. Diluting rains may therefore aid in ameliorating the effects of moderate chloride concentrations in vernal breeding pools. However high chloride in breeding habitats may permanently disrupt the ability of egg clutches to osmoregulate or take up water. This could result in increasing risk of predation, freezing, malformations and other adverse effects to embryos of the spotted salamander (Karraker and Gibbs 2011). The CWQG of 120 mg Cl^-/L is expected to be protective of the early life stage of the spotted salamander.

Therefore, the long-term exposure CWQG for the protection of freshwater life is 120 mg Cl^-/L for the chloride ion.

Marine Water Quality Guideline: approximately 35,000 mg/L of which approximately 55% is chloride, which equates to 19,250 mg chloride/L. For this reason, brine discharges to marine environments were not evaluated.

Table 6. Long-term freshwater CWQG for the chloride ion resulting from the SSD Method.

	Concentration
SSD 5th percentile	**120 mg Cl^-/L**
SSD 5th percentile, 90% LFL (5%)	90 mg Cl-/L
SSD 5th percentile, 90% UFL (95%)	150 mg Cl^-/L

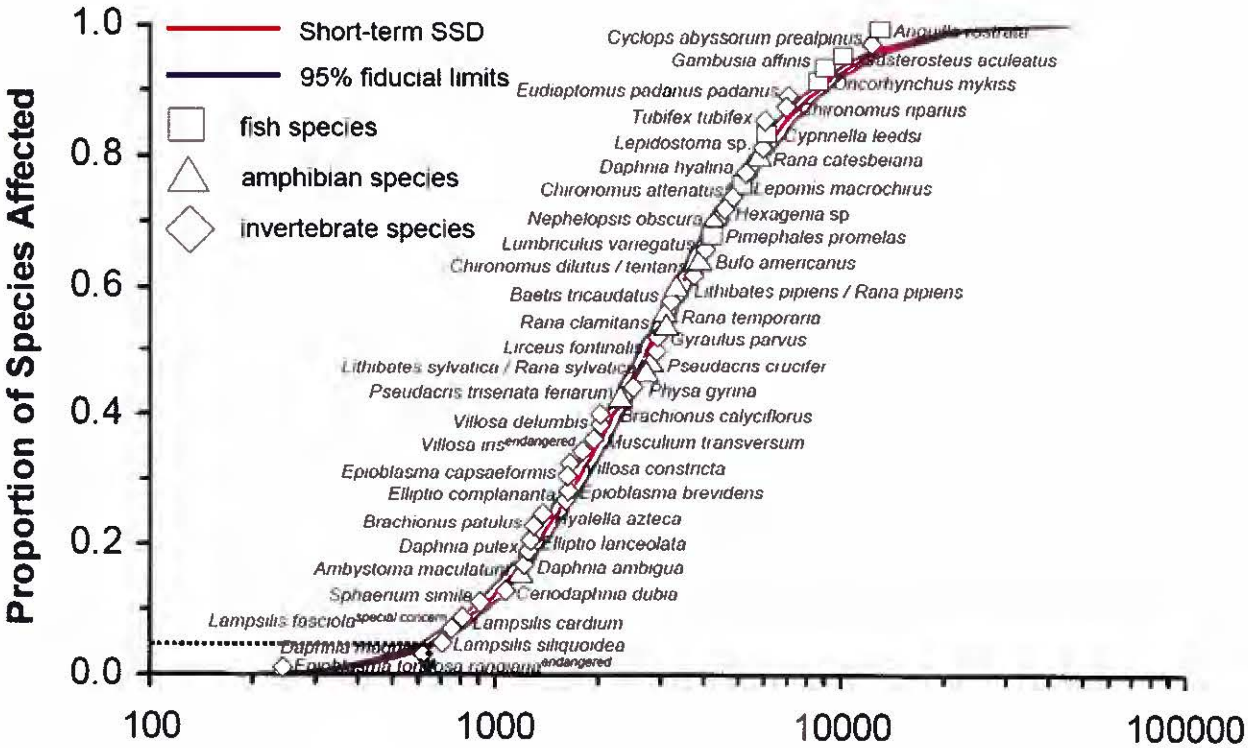
Guidance on the Use of Guidelines: These guidelines for the chloride ion are only intended to protect against direct toxic effects of chloride, based on studies using NaCl and $CaCl_2$ salts. The guideline should be used as a screening and management tool to ensure that chloride does not lead to the degradation of the aquatic environment. Further guidance on the application of these guidelines is provided in the scientific criteria document (CCME 2011).

The short-term benchmark concentration and long-term CWQG for chloride are set to provide protection for short- and long-term exposure periods, respectively. They are based on generic environmental fate and behaviour and toxicity data. The long-term water quality guideline is a conservative value below which all forms of aquatic life, during all life stages and in all Canadian aquatic systems, should be protected – with one exception. As noted earlier, the CWQG may not be protective of the early (glochidia) life-stage certain species of COSEWIC endangered and special concern freshwater mussels (discussion with provincial regulators should occur if there is a need to develop more protective site specific values). Because the guideline is not corrected for any toxicity modifying factors (e.g. hardness), it is a generic value that does not take into account any site-specific factors. Moreover, since the guideline is mostly based on toxicity tests using naïve (i.e., non-tolerant) laboratory organisms, the guideline may be over-protective for areas with a naturally-elevated concentration of chloride and associated adapted ecological community (CCME 2007). Thus, if an exceedence of the guideline is observed (due to anthropogenically-enriched water or because of elevated natural background concentrations), it does not necessarily suggest that toxic effects will be observed, but rather indicates the need to determine whether or not there is a potential for adverse environmental effects. In some situations, such as where an exceedence is observed, it may be necessary or advantageous to derive a site-specific guideline that takes into account local conditions (water chemistry, natural background concentration, genetically-adapted organisms, community structure) (CCME 2007). CCME has outlined several procedures to modify the national water quality guidelines to site-specific water quality guidelines or objectives to account for unique conditions and/or requirements at the site under investigation (CCME 1991; CCME 2003; Intrinsik 2010).

Fiducial limits (FLs) are reported here (Table 6) along with the 5th percentile or guideline value, and are similar to confidence intervals. FLs help assess the fit of the selected curve or model to the dataset. As the number of data points plotted on an SSD increases, the fit of FLs should be tighter. FLs can also be used to help interpret monitoring data, particularly if the guideline and method detection limit are close. Only the 5th percentile is used as the guideline.

In general, Canadian Water Quality Guidelines (CWQG) are numerical concentrations or narrative statements that are recommended as levels that should result in negligible risk of adverse effects to aquatic biota. As recommendations, the CWQGs are not legally enforceable limits, though they may form the scientific basis for legislation, regulation and/or management at the provincial, territorial, or municipal level. CWQGs may also be used as benchmarks or targets in the assessment and remediation of contaminated sites, as tools to evaluate the effectiveness of point-source controls, or as "alert levels" to identify potential risks.

CWQG values are calculated such that they protect the most sensitive life stage of the most sensitive aquatic life species over the long term. Hence, concentrations of a parameter that are less than the applicable CWQG are not expected to cause any adverse effect on aquatic life. Concentrations that exceed the CWQGs, however, do not necessarily imply that aquatic biota will be adversely affected, or that the water body is impaired; the concentration at which such effects occur may differ depending on site-specific conditions. Where the CWQGs are exceeded, professional advice should be sought in interpreting such results. As with other CWQGs, the guidelines for chloride are intended to be applied towards concentrations in ambient surface waters, rather than immediately adjacent to point sources such as municipal or industrial effluent outfalls. Various jurisdictions provide guidance on determining the limits of mixing zones when sampling downstream from a point source (see, for example, BC MELP 1986 and MEQ 1991), though Environment Canada and CCME do not necessarily endorse these methods.



Chloride (mg/L)

Figure 1. SSD of short-term L/EC$_{50}$ toxicity data for the chloride ion in freshwater derived by fitting the Normal model to the logarithm of acceptable toxicity data for 51 aquatic species versus Hazen plotting position (proportion of species affected). The arrow at the bottom of the graph denotes the 5th percentile and the corresponding short-term benchmark concentration value.

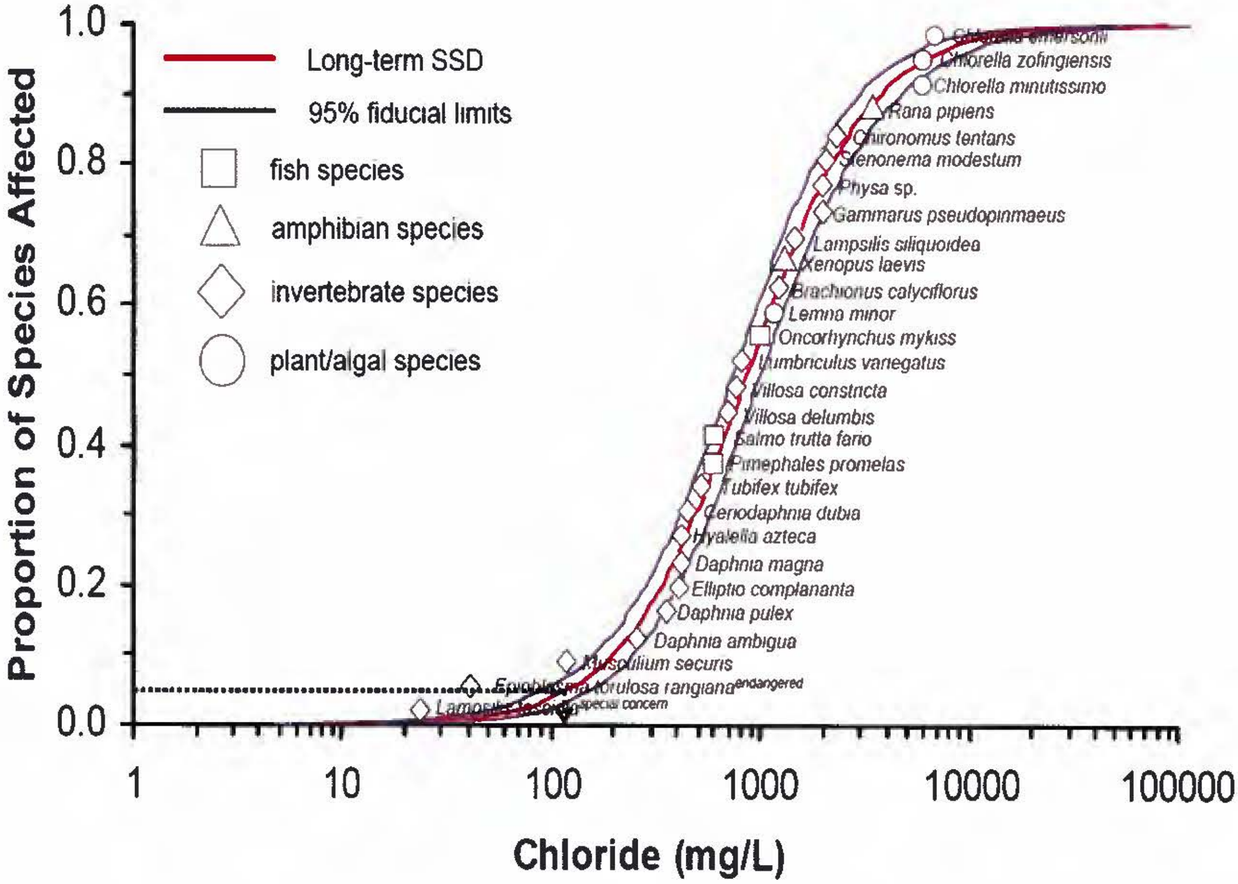


Figure 2. SSD of long-term no- and low-effect endpoint toxicity data for the chloride ion in freshwater (where mussels are present) derived by fitting the Logistic model to the logarithm of acceptable data for 28 aquatic species versus Hazen plotting position (proportion of species affected). The arrow at the bottom of the graph denotes the 5th percentile and the corresponding long-term Canadian Water Quality Guideline value.

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APPENDIX M

ECOLOGICAL RESULTS

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In the quantitative assessment the estimated intakes or media concentrations (EPCs) of constituents of potential concern (COPC) were compared to the toxicity reference values (TRVs) to derive a screening index (SI) value as follows:

$$SI = \frac{EPC \text{ or } Intake}{TRV}$$

An SI value of 1.0 is used for comparison when the receptor's entire exposure has been accounted for in the exposure assessment. This can include consideration of exposure from background if the receptor does not reside entirely on the site. For this assessment an SI value of 1.0 was used as the assessment point.

An SI value above the acceptable value (i.e., 1.0) does not necessarily indicate an effect but highlights combinations of receptors and COPC that require further consideration as there is a greater potential for an effect. A weight-of-evidence approach involving field observations and spatial considerations is used to determine whether there is the possibility of a population effect for those COPC with an SI value above 1.

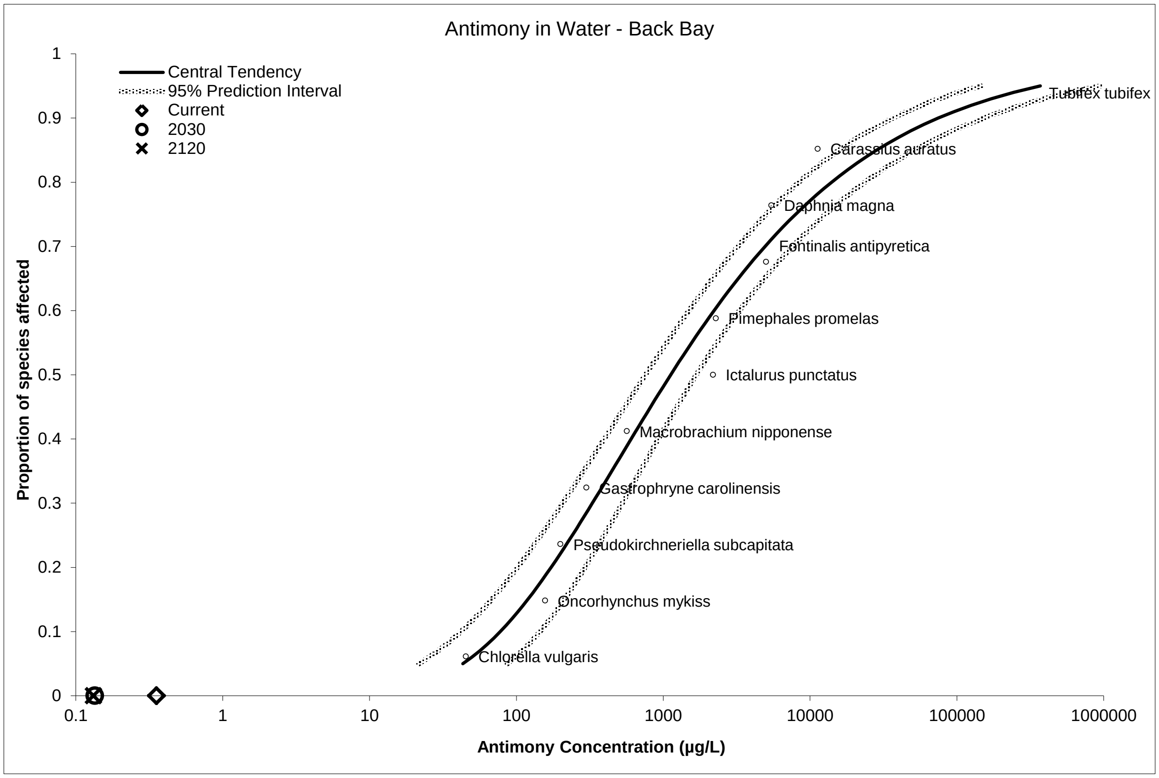
M.1 Aquatic Environment

M.1.1 Aquatic Biota

Potential effects to aquatic biota (i.e., zooplankton, phytoplankton, benthic invertebrates, and fish) were evaluated using SSD curves, which are a statistical representation of available toxicity data for each COPC. Aquatic COPC evaluated in this way were antimony, arsenic, chloride, and sulphate. Sulphate toxicity has been shown to be hardness dependent and so expected hardness of each evaluated area was used to ensure the correct SSD curve was employed.

Conditions were evaluated in this way for current, immediately post-remediation (2030), and 100 years in the future (2120) in the modelled segments of lower Baker Creek and Back Bay.

Figure M.1 SSD curves for current and future conditions - antimony



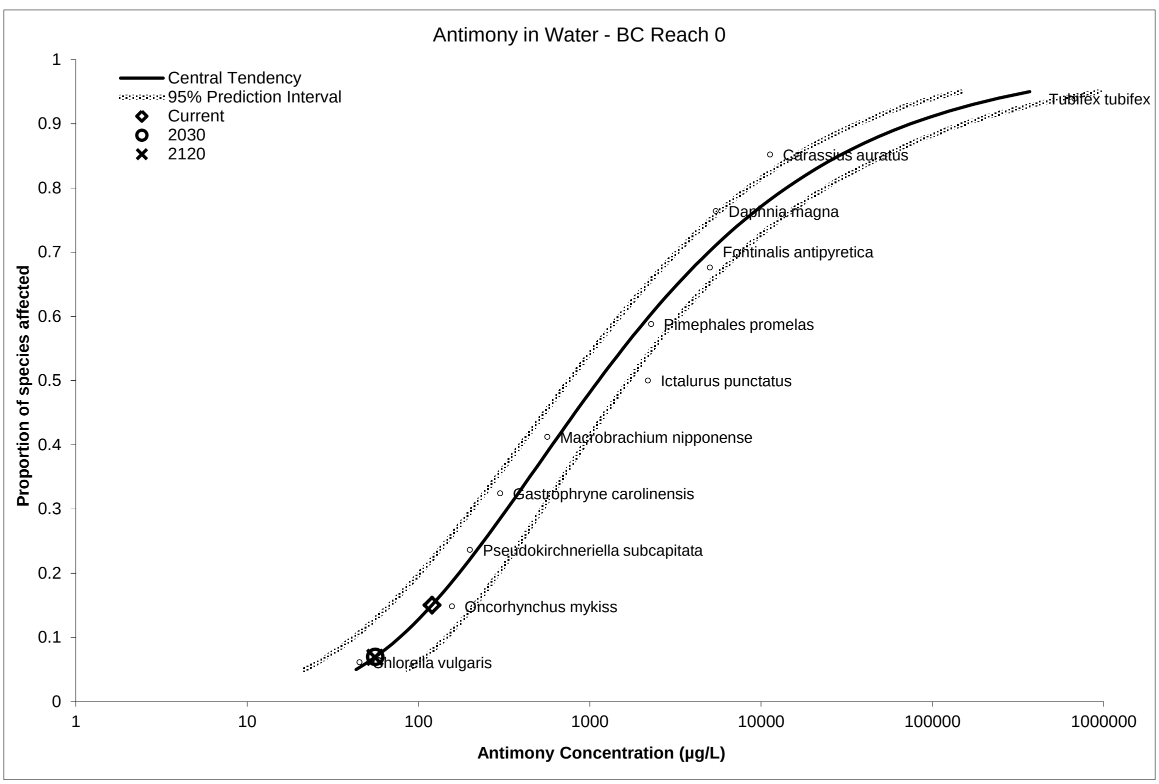
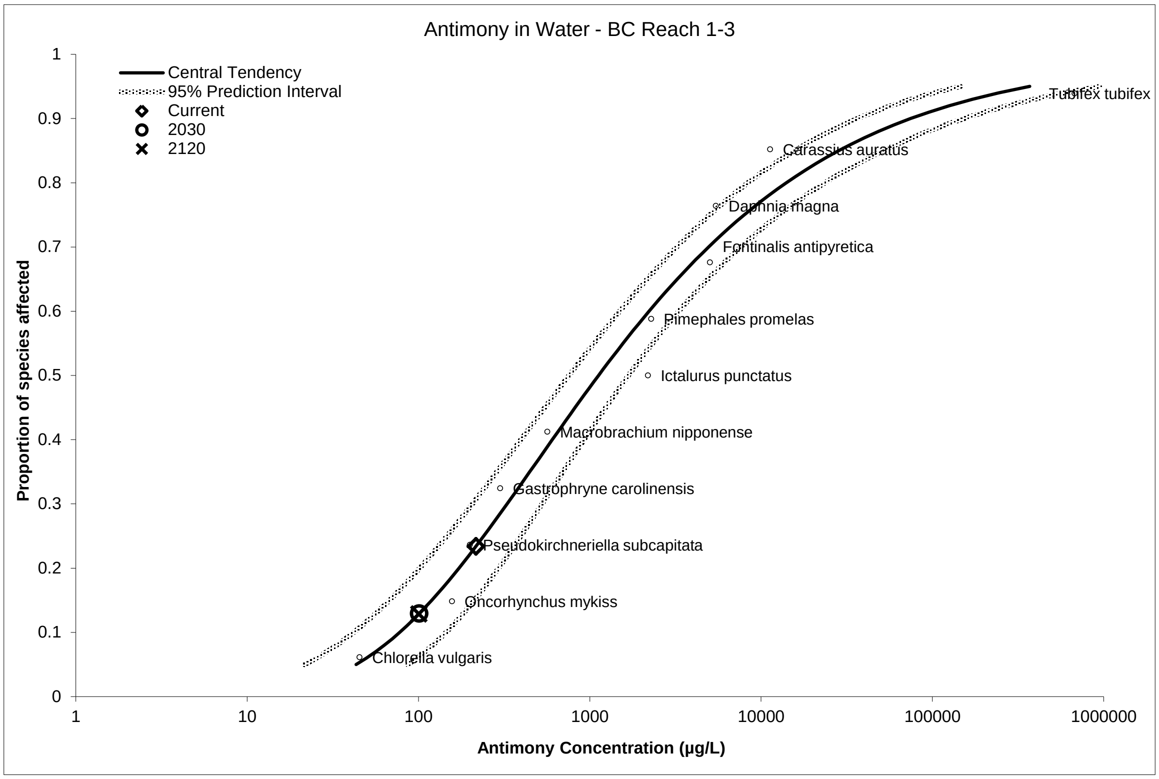


Figure M.1 SSD curves for current and future conditions – antimony (cont'd)



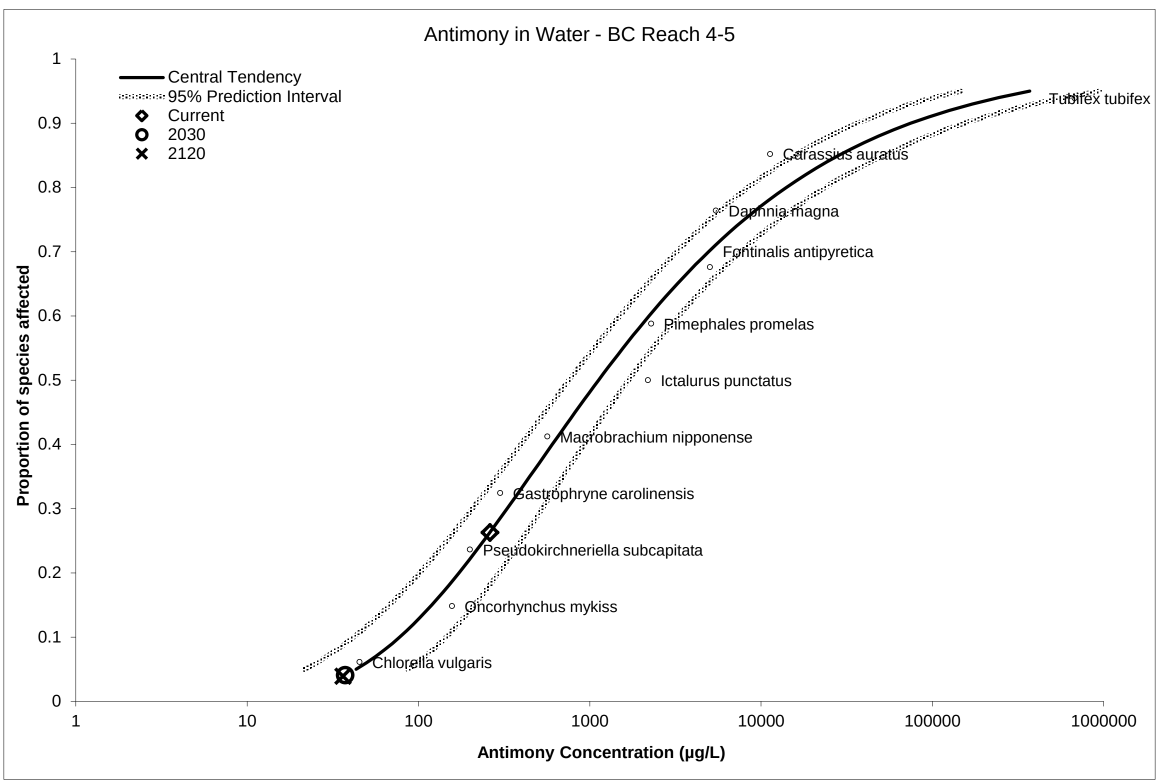


Figure M.1 SSD curves for current and future conditions – antimony (cont'd)

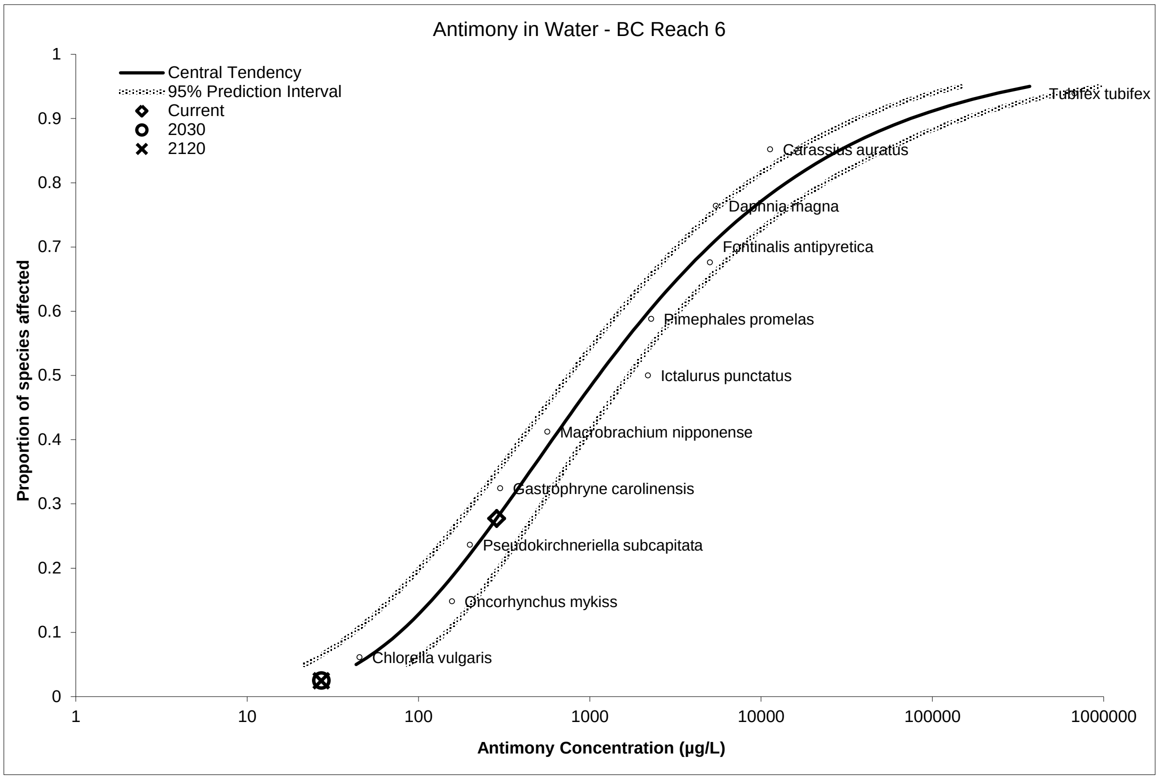
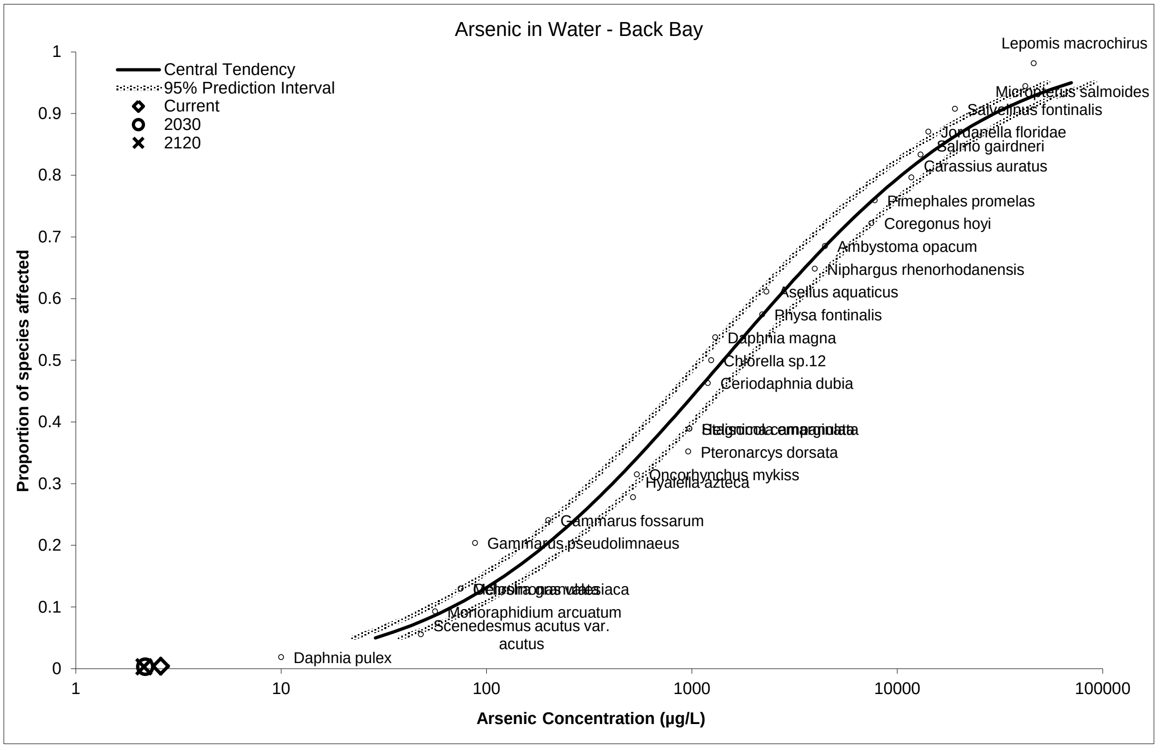


Figure M.2 SSD curves for current and future conditions - arsenic



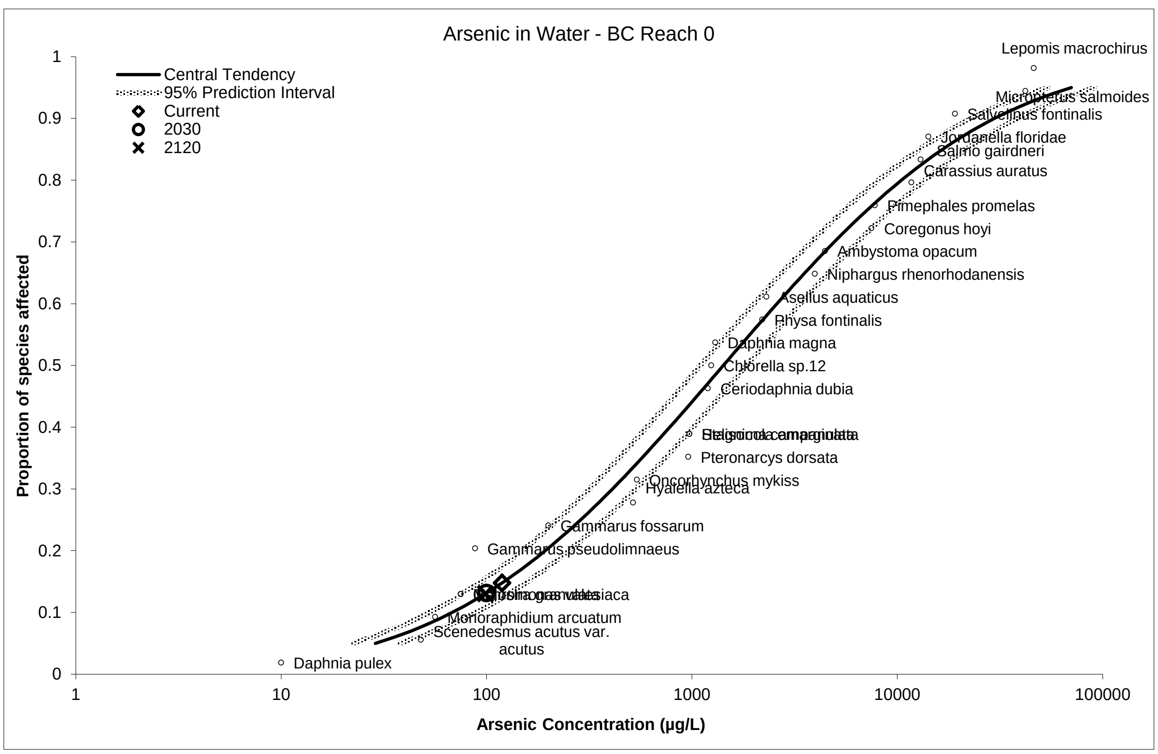
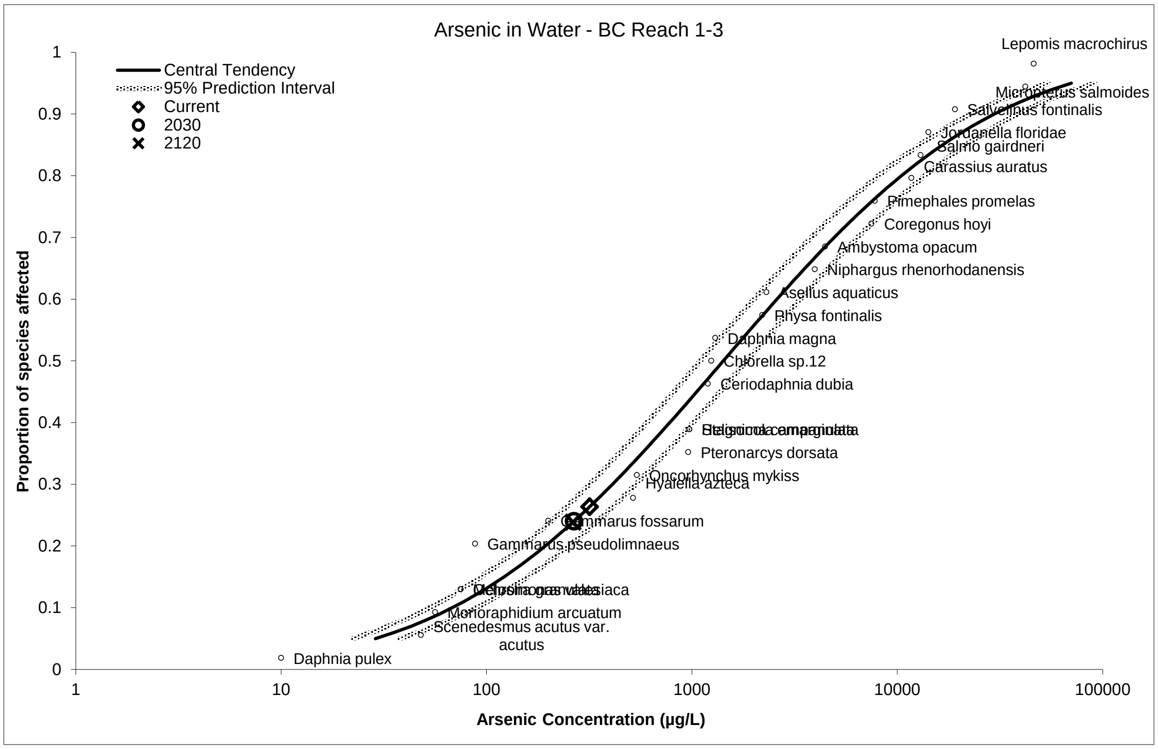


Figure M.2 SSD curves for current and future conditions – arsenic (cont'd)



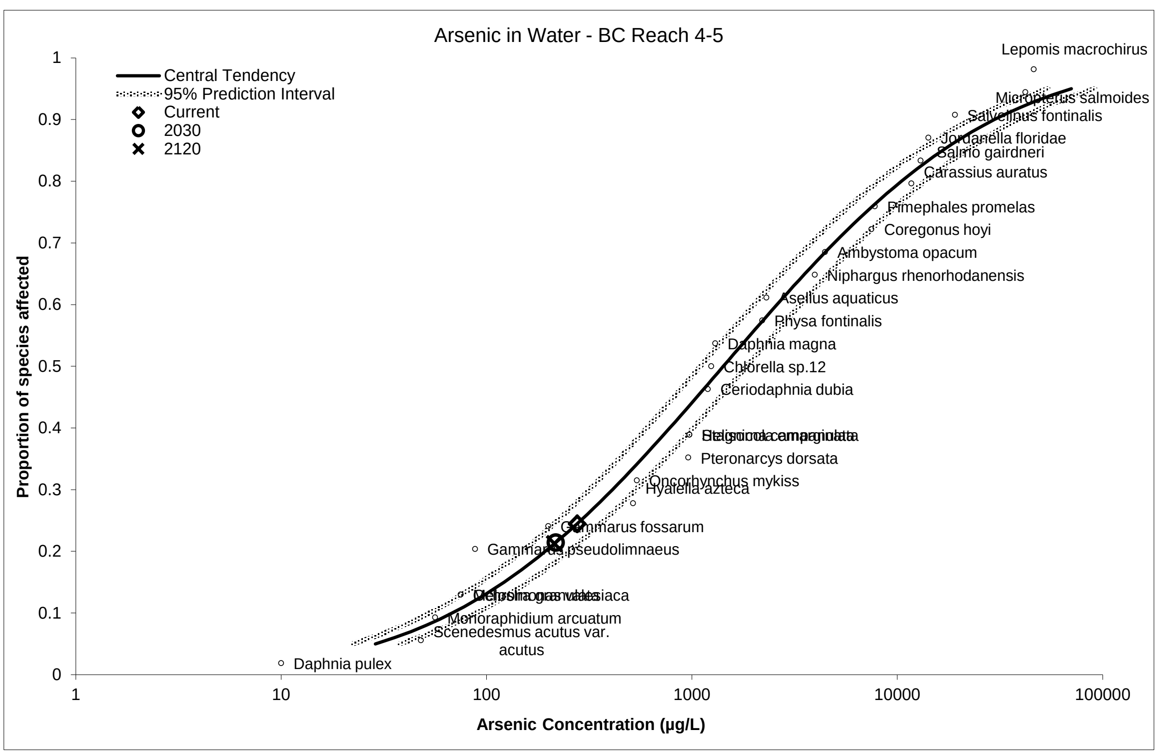


Figure M.2 SSD curves for current and future conditions – arsenic (cont'd)

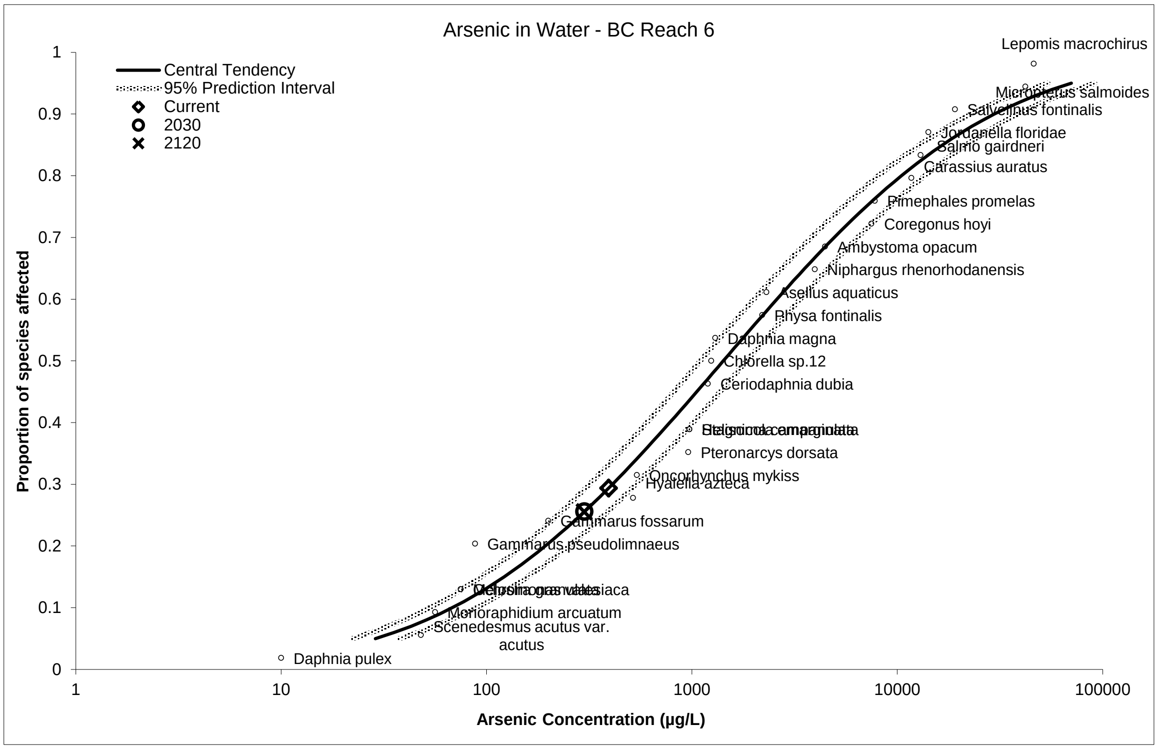
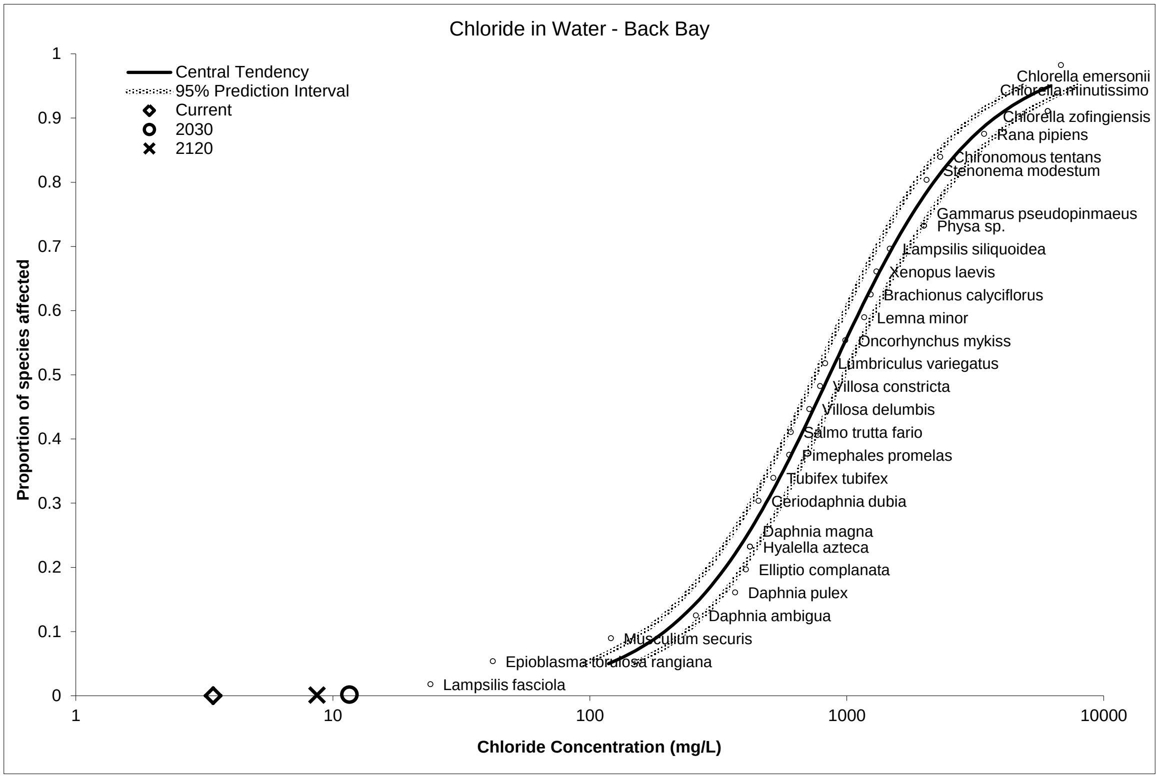


Figure M.3 SSD curves for current and future conditions - chloride



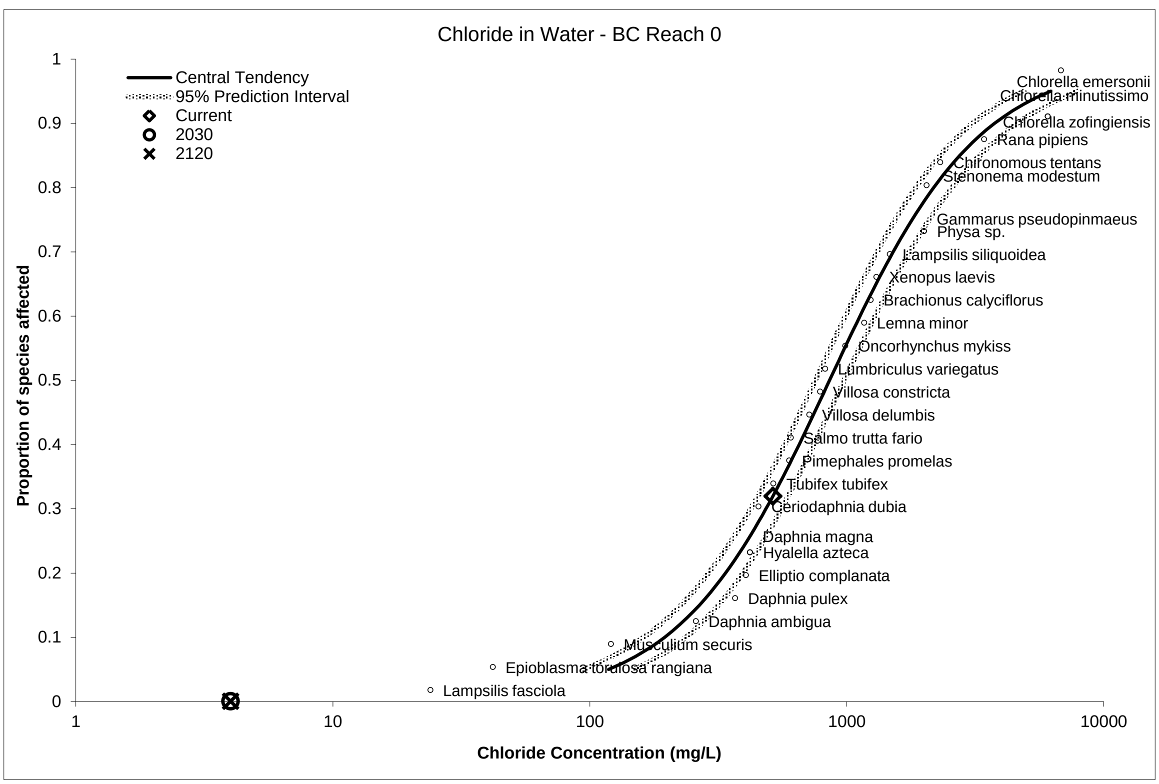
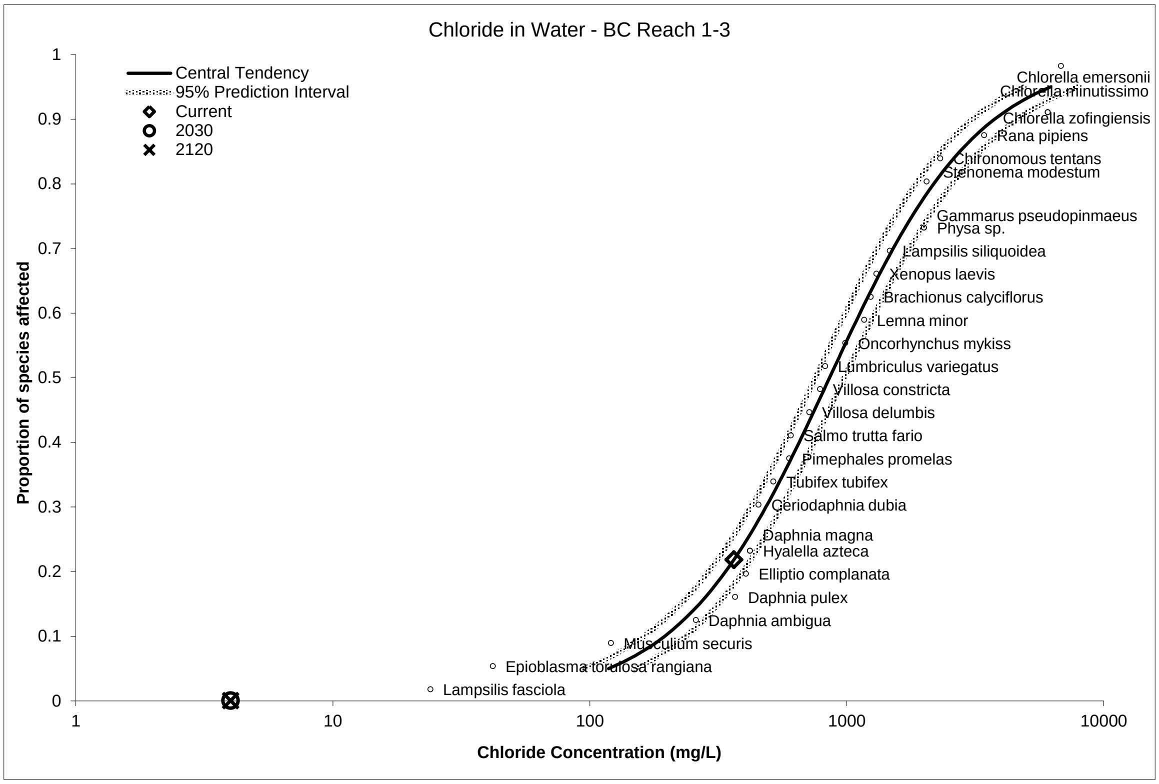


Figure M.3 SSD curves for current and future conditions – chloride (cont'd)



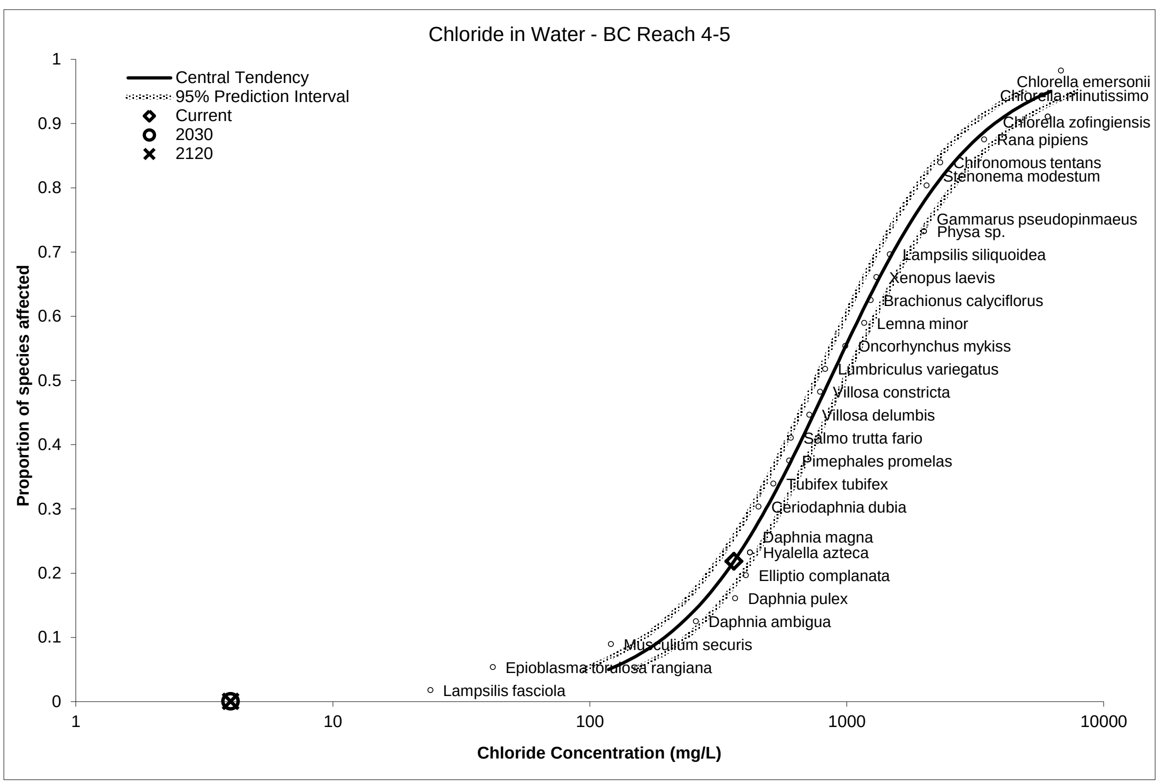


Figure M.3 SSD curves for current and future conditions – chloride (cont'd)

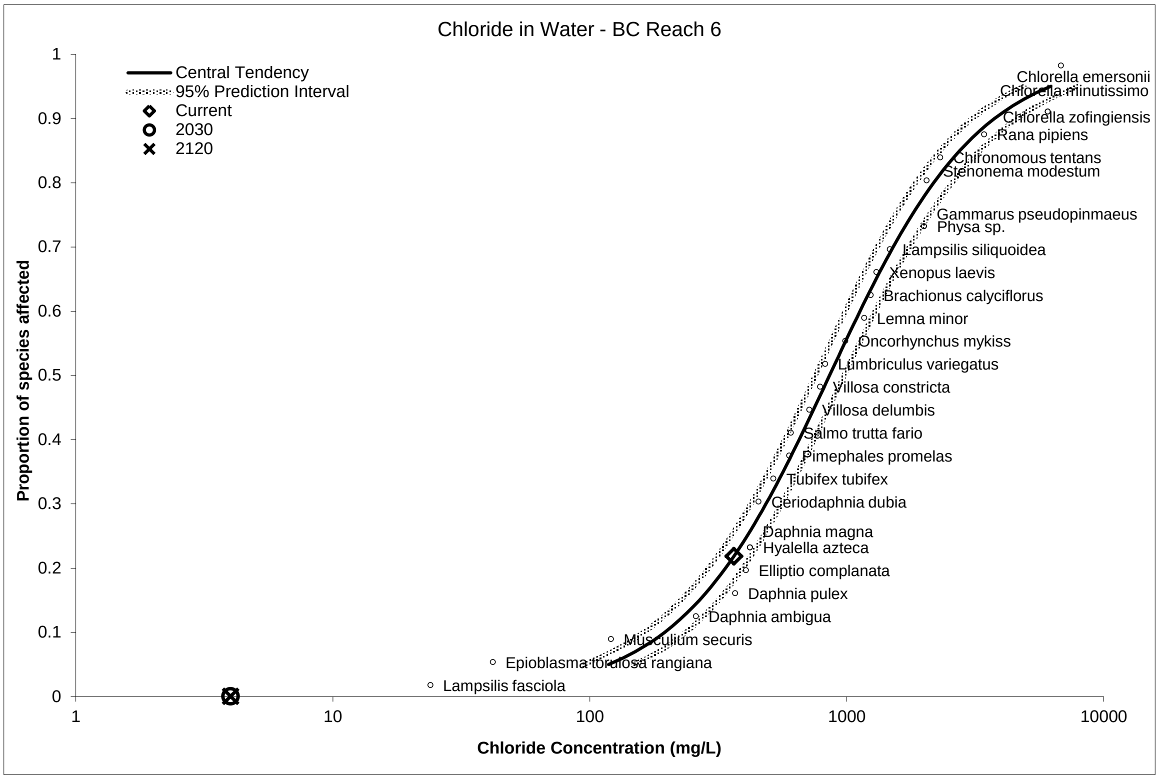
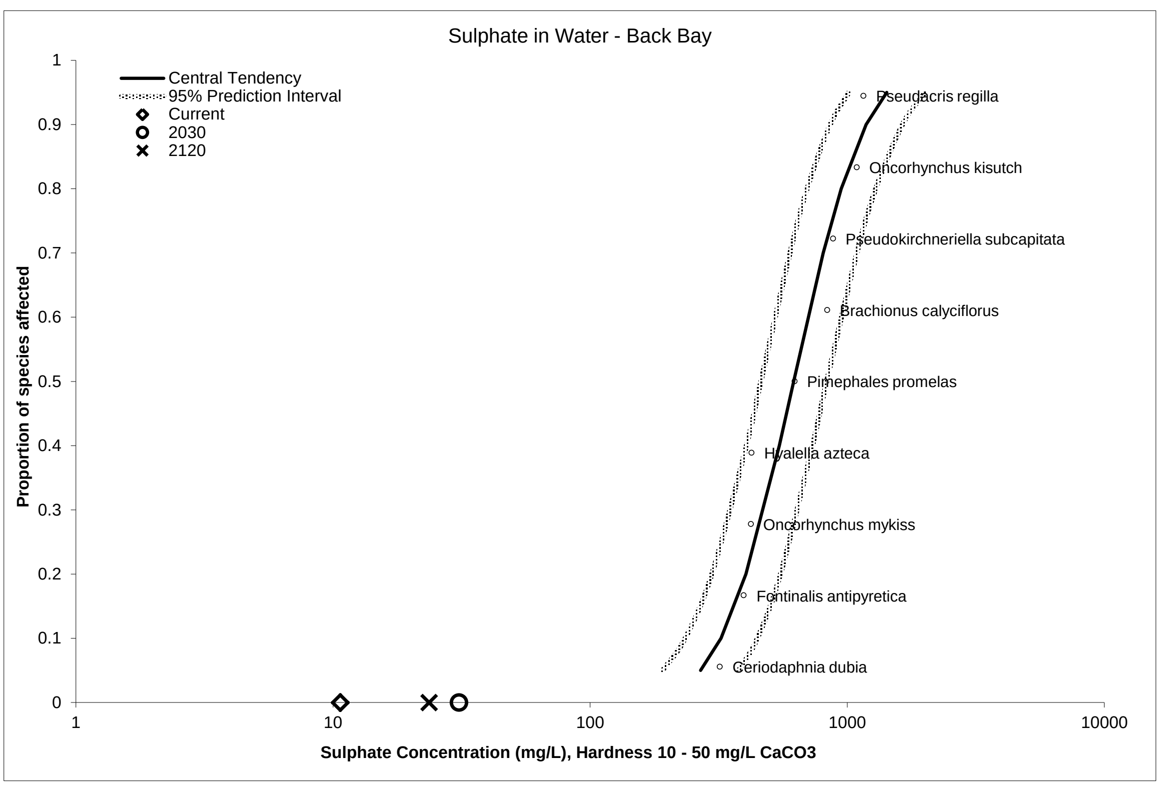


Figure M.4 SSD curves for current and future conditions - sulphate



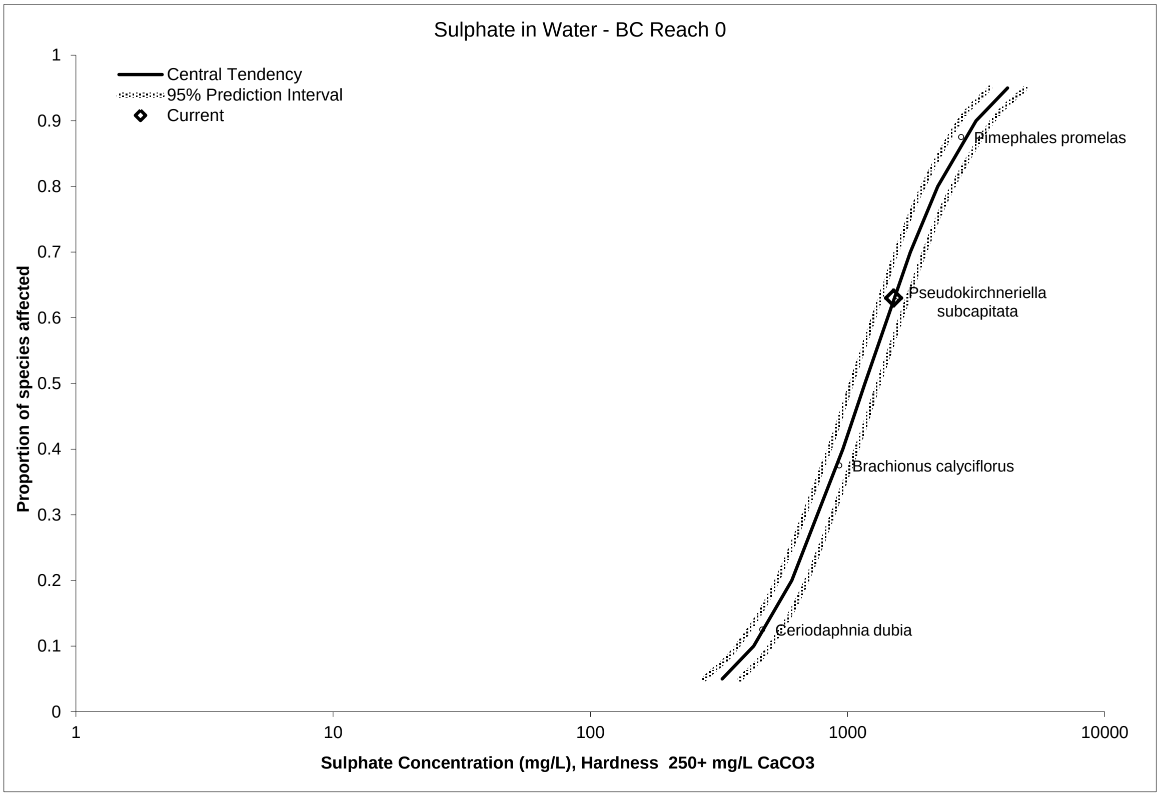
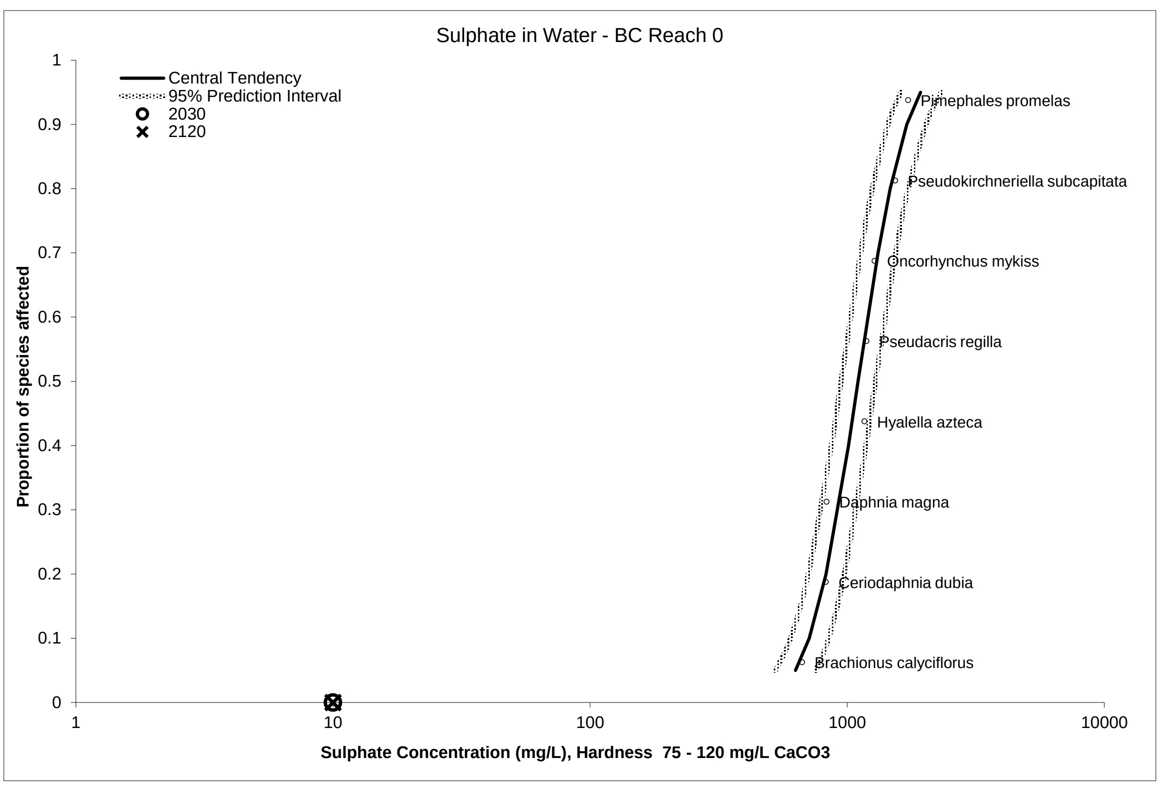


Figure M.4 SSD curves for current and future conditions – sulphate (cont'd)



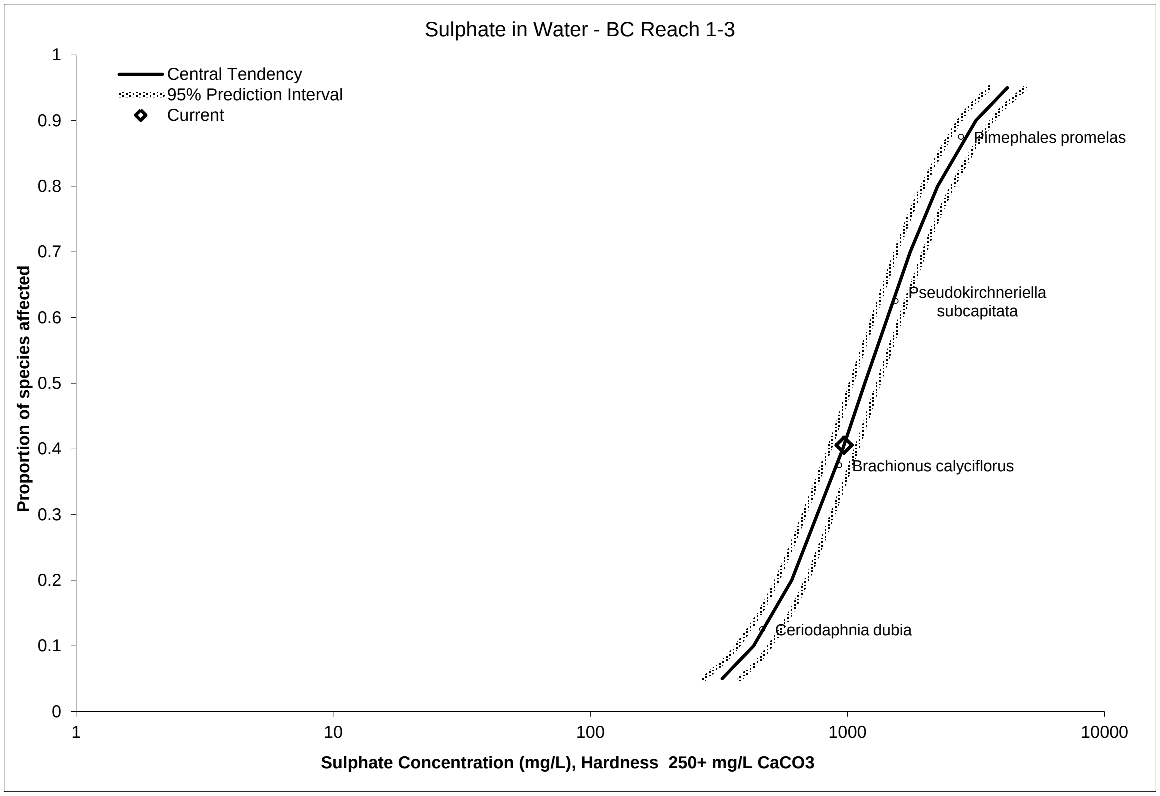
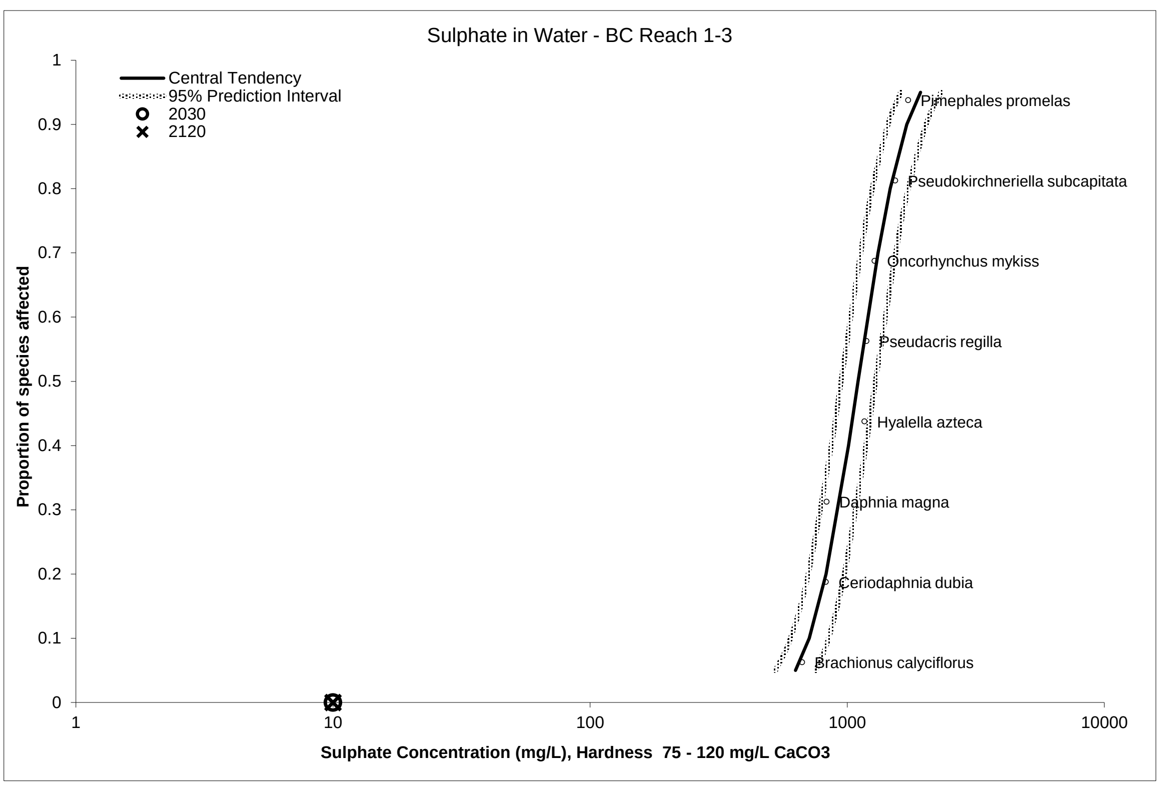


Figure M.4 SSD curves for current and future conditions – sulphate (cont'd)



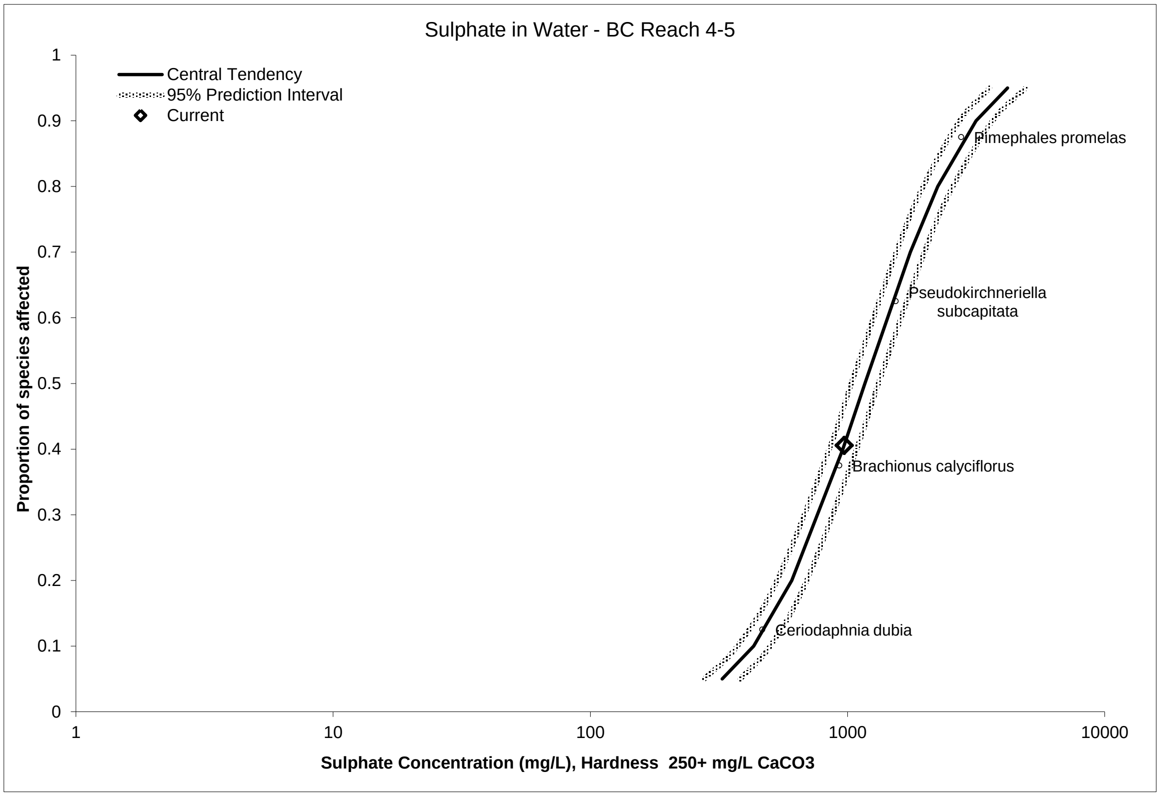
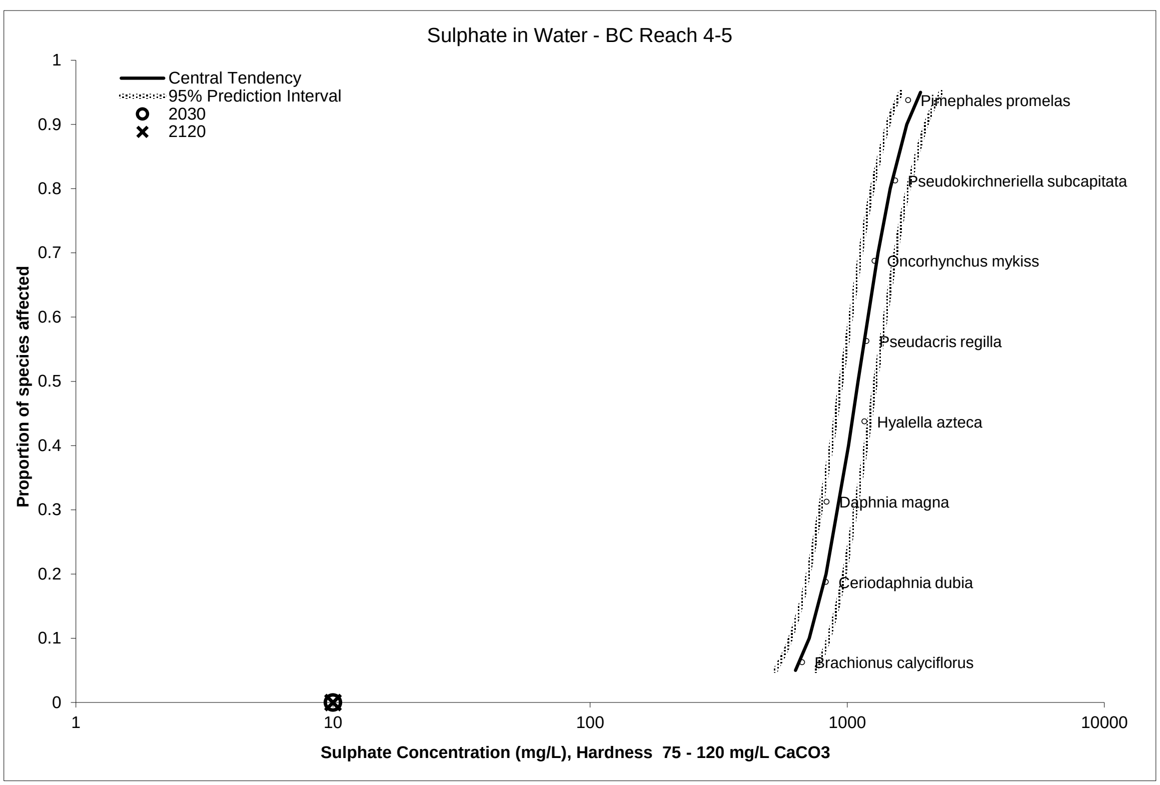


Figure M.4 SSD curves for current and future conditions – sulphate (cont'd)



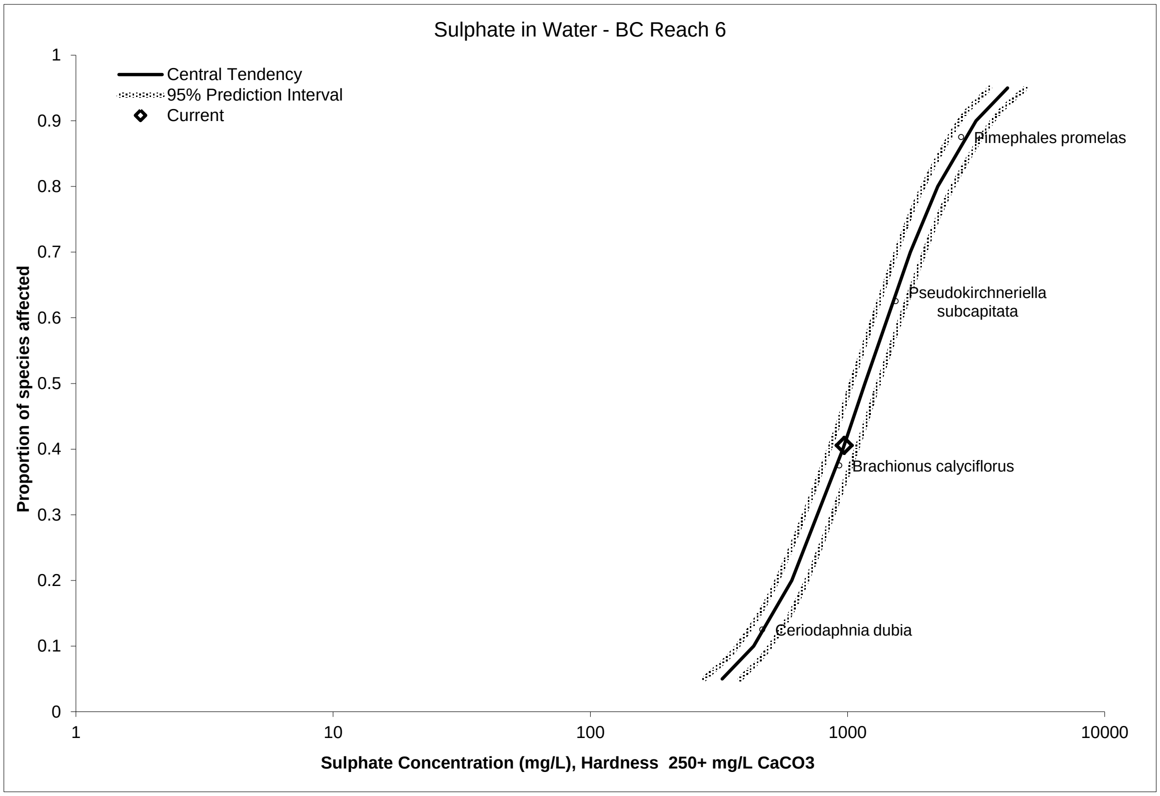
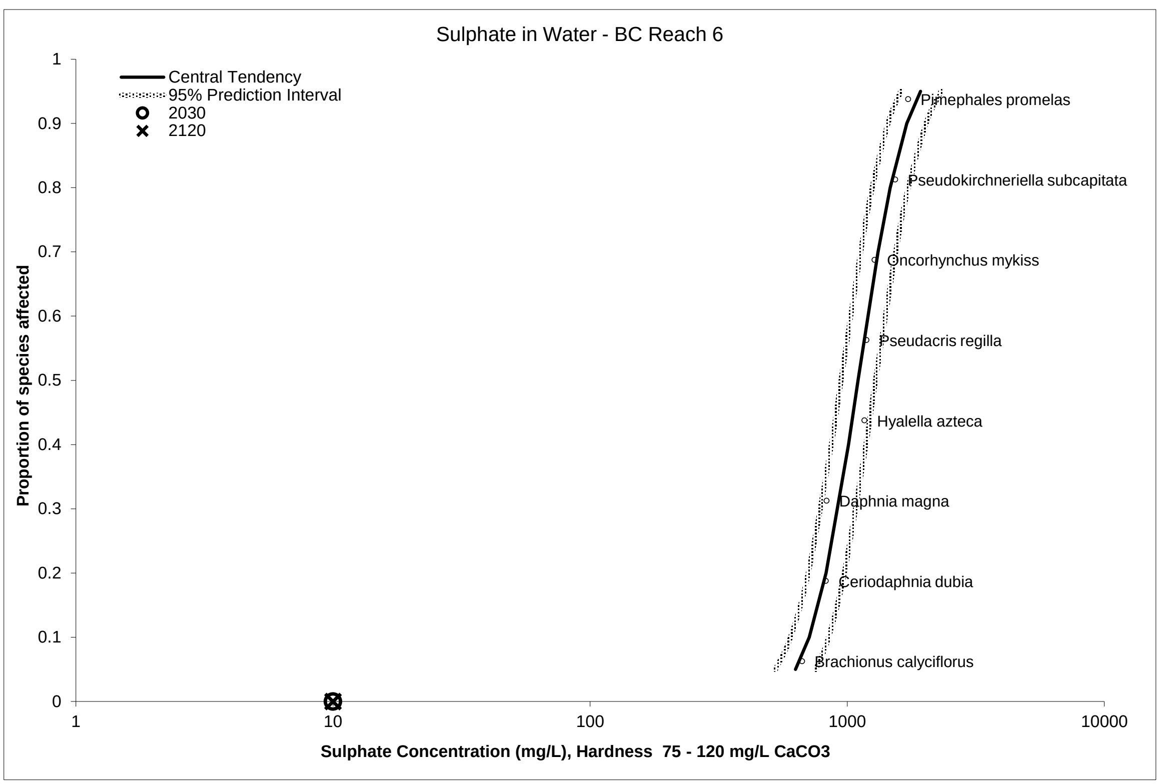


Figure M.4 SSD curves for current and future conditions – sulphate (cont'd)



M.1.2 Fish

In addition to development and use of SSD curves, an additional line of evidence was used for evaluating potential effects to fish. Levels of COPC in fish were compared to fish tissue benchmarks from literature sources. The values from literature are presented in Appendix L and are compared to measured (current) and predicted (future) Baker Creek fish levels. This comparison is shown in the tables below.

Table M.1 Comparison of measured arctic grayling concentrations to available benchmarks – current – Baker Creek

COPC	Fish Tissue Benchmark [a]		Measured Whole Body Arctic Grayling Summary Statistics							
	NOEC	LOEC	N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile
	mg/kg ww									
Antimony	5	9	4	0	0.50	0.62	0.55	0.05	0.55	0.61
Arsenic	1.5	2	4	0	7.5	16	12	3.6	12	16

Note: [a] Fish tissue benchmarks obtained from CH2MHill (2015).

Table M.2 Comparison of measured ninespine stickleback concentrations to available benchmarks – current – Baker Creek

COPC	Fish Tissue Benchmark [a]		Measured Whole Body Ninespine stickleback Summary Statistics							
	NOEC	LOEC	N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile
	mg/kg ww									
Antimony	5	9	4	0	0.04	0.08	0.06	0.02	0.06	0.08
Arsenic	1.5	2	4	0	0.74	1.6	1.0	0.39	0.97	1.5

Note: [a] Fish tissue benchmarks obtained from CH2MHill (2015).

Table M.3 Comparison of measured slimy sculpin concentrations to available benchmarks – current – Baker Creek

COPC	Fish Tissue Benchmark [a]		Measured Whole Body slimy sculpin Summary Statistics							
	NOEC	LOEC	N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile
	mg/kg ww									
Antimony	5	9	4	0	0.17	0.23	0.21	0.03	0.21	0.23
Arsenic	1.5	2	4	0	2.4	2.7	2.6	0.13	2.5	2.7

Note: [a] Fish tissue benchmarks obtained from CH2MHill (2015).

Table M.4 Comparison of predicted 2030 fish concentrations to available benchmarks

COPC	Fish Tissue Benchmark [a]		Baker Creek Reach 0	Baker Creek Reach 1-3	Baker Creek Reach 4-5	Baker Creek Reach 6
	NOEC	LOEC				
	mg/kg ww					
Antimony	5	9	0.16	0.28	0.10	0.08
Arsenic	1.5	2	1.9	5.1	4.1	5.7

Note: [a] Fish tissue benchmarks obtained from CH2MHill (2015).

Table M.5 Comparison of predicted 2120 fish concentrations to available benchmarks

COPC	Fish Tissue Benchmark [a]		Baker Creek Reach 0	Baker Creek Reach 1-3	Baker Creek Reach 4-5	Baker Creek Reach 6
	NOEC	LOEC				
	mg/kg ww					
Antimony	5	9	0.16	0.28	0.10	0.08
Arsenic	1.5	2	1.9	5.0	4.1	5.7

Note: [a] Fish tissue benchmarks obtained from CH2MHill (2015).

M.1.3 Aquatic Wildlife

M.1.3.1 Food Chain Model

The section presents the results for aquatic wildlife receptors. Predicted SI values for all aquatic receptors are provided in Table M.6, Table M.7, and Table M.8 for current, 2030, and 2120, respectively and the full results are presented in ATTACHMENT M.1.

Table M.6 SI values for aquatic receptors - current

Receptor	Location	SI Values	
		Antimony	Arsenic
Muskrat	BC Reach 0	57	22
	BC Reach 1-3	34	30
	BC Reach 4-5	83	39
	BC Reach 6	68	24
	Back Bay	6.9	13
Mink	BC Lower Reaches (0-6)	37	17
	Back Bay	4.1	7.5
Mallard	BC Lower Reaches (0-6)	-	14
	Back Bay	-	6.4
Grebe	BC Lower Reaches (0-6)	-	25
	Back Bay	-	12
Merganser	BC Lower Reaches (0-6)	-	1.8
	Back Bay	-	0.78
Bat	BC Lower Reaches (0-6)	26	14
	Back Bay	5.8	6.0
Swallow	BC Lower Reaches (0-6)	-	10
	Back Bay	-	3.8
Osprey	Back Bay/ Baker Creek	-	0.19

Note: shaded values exceed the benchmark of 1

Table M.7 SI values for aquatic receptors - 2030

Receptor	Location	SI Values	
		Antimony	Arsenic
Muskrat	BC Reach 0	1.8	0.60
	BC Reach 1-3	2.9	0.92
	BC Reach 4-5	1.4	0.82
	BC Reach 6	1.1	0.98
	Back Bay	6.4	12
Mink	BC Lower Reaches (0-6)	0.54	0.37
	Back Bay	3.8	6.8
Mallard	BC Lower Reaches (0-6)	-	0.22
	Back Bay	-	5.9
Grebe	BC Lower Reaches (0-6)	-	0.38
	Back Bay	-	11
Merganser	BC Lower Reaches (0-6)	-	0.10
	Back Bay	-	0.71
Bat	BC Lower Reaches (0-6)	6.0	2.1
	Back Bay	2.6	4.9
Swallow	BC Lower Reaches (0-6)	-	3.6
	Back Bay	-	2.2
Osprey	Back Bay/ Baker Creek	-	0.06

Note: shaded values exceed the benchmark of 1

Table M.8 SI values for aquatic receptors - 2120

Receptor	Location	SI Values	
		Antimony	Arsenic
Muskrat	BC Reach 0	18	7.0
	BC Reach 1-3	33	17
	BC Reach 4-5	12	14
	BC Reach 6	9.3	19
	Back Bay	4.8	9.4
Mink	BC Lower Reaches (0-6)	11	8.1
	Back Bay	2.9	5.1
Mallard	BC Lower Reaches (0-6)	-	6.7
	Back Bay	-	4.4
Grebe	BC Lower Reaches (0-6)	-	12
	Back Bay	-	7.9
Merganser	BC Lower Reaches (0-6)	-	0.86
	Back Bay	-	0.54
Bat	BC Lower Reaches (0-6)	11	7.2
	Back Bay	2.1	3.7
Swallow	BC Lower Reaches (0-6)	-	5.8
	Back Bay	-	1.7
Osprey	Back Bay/ Baker Creek	-	0.11

Note: shaded values exceed the benchmark of 1

M.2 Terrestrial Environment

M.2.1 Terrestrial Vegetation

To evaluate potential effects on terrestrial vegetation, predicted foliage concentrations were compared to phytotoxic concentrations presented in literature. The values from literature are presented in Appendix L in mg/kg on a dry weight basis (dw) and were converted to mg/kg on a wet weight basis (ww) for comparison to measured (current) and predicted (future) foliage levels using moisture content for foliage samples collected on the Giant Mine.

Table M.9 Comparison of measured foliage concentrations to phytotoxic levels – current – Trapper Lake North

COPC	Phytotoxic Range	Measured Foliage Summary Statistics								
		N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile	95% UCLM
	mg/kg ww									
Antimony	65 [a]	21	0	0.01	0.77	0.15	0.16	0.10	0.32	0.22
Arsenic	1.3-11 [a]	21	0	0.43	5.1	1.4	1.0	1.1	2.7	1.8
Copper	8.6-43 [a]	21	0	0.74	2.5	1.4	0.48	1.3	2.4	1.6
Manganese	172-430 [a]	21	0	23	707	144	206	76	702	340
Zinc	43-645 [a]	21	0	2.7	7.3	4.7	1.2	4.6	7.2	5.2

Note: [a] converted from dw to ww using a Giant Mine sample average moisture content of 57 % moisture.

Table M.10 Comparison of measured foliage concentrations to phytotoxic levels – current – West of Baker Creek

COPC	Phytotoxic Range	Measured Foliage Summary Statistics								
		N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile	95 UCLM
	mg/kg ww									
Antimony	65 [a]	17	0	0.03	0.25	0.09	0.05	0.08	0.18	0.12
Arsenic	1.3-11 [a]	18	0	0.38	3.3	1.3	0.66	1.1	2.5	1.6
Copper	8.6-43 [a]	17	0	0.77	2.8	1.6	0.48	1.5	2.4	1.8
Manganese	172-430 [a]	17	0	24	953	223	281	121	845	389
Zinc	43-645 [a]	17	0	1.8	6.9	4.2	1.4	4.0	6.8	4.8

Note: [a] converted from dw to ww using a Giant Mine sample average moisture content of 57 % moisture.

Table M.11 Comparison of measured foliage concentrations to phytotoxic levels – current – East of Baker Creek

COPC	Phytotoxic Range	Measured Foliage Summary Statistics								
		N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile	95 UCLM
	mg/kg ww									
Antimony	65 [a]	38	0	0.03	1.8	0.48	0.45	0.30	1.3	0.63
Arsenic	1.3-11 [a]	57	0	0.41	284	12	38	4.2	27	15
Copper	8.6-43 [a]	38	0	0.58	2.7	1.4	0.47	1.3	2.1	1.5
Manganese	172-430 [a]	38	0	14	335	89	89	61	303	119
Zinc	43-645 [a]	38	0	2.5	19	5.4	2.9	4.9	8.8	6.2

Note: [a] converted from dw to ww using a Giant Mine sample average moisture content of 57 % moisture.

Table M.12 Comparison of measured foliage concentrations to phytotoxic levels – current – South Baker Creek

COPC	Phytotoxic Range	Measured Foliage Summary Statistics								
		N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile	95 UCLM
	mg/kg ww									
Antimony	65 [a]	9	0	0.01	0.05	0.03	0.01	0.02	0.05	-
Arsenic	1.3-11 [a]	10	0	0.36	7.0	1.1	2.1	0.59	4.2	4.0
Copper	8.6-43 [a]	9	0	1.2	1.7	1.5	0.24	1.4	1.7	-
Manganese	172-430 [a]	9	0	56	213	119	66	104	211	-
Zinc	43-645 [a]	9	0	3.1	8.5	5.0	2.1	4.7	8.5	-

Note: [a] converted from dw to ww using a Giant Mine sample average moisture content of 57% moisture.

Table M.13 Comparison of predicted foliage concentrations to phytotoxic levels – future

COPC	Phytotoxic Range	Trapper Lake North	West of Baker Creek	East of Baker Creek	South Baker Creek
	mg/kg ww				
Antimony	65 [a]	0.21	0.31	0.27	0.28
Arsenic	1.3-11 [a]	2.4	4.4	3.6	4.6
Copper	8.6-43 [a]	1.5	1.5	1.5	1.5
Manganese	172-430 [a]	385	307	378	570
Zinc	43-645 [a]	0.55	0.55	0.61	0.57

Note: [a] converted from dw to ww using a Giant Mine sample average moisture content of 57 % moisture.

M.2.2 Terrestrial Wildlife

M.2.2.1 Food Chain Model

The section presents the results for terrestrial wildlife receptors. Predicted SI values for all terrestrial receptors are provided in Table M.14 and Table M.15 for current and future (post-remediation) timeframes, respectively and the full results are presented in ATTACHMENT M.1.

Table M.14 SI values for terrestrial receptors – current

Receptor	Location	SI Values				
		Antimony	Arsenic	Copper	Manganese	Zinc
Mouse	Trapper Lake North	2.2	0.99	0.10	2.1	4.3×10^{-3}
	West of Baker Creek	7.5	2.7	0.09	1.6	4.4×10^{-3}
	East of Baker Creek	12	7.7	0.16	2.2	8.8×10^{-3}
	South Baker Creek	5.8	3.5	0.11	2.4	5.7×10^{-3}
Hare	Trapper Lake North	3.2	1.3	0.12	1.7	6.5×10^{-3}
	West of Baker Creek	13	4.2	0.10	1.3	6.8×10^{-3}
	East of Baker Creek	22	10	0.25	1.7	0.02
	South Baker Creek	9.5	5.7	0.13	1.9	8.8×10^{-3}
Bat	Trapper Lake North	3.2	1.6	0.15	2.9	6.5×10^{-3}
	West of Baker Creek	11	4.3	0.13	2.3	6.7×10^{-3}
	East of Baker Creek	19	6.9	0.25	3.0	0.01
	South Baker Creek	8.5	5.6	0.16	3.3	8.4×10^{-3}
Ptarmigan	Trapper Lake North	-	0.42	0.20	0.51	0.01
	West of Baker Creek	-	1.4	0.15	0.40	0.01
	East of Baker Creek	-	3.4	0.44	0.54	0.03
	South Baker Creek	-	1.9	0.22	0.58	0.01
Swallow	Trapper Lake North	-	1.7	0.71	1.5	0.04
	West of Baker Creek	-	5.6	0.52	1.2	0.04
	East of Baker Creek	-	9.9	1.7	1.6	0.10
	South Baker Creek	-	7.7	0.77	1.8	0.05
Shrew	Trapper Lake North	10	4.9	0.48	9.6	0.02
	West of Baker Creek	33	13	0.43	7.6	0.02
	East of Baker Creek	55	21	0.77	10	0.04
	South Baker Creek	25	17	0.50	11	0.03
Fox	Entire Site	2.6	1.0	0.04	0.28	0.01
Falcon	Entire Site	-	0.19	0.05	6.0×10^{-3}	0.03
Owl	Entire Site	-	0.83	0.13	0.02	0.05
Lynx	Entire Site	1.9	0.81	0.05	0.03	0.02

Note: shaded values exceed the benchmark of 1

Table M.15 SI values for terrestrial receptors – future (post-remediation)

Receptor	Location	SI Values				
		Antimony	Arsenic	Copper	Manganese	Zinc
Mouse	Trapper Lake North	2.2	0.99	0.10	2.1	$4.3x10^{-3}$
	West of Baker Creek	7.5	2.7	0.09	1.6	$4.4x10^{-3}$
	East of Baker Creek	5.3	4.0	0.11	2.0	$8.4x10^{-3}$
	South Baker Creek	5.5	2.9	0.11	3.1	$5.7x10^{-3}$
Hare	Trapper Lake North	3.2	1.3	0.12	1.7	$6.5x10^{-3}$
	West of Baker Creek	13	4.2	0.10	1.3	$6.8x10^{-3}$
	East of Baker Creek	8.3	4.6	0.15	1.6	0.02
	South Baker Creek	8.9	4.7	0.13	2.4	$8.8x10^{-3}$
Bat	Trapper Lake North	3.2	1.6	0.15	2.9	$6.5x10^{-3}$
	West of Baker Creek	11	4.3	0.13	2.3	$6.7x10^{-3}$
	East of Baker Creek	7.6	3.0	0.17	2.8	0.01
	South Baker Creek	8.0	4.6	0.16	4.2	$8.4x10^{-3}$
Ptarmigan	Trapper Lake North	-	0.42	0.20	0.51	0.01
	West of Baker Creek	-	1.4	0.15	0.40	0.01
	East of Baker Creek	-	1.5	0.25	0.50	0.03
	South Baker Creek	-	1.6	0.22	0.75	0.01
Swallow	Trapper Lake North	-	1.7	0.71	1.5	0.04
	West of Baker Creek	-	5.6	0.52	1.2	0.04
	East of Baker Creek	-	3.7	0.89	1.5	0.10
	South Baker Creek	-	6.3	0.77	2.3	0.05
Shrew	Trapper Lake North	10	4.9	0.48	9.6	0.02
	West of Baker Creek	33	13	0.43	7.6	0.02
	East of Baker Creek	22	9.3	0.54	9.4	0.04
	South Baker Creek	24	14	0.50	14	0.03
Fox	Entire Site	2.0	0.70	0.03	0.26	0.01
Falcon	Entire Site	-	0.13	0.04	$5.9x10^{-3}$	0.03
Owl	Entire Site	-	0.55	0.13	0.02	0.05
Lynx	Entire Site	1.4	0.55	0.04	0.03	0.02

Note: shaded values exceed the benchmark of 1

M.2.2.2 Small Mammal Tissue

To evaluate potential effects on small mammals, measured concentrations and future predicted concentrations were compared to toxic tissue concentrations presented in literature (Appendix L), as shown in the following tables.

Table M.16 Comparison of measured small mammal concentrations to toxic tissue concentrations – current – Trapper Lake North

COPC	Toxic Tissue Concentration [a]	Measured Whole Body Small Mammal Summary Statistics [b]								
		N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile	95 UCLM
	mg/kg ww									
Antimony	-	16	0	0.01	0.11	0.04	0.03	0.03	0.08	0.05
Arsenic	6-28 liver 5-26 kidney	16	0	0.39	2.8	1.6	0.61	1.4	2.3	1.8
Copper	690 liver 23 kidney	16	0	2.1	4.9	2.8	0.72	2.7	4.1	3.1
Manganese	-	16	0	1.9	4.2	3.0	0.67	2.9	4.1	3.3
Zinc	-	16	0	23	40	28	4.1	27	33	29

Note: [a] source: Puls (1994)
[b] source: Golder (2016)

Table M.17 Comparison of measured small mammal concentrations to toxic tissue concentrations – West of Baker Creek

COPC	Toxic Tissue Concentration [a]	Measured Whole Body Small Mammal Summary Statistics [b]								
		N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile	95 UCLM
	mg/kg ww									
Antimony	-	18	0	0.03	0.78	0.11	0.17	0.07	0.28	0.28
Arsenic	6-28 liver 5-26 kidney	18	0	1.3	28	4.4	6.1	3.0	12	6.2
Copper	690 liver 23 kidney	18	0	2.4	3.9	3.3	0.40	3.3	3.8	3.5
Manganese	-	18	0	2.3	15	5.5	3.7	4.7	14	7.2
Zinc	-	18	0	24	34	29	3.2	28	34	30

Note: [a] source: Puls (1994)
[b] source: Golder (2016)

Table M.18 Comparison of measured small mammal concentrations to toxic tissue concentrations – East of Baker Creek

COPC	Toxic Tissue Concentration [a]	Measured Whole Body Small Mammal Summary Statistics [b]								
		N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile	95 UCLM
	mg/kg ww									
Antimony	-	3	0	0.14	0.19	0.17	-	0.17	-	-
Arsenic	6-28 liver 5-26 kidney	3	0	2.1	3.1	2.6	-	2.5	-	-
Copper	690 liver 23 kidney	3	0	2.7	2.8	2.7	-	2.7	-	-
Manganese	-	3	0	3.5	13	7.0	-	5.7	-	-
Zinc	-	3	0	22	24	23	-	23	-	-

Note: [a] source: Puls (1994)
[b] source: Golder (2016)

Table M.19 Comparison of measured small mammal concentrations to toxic tissue concentrations – South Baker Creek

COPC	Toxic Tissue Concentration [a]	Measured Whole Body Small Mammal Summary Statistics [b]								
		N	N<MDL	Min	Max	Mean	St Dev	Geo Mean	95th Percentile	95 UCLM
	mg/kg ww									
Antimony	-	9	0	$4.5x10^{-3}$	0.12	0.04	0.05	0.02	0.12	-
Arsenic	6-28 liver 5-26 kidney	9	0	0.15	2.8	1.0	0.83	0.72	2.3	-
Copper	690 liver 23 kidney	9	0	1.2	3.3	2.6	0.70	2.5	3.3	-
Manganese	-	9	0	1.4	8.2	3.2	2.0	2.8	6.4	-
Zinc	-	9	0	14	33	25	5.4	24	32	-

Note: [a] source: Puls (1994)
[b] source: Golder (2016)

Table M.20 Comparison of measured small mammal concentrations to toxic tissue concentrations – future

COPC	Toxic Tissue Concentration [a]	Trapper Lake North [b]	West of Baker Creek [b]	East of Baker Creek [b]	South Baker Creek [b]
	mg/kg ww				
Antimony	-	0.07	0.09	0.08	0.08
Arsenic	6-28 liver 5-26 kidney	2.3	3.4	3.0	3.5
Copper	690 liver 23 kidney	0.66	0.63	0.68	0.67
Manganese	-	6.0	4.8	5.9	8.9
Zinc	-	31	32	34	

Note: [a] source: Puls (1994)
[b] predicted concentrations for shrew/mouse

M.3 Sample Calculations

A sample calculation of the food chain model was presented in Appendix K. This included the exposure assessment as well as the estimation of the SI.

M.4 Literature Cited

CH2MHill. 2015. Appendx E: Summary of literature-derived fish tissue toxicity data for the baseline ecological risk assessment - Halaco Superfund Site, Oxnard, California, Remedial Investigation. Prepared for the U.S. Environmental Protection Agency Region 9, September.

Golder Associates Ltd. [Golder]. 2016. Small mammal 2016 data. Laboratory Excel file, December 14 2016.

Puls, R. 1994. Mineral levels in animal health: Diagnostic data. 2nd Ed. Clearbrook, BC: Sherpa International.

LIST OF ATTACHMENTS

ATTACHMENT M.1

FULL ECOLOGICAL RESULTS

Muskrat - Current - BC Reach 0 - Page 1/2

Receptor
GiantMuskrat
Timeframe
Current
Aquatic Pathways Source
BC Reach 0
Terrestrial Pathways Source

Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Muskrat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1
Water ingestion rate	Water	m^3/d	1.12E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	4.08E+02
Sediment ingestion rate	Sediment	g (dw)/d	2.70E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.20
Aquatic Vegetation	AquaticVeg	-	0.80
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC0	BG-BC711
Sediment	BC0	BG-BC711
Benthic	BC0	BG-BC711
AquaticVeg	BC0	BG-BC711
Fish	-	-
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Muskrat - Current - BC Reach 0 - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC0_Current	mg/L	1.20E-01	1.19E-01
Sediment	Sediment_BC0_Current	mg/kg dw	3.25E+02	6.84E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC0_Current	mg/kg ww	2.54E+01	2.33E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BC0_Current	mg/kg ww	1.25E+00	6.75E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_Current	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_Current	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_Current	mg/kg ww	2.68E-02	1.87E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.35E-02	1.34E-02
	Sediment	mg/kg-d	8.76E-01	1.84E+00
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	2.07E+00	1.90E+01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	4.08E-01	2.20E+00
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	3.37E+00	2.31E+01
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	57.07	22.22
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.81E-04	5.73E-03
	Sediment	mg/kg-d	1.35E-02	8.19E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	3.19E-02	2.24E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	8.75E-03	6.11E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	5.44E-02	2.94E+00
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.92	2.83
Concentration		mg/kg ww		

Muskrat - Current - BC Reach 1-3 - Page 1/2

Receptor
GiantMuskrat
Timeframe
Current
Aquatic Pathways Source
BC Reach 1-3
Terrestrial Pathways Source

Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Muskrat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1
Water ingestion rate	Water	m^3/d	1.12E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	4.08E+02
Sediment ingestion rate	Sediment	g (dw)/d	2.70E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.20
Aquatic Vegetation	AquaticVeg	-	0.80
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC13	BG-BC711
Sediment	BC13	BG-BC711
Benthic	BC13	BG-BC711
AquaticVeg	BC13	BG-BC711
Fish	-	-
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Muskrat - Current - BC Reach 1-3 - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC13_Current	mg/L	2.17E-01	3.18E-01
Sediment	Sediment_BC13_Current	mg/kg dw	1.89E+02	9.30E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC13_Current	mg/kg ww	1.47E+01	3.17E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BC13_Current	mg/kg ww	7.58E-01	8.12E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_Current	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_Current	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_Current	mg/kg ww	2.68E-02	1.87E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.43E-02	3.57E-02
	Sediment	mg/kg-d	5.09E-01	2.51E+00
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.20E+00	2.59E+01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	2.47E-01	2.65E+00
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.99E+00	3.11E+01
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	33.65	29.89
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.81E-04	5.73E-03
	Sediment	mg/kg-d	1.35E-02	8.19E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	3.19E-02	2.24E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	8.75E-03	6.11E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	5.44E-02	2.94E+00
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.92	2.83
Concentration		mg/kg ww		

Muskrat - Current - BC Reach 4-5 - Page 1/2

Receptor
GiantMuskrat
Timeframe
Current
Aquatic Pathways Source
BC Reach 4-5
Terrestrial Pathways Source

Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Muskrat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1
Water ingestion rate	Water	m^3/d	1.12E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	4.08E+02
Sediment ingestion rate	Sediment	g (dw)/d	2.70E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.20
Aquatic Vegetation	AquaticVeg	-	0.80
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC45	BG-BC711
Sediment	BC45	BG-BC711
Benthic	BC45	BG-BC711
AquaticVeg	BC45	BG-BC711
Fish	-	-
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Muskrat - Current - BC Reach 4-5 - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC45_Current	mg/L	2.61E-01	2.76E-01
Sediment	Sediment_BC45_Current	mg/kg dw	4.71E+02	1.23E+03
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC45_Current	mg/kg ww	3.67E+01	4.20E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BC45_Current	mg/kg ww	1.76E+00	9.61E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_Current	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_Current	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_Current	mg/kg ww	2.68E-02	1.87E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.93E-02	3.10E-02
	Sediment	mg/kg-d	1.27E+00	3.32E+00
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	3.00E+00	3.43E+01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	5.73E-01	3.14E+00
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	4.87E+00	4.08E+01
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	82.58	39.26
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.81E-04	5.73E-03
	Sediment	mg/kg-d	1.35E-02	8.19E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	3.19E-02	2.24E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	8.75E-03	6.11E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	5.44E-02	2.94E+00
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.92	2.83
Concentration		mg/kg ww		

Muskrat - Current - BC Reach 6 - Page 1/2

Receptor
GiantMuskrat
Timeframe
Current
Aquatic Pathways Source
BC Reach 6
Terrestrial Pathways Source

Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Muskrat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1
Water ingestion rate	Water	m^3/d	1.12E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	4.08E+02
Sediment ingestion rate	Sediment	g (dw)/d	2.70E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.20
Aquatic Vegetation	AquaticVeg	-	0.80
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC6	BG-BC711
Sediment	BC6	BG-BC711
Benthic	BC6	BG-BC711
AquaticVeg	BC6	BG-BC711
Fish	-	-
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Muskrat - Current - BC Reach 6 - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC6_Current	mg/L	2.86E-01	3.93E-01
Sediment	Sediment_BC6_Current	mg/kg dw	3.85E+02	7.55E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC6_Current	mg/kg ww	3.00E+01	2.57E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BC6_Current	mg/kg ww	1.46E+00	7.16E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_Current	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_Current	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_Current	mg/kg ww	2.68E-02	1.87E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	3.21E-02	4.41E-02
	Sediment	mg/kg-d	1.04E+00	2.03E+00
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	2.45E+00	2.10E+01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	4.76E-01	2.34E+00
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	4.00E+00	2.54E+01
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	67.77	24.46
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.81E-04	5.73E-03
	Sediment	mg/kg-d	1.35E-02	8.19E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	3.19E-02	2.24E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	8.75E-03	6.11E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	5.44E-02	2.94E+00
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.92	2.83
Concentration		mg/kg ww		

Muskrat - Current - Back Bay - Page 1/2

Receptor
GiantMuskrat
Timeframe
Current
Aquatic Pathways Source
Back Bay
Terrestrial Pathways Source

Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - South Yellowknife Bay
Benthic Reference Location
Background - South Yellowknife Bay
Fish Reference Location

Aquatic Vegetation Reference Location
Background - South Yellowknife Bay
Aquatic/Terrestrial Insect Source

Muskrat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1
Water ingestion rate	Water	m^3/d	1.12E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	4.08E+02
Sediment ingestion rate	Sediment	g (dw)/d	2.70E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.20
Aquatic Vegetation	AquaticVeg	-	0.80
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BB	BG-LK
Sediment	BB	BG-SYB
Benthic	BB	BG-SYB
AquaticVeg	BB	BG-SYB
Fish	-	-
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Muskrat - Current - Back Bay - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BB_Current	mg/L	3.53E-04	2.59E-03
Sediment	Sediment_BB_Current	mg/kg dw	3.87E+01	2.48E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BB_Current	mg/kg ww	3.02E+00	1.43E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BB_Current	mg/kg ww	1.76E-01	5.04E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_Current	mg/L	2.00E-04	5.60E-04
Sediment	Sediment_BG-SYB_Current	mg/kg dw	1.10E+00	1.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-SYB_Current	mg/kg ww	8.58E-02	6.00E+00
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-SYB_Current	mg/kg ww	6.66E-03	7.51E-01
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	3.97E-05	2.91E-04
	Sediment	mg/kg-d	1.04E-01	6.69E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	2.46E-01	1.17E+01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	5.75E-02	1.65E+00
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	4.08E-01	1.40E+01
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	6.92	13.47
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.25E-05	6.29E-05
	Sediment	mg/kg-d	2.96E-03	2.80E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	7.01E-03	4.90E-01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	2.17E-03	2.45E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.22E-02	7.63E-01
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.21	0.73
Concentration		mg/kg ww		

Mink - Current - BC Lower Reaches (0-6) - Page 1/2

Receptor
GiantMink
Timeframe
Current
Aquatic Pathways Source
BC Lower Reaches (0-6)
Terrestrial Pathways Source
Site Average
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location
Background - BC Reach 7-11
Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

American Mink

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.82
Water ingestion rate	Water	m^3/d	2.49E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.16E+02
Sediment ingestion rate	Sediment	g (dw)/d	1.89E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.35
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	0.40
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	0.25
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC06	BG-BC711
Sediment	BC06	BG-BC711
Benthic	BC06	BG-BC711
AquaticVeg	-	-
Fish	BC06	BG-BC711
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	GiantAvg	BG
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Mink - Current - BC Lower Reaches (0-6) - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC06_Current	mg/L	2.21E-01	2.76E-01
Sediment	Sediment_BC06_Current	mg/kg dw	3.43E+02	9.01E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC06_Current	mg/kg ww	2.67E+01	3.07E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BC06_Current	mg/kg ww	6.19E-01	2.65E+00
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	Mouse_GiantAvg_Current	mg/kg ww	8.71E-02	1.33E+00
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_Current	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_Current	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BG-BC711_Current	mg/kg ww	7.00E-03	3.84E-01
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	Mouse_BG_Current	mg/kg ww	5.43E-02	6.76E-01
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	6.71E-03	8.39E-03
	Sediment	mg/kg-d	7.87E-01	2.07E+00
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.32E+00	1.52E+01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	3.51E-02	1.50E-01
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	mg/kg-d	3.09E-03	4.69E-02
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	2.16E+00	1.75E+01
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	36.56	16.83
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	7.59E-05	1.55E-03
	Sediment	mg/kg-d	1.15E-02	6.98E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.93E-02	1.36E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	3.97E-04	2.18E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	mg/kg-d	1.92E-03	2.40E-02
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	3.32E-02	1.48E+00
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.56	1.42
Concentration		mg/kg ww		

Mink - Current - Back Bay - Page 1/2

Receptor
GiantMink
Timeframe
Current
Aquatic Pathways Source
Back Bay
Terrestrial Pathways Source
Giant Townsite
Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - South Yellowknife Bay
Benthic Reference Location
Background - South Yellowknife Bay
Fish Reference Location
Background - South Yellowknife Bay
Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

American Mink

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.82
Water ingestion rate	Water	m^3/d	2.49E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.16E+02
Sediment ingestion rate	Sediment	g (dw)/d	1.89E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.35
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	0.40
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	0.25
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BB	BG-LK
Sediment	BB	BG-SYB
Benthic	BB	BG-SYB
AquaticVeg	-	-
Fish	BB	BG-SYB
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	Townsite	BG
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Mink - Current - Back Bay - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BB_Current	mg/L	3.53E-04	2.59E-03
Sediment	Sediment_BB_Current	mg/kg dw	3.87E+01	2.48E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BB_Current	mg/kg ww	3.02E+00	1.43E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BB_Current	mg/kg ww	5.42E-02	1.16E+00
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	Mouse_Townsite_Current	mg/kg ww	8.02E-02	9.94E-01
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_Current	mg/L	2.00E-04	5.60E-04
Sediment	Sediment_BG-SYB_Current	mg/kg dw	1.10E+00	1.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-SYB_Current	mg/kg ww	8.58E-02	6.00E+00
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BG-SYB_Current	mg/kg ww	1.54E-03	6.19E-02
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	Mouse_BG_Current	mg/kg ww	5.43E-02	6.76E-01
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.07E-05	7.86E-05
	Sediment	mg/kg-d	8.89E-02	5.71E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.50E-01	7.10E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	3.07E-03	6.60E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	mg/kg-d	2.84E-03	3.52E-02
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	2.44E-01	7.78E+00
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	4.14	7.48
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	6.07E-06	1.70E-05
	Sediment	mg/kg-d	2.53E-03	2.39E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	4.26E-03	2.98E-01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	8.73E-05	3.51E-03
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	mg/kg-d	1.92E-03	2.40E-02
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	8.80E-03	3.49E-01
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.15	0.34
Concentration		mg/kg ww		

Mallard - Current - BC Lower Reaches (0-6) - Page 1/2

Receptor
GiantMallard
Timeframe
Current
Aquatic Pathways Source
BC Lower Reaches (0-6)
Terrestrial Pathways Source

Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Mallard

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.2
Water ingestion rate	Water	m^3/d	6.26E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.08E+02
Sediment ingestion rate	Sediment	g (dw)/d	2.03E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.75
Aquatic Vegetation	AquaticVeg	-	0.25
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC06	BG-BC711
Sediment	BC06	BG-BC711
Benthic	BC06	BG-BC711
AquaticVeg	BC06	BG-BC711
Fish	-	-
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Mallard - Current - BC Lower Reaches (0-6) - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC06_Current	mg/L	2.21E-01	2.76E-01
Sediment	Sediment_BC06_Current	mg/kg dw	3.43E+02	9.01E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC06_Current	mg/kg ww	2.67E+01	3.07E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BC06_Current	mg/kg ww	1.31E+00	7.96E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_Current	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_Current	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_Current	mg/kg ww	2.68E-02	1.87E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.15E-02	1.44E-02
	Sediment	mg/kg-d	5.80E-01	1.52E+00
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	5.14E+00	5.91E+01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	8.39E-02	5.10E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	5.81E+00	6.11E+01
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	13.89
Concentration		mg/kg ww	6.98E-01	7.33E+01

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.31E-04	2.66E-03
	Sediment	mg/kg-d	8.46E-03	5.14E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	7.50E-02	5.28E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	1.72E-03	1.20E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	8.53E-02	5.45E+00
		mg/kg-d	-	4.40E+00
SI Value		-	-	1.24
Concentration		mg/kg ww	1.02E-02	6.55E+00

Mallard - Current - Back Bay - Page 1/2

Receptor
GiantMallard
Timeframe
Current
Aquatic Pathways Source
Back Bay
Terrestrial Pathways Source

Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - South Yellowknife Bay
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Mallard

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.2
Water ingestion rate	Water	m^3/d	6.26E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.08E+02
Sediment ingestion rate	Sediment	g (dw)/d	2.03E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.75
Aquatic Vegetation	AquaticVeg	-	0.25
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BB	BG-LK
Sediment	BB	BG-SYB
Benthic	BB	BG-BC711
AquaticVeg	BB	BG-BC711
Fish	-	-
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Mallard - Current - Back Bay - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BB_Current	mg/L	3.53E-04	2.59E-03
Sediment	Sediment_BB_Current	mg/kg dw	3.87E+01	2.48E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BB_Current	mg/kg ww	3.02E+00	1.43E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BB_Current	mg/kg ww	1.76E-01	5.04E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_Current	mg/L	2.00E-04	5.60E-04
Sediment	Sediment_BG-SYB_Current	mg/kg dw	1.10E+00	1.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_Current	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_Current	mg/kg ww	2.68E-02	1.87E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.84E-05	1.35E-04
	Sediment	mg/kg-d	6.55E-02	4.20E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	5.80E-01	2.75E+01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	1.13E-02	3.23E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	6.57E-01	2.83E+01
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	6.43
Concentration		mg/kg ww	7.89E-02	3.40E+01

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.04E-05	2.92E-05
	Sediment	mg/kg-d	1.86E-03	1.76E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	7.50E-02	5.28E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	1.72E-03	1.20E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	7.86E-02	5.42E+00
		mg/kg-d	-	4.40E+00
SI Value		-	-	1.23
Concentration		mg/kg ww	9.43E-03	6.50E+00

Grebe - Current - BC Lower Reaches (0-6) - Page 1/2

Receptor
GiantGrebe
Timeframe
Current
Aquatic Pathways Source
BC Lower Reaches (0-6)
Terrestrial Pathways Source

Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location
Background - BC Reach 7-11
Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Horned Grebe

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.44
Water ingestion rate	Water	m^3/d	3.40E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.70E+02
Sediment ingestion rate	Sediment	g (dw)/d	1.60E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.90
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	0.10
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC06	BG-BC711
Sediment	BC06	BG-BC711
Benthic	BC06	BG-BC711
AquaticVeg	-	-
Fish	BC06	BG-BC711
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Grebe - Current - BC Lower Reaches (0-6) - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC06_Current	mg/L	2.21E-01	2.76E-01
Sediment	Sediment_BC06_Current	mg/kg dw	3.43E+02	9.01E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC06_Current	mg/kg ww	2.67E+01	3.07E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BC06_Current	mg/kg ww	6.19E-01	2.65E+00
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_Current	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_Current	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BG-BC711_Current	mg/kg ww	7.00E-03	3.84E-01
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.71E-02	2.14E-02
	Sediment	mg/kg-d	1.25E+00	3.28E+00
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	9.29E+00	1.07E+02
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	2.39E-02	1.03E-01
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.06E+01	1.10E+02
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	25.04
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.93E-04	3.94E-03
	Sediment	mg/kg-d	1.82E-02	1.10E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.36E-01	9.55E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	2.70E-04	1.49E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.54E-01	9.67E+00
		mg/kg-d	-	4.40E+00
SI Value		-	-	2.20
Concentration		mg/kg ww		

Grebe - Current - Back Bay - Page 1/2

Receptor
GiantGrebe
Timeframe
Current
Aquatic Pathways Source
Back Bay
Terrestrial Pathways Source

Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - South Yellowknife Bay
Benthic Reference Location
Background - South Yellowknife Bay
Fish Reference Location
Background - South Yellowknife Bay
Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Horned Grebe

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.44
Water ingestion rate	Water	m^3/d	3.40E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.70E+02
Sediment ingestion rate	Sediment	g (dw)/d	1.60E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.90
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	0.10
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BB	BG-LK
Sediment	BB	BG-SYB
Benthic	BB	BG-SYB
AquaticVeg	-	-
Fish	BB	BG-SYB
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Grebe - Current - Back Bay - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BB_Current	mg/L	3.53E-04	2.59E-03
Sediment	Sediment_BB_Current	mg/kg dw	3.87E+01	2.48E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BB_Current	mg/kg ww	3.02E+00	1.43E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BB_Current	mg/kg ww	5.42E-02	1.16E+00
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_Current	mg/L	2.00E-04	5.60E-04
Sediment	Sediment_BG-SYB_Current	mg/kg dw	1.10E+00	1.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-SYB_Current	mg/kg ww	8.58E-02	6.00E+00
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BG-SYB_Current	mg/kg ww	1.54E-03	6.19E-02
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.73E-05	2.00E-04
	Sediment	mg/kg-d	1.41E-01	9.03E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.05E+00	4.98E+01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	2.09E-03	4.50E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.19E+00	5.07E+01
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	11.53
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.55E-05	4.33E-05
	Sediment	mg/kg-d	4.00E-03	3.78E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	2.98E-02	2.09E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	5.95E-05	2.39E-03
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	3.39E-02	2.13E+00
		mg/kg-d	-	4.40E+00
SI Value		-	-	0.48
Concentration		mg/kg ww		

Merganser - Current - BC Lower Reaches (0-6) - Page 1/2

Receptor
GiantMerganser
Timeframe
Current
Aquatic Pathways Source
BC Lower Reaches (0-6)
Terrestrial Pathways Source

Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location
Background - BC Reach 7-11
Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Common Merganser

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.5
Water ingestion rate	Water	m^3/d	7.75E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.79E+02
Sediment ingestion rate	Sediment	g (dw)/d	1.51E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.08
Aquatic Vegetation	AquaticVeg	-	0.02
Fish	Fish	-	0.90
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC06	BG-BC711
Sediment	BC06	BG-BC711
Benthic	BC06	BG-BC711
AquaticVeg	BC06	BG-BC711
Fish	BC06	BG-BC711
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Merganser - Current - BC Lower Reaches (0-6) - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC06_Current	mg/L	2.21E-01	2.76E-01
Sediment	Sediment_BC06_Current	mg/kg dw	3.43E+02	9.01E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC06_Current	mg/kg ww	2.67E+01	3.07E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BC06_Current	mg/kg ww	1.31E+00	7.96E+00
Fish	Fish_BC06_Current	mg/kg ww	6.19E-01	2.65E+00
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_Current	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_Current	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_Current	mg/kg ww	2.68E-02	1.87E+00
Fish	Fish_BG-BC711_Current	mg/kg ww	7.00E-03	3.84E-01
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.14E-02	1.43E-02
	Sediment	mg/kg-d	3.46E-01	9.09E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	5.39E-01	6.20E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	6.61E-03	4.02E-02
	Fish	mg/kg-d	1.41E-01	6.03E-01
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.04E+00	7.77E+00
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	1.77
Concentration		mg/kg ww	1.57E-01	1.17E+01

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.29E-04	2.63E-03
	Sediment	mg/kg-d	5.05E-03	3.07E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	7.88E-03	5.54E-01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	1.35E-04	9.44E-03
	Fish	mg/kg-d	1.59E-03	8.74E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.48E-02	6.84E-01
		mg/kg-d	-	4.40E+00
SI Value		-	-	0.16
Concentration		mg/kg ww	2.22E-03	1.03E+00

Merganser - Current - Back Bay - Page 1/2

Receptor
GiantMerganser
Timeframe
Current
Aquatic Pathways Source
Back Bay
Terrestrial Pathways Source

Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - South Yellowknife Bay
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location
Background - South Yellowknife Bay
Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Common Merganser

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.5
Water ingestion rate	Water	m^3/d	7.75E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.79E+02
Sediment ingestion rate	Sediment	g (dw)/d	1.51E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.08
Aquatic Vegetation	AquaticVeg	-	0.02
Fish	Fish	-	0.90
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BB	BG-LK
Sediment	BB	BG-SYB
Benthic	BB	BG-BC711
AquaticVeg	BB	BG-BC711
Fish	BB	BG-SYB
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Merganser - Current - Back Bay - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BB_Current	mg/L	3.53E-04	2.59E-03
Sediment	Sediment_BB_Current	mg/kg dw	3.87E+01	2.48E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BB_Current	mg/kg ww	3.02E+00	1.43E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BB_Current	mg/kg ww	1.76E-01	5.04E+00
Fish	Fish_BB_Current	mg/kg ww	5.42E-02	1.16E+00
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_Current	mg/L	2.00E-04	5.60E-04
Sediment	Sediment_BG-SYB_Current	mg/kg dw	1.10E+00	1.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_Current	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_Current	mg/kg ww	2.68E-02	1.87E+00
Fish	Fish_BG-SYB_Current	mg/kg ww	1.54E-03	6.19E-02
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.83E-05	1.34E-04
	Sediment	mg/kg-d	3.91E-02	2.51E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	6.09E-02	2.89E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	8.89E-04	2.54E-02
	Fish	mg/kg-d	1.23E-02	2.65E-01
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.13E-01	3.43E+00
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	0.78
Concentration		mg/kg ww	1.70E-02	5.15E+00

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.03E-05	2.89E-05
	Sediment	mg/kg-d	1.11E-03	1.05E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	7.88E-03	5.54E-01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	1.35E-04	9.44E-03
	Fish	mg/kg-d	3.50E-04	1.41E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	9.48E-03	5.88E-01
		mg/kg-d	-	4.40E+00
SI Value		-	-	0.13
Concentration		mg/kg ww	1.42E-03	8.83E-01

Bat - Current - BC Lower Reaches (0-6) - Page 1/2

Receptor
GiantBat
Timeframe
Current
Aquatic Pathways Source
BC Lower Reaches (0-6)
Terrestrial Pathways Source
Site Average
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
Benthic

Little Brown Bat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.01
Water ingestion rate	Water	m^3/d	1.51E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.75E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BC06	BG-BC711	
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	GiantAvg	BG	
TerrInsects	-	-	
Foliage	-	-	
WoodyVeg	-	-	
FruitsFlowers	-	-	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	BC06	BG-BC711	Emergent assumed to be 1/10 benthic

Bat - Current - BC Lower Reaches (0-6) - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC06_Current	mg/L	2.21E-01	2.76E-01
Sediment	-	-	-	-
Soil	Soil_GiantAvg_Current	mg/kg dw	1.62E+02	9.96E+02
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BC06_Current	mg/kg ww	2.67E+00	3.07E+01
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02
Sediment	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BG-BC711_Current	mg/kg ww	3.90E-02	2.75E+00
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	3.34E-02	4.18E-02
	Sediment	-	-	-
	Soil	mg/kg-d	4.86E-01	2.99E+00
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.00E+00	1.15E+01
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.52E+00	1.45E+01
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	25.78	13.98
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	3.78E-04	7.71E-03
	Sediment	-	-	-
	Soil	mg/kg-d	6.60E-03	1.07E-01
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.46E-02	1.03E+00
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	2.16E-02	1.14E+00
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.37	1.10
Concentration		mg/kg ww		

Bat - Current - Back Bay - Page 1/2

Receptor
GiantBat
Timeframe
Current
Aquatic Pathways Source
Back Bay
Terrestrial Pathways Source
Giant Townsite
Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - South Yellowknife Bay
Benthic Reference Location
Background - South Yellowknife Bay
Fish Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
Benthic

Little Brown Bat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.01
Water ingestion rate	Water	m^3/d	1.51E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.75E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BB	BG-LK	
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	Townsite	BG	
TerrInsects	-	-	
Foliage	-	-	
WoodyVeg	-	-	
FruitsFlowers	-	-	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	BB	BG-SYB	Emergent assumed to be 1/10 benthic

Bat - Current - Back Bay - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BB_Current	mg/L	3.53E-04	2.59E-03
Sediment	-	-	-	-
Soil	Soil_Townsite_Current	mg/kg dw	7.60E+01	2.97E+02
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BB_Current	mg/kg ww	3.02E-01	1.43E+01
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_Current	mg/L	2.00E-04	5.60E-04
Sediment	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BG-SYB_Current	mg/kg ww	8.58E-03	6.00E-01
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	5.34E-05	3.91E-04
	Sediment	-	-	-
	Soil	mg/kg-d	2.28E-01	8.92E-01
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.13E-01	5.37E+00
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	3.41E-01	6.26E+00
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	5.78	6.02
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	3.02E-05	8.46E-05
	Sediment	-	-	-
	Soil	mg/kg-d	6.60E-03	1.07E-01
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	3.22E-03	2.25E-01
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	9.85E-03	3.32E-01
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.17	0.32
Concentration		mg/kg ww		

Swallow - Current - BC Lower Reaches (0-6) - Page 1/2

Receptor
GiantSwallow
Timeframe
Current
Aquatic Pathways Source
BC Lower Reaches (0-6)
Terrestrial Pathways Source
Site Average
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
Benthic

Barn Swallow

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0187
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.23E+01
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.50E-01
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BC06	BG-BC711	
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	GiantAvg	BG	
TerrInsects	-	-	
Foliage	-	-	
WoodyVeg	-	-	
FruitsFlowers	-	-	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	BC06	BG-BC711	Emergent assumed to be 1/10 benthic

Swallow - Current - BC Lower Reaches (0-6) - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC06_Current	mg/L	2.21E-01	2.76E-01
Sediment	-	-	-	-
Soil	Soil_GiantAvg_Current	mg/kg dw	1.62E+02	9.96E+02
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BC06_Current	mg/kg ww	2.67E+00	3.07E+01
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02
Sediment	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BG-BC711_Current	mg/kg ww	3.90E-02	2.75E+00
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	4.84E-02	6.06E-02
	Sediment	-	-	-
	Soil	mg/kg-d	3.90E+00	2.40E+01
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.75E+00	2.01E+01
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	5.70E+00	4.41E+01
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	10.03
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	5.48E-04	1.12E-02
	Sediment	-	-	-
	Soil	mg/kg-d	5.29E-02	8.60E-01
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	2.55E-02	1.80E+00
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	7.90E-02	2.67E+00
		mg/kg-d	-	4.40E+00
SI Value		-	-	0.61
Concentration		mg/kg ww		

Swallow - Current - Back Bay - Page 1/2

Receptor
GiantSwallow
Timeframe
Current
Aquatic Pathways Source
Back Bay
Terrestrial Pathways Source
Giant Townsite
Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - South Yellowknife Bay
Benthic Reference Location
Background - South Yellowknife Bay
Fish Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
Benthic

Barn Swallow

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0187
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.23E+01
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.50E-01
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BB	BG-LK	
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	Townsite	BG	
TerrInsects	-	-	
Foliage	-	-	
WoodyVeg	-	-	
FruitsFlowers	-	-	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	BB	BG-SYB	Emergent assumed to be 1/10 benthic

Swallow - Current - Back Bay - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BB_Current	mg/L	3.53E-04	2.59E-03
Sediment	-	-	-	-
Soil	Soil_Townsite_Current	mg/kg dw	7.60E+01	2.97E+02
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BB_Current	mg/kg ww	3.02E-01	1.43E+01
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_Current	mg/L	2.00E-04	5.60E-04
Sediment	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BG-SYB_Current	mg/kg ww	8.58E-03	6.00E-01
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	7.75E-05	5.68E-04
	Sediment	-	-	-
	Soil	mg/kg-d	1.83E+00	7.16E+00
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.98E-01	9.38E+00
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	2.03E+00	1.65E+01
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	3.76
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	4.39E-05	1.23E-04
	Sediment	-	-	-
	Soil	mg/kg-d	5.29E-02	8.60E-01
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	5.62E-03	3.93E-01
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	5.86E-02	1.25E+00
		mg/kg-d	-	4.40E+00
SI Value		-	-	0.28
Concentration		mg/kg ww		

Osprey - Current - Back Bay/ Baker Creek - Page 1/2

Receptor
GiantOsprey
Timeframe
Current
Aquatic Pathways Source
Back Bay/ Baker Creek
Terrestrial Pathways Source

Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - All Locations
Benthic Reference Location

Fish Reference Location
Background - South Yellowknife Bay
Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Osprey

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.7
Water ingestion rate	Water	m^3/d	7.40E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.62E+02
Sediment ingestion rate	Sediment	g (dw)/d	1.40E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	1.00
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BBBC	BG-LK
Sediment	BBBC	BG-All
Benthic	-	-
AquaticVeg	-	-
Fish	BBBC	BG-SYB
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Osprey - Current - Back Bay/ Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BBBC_Current	mg/L	1.11E-01	1.40E-01
Sediment	Sediment_BBBC_Current	mg/kg dw	1.91E+02	5.25E+02
Soil	-	-	-	-
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BBBC_Current	mg/kg ww	3.10E-01	1.90E+00
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_Current	mg/L	2.00E-04	5.60E-04
Sediment	Sediment_BG-All_Current	mg/kg dw	1.20E+00	5.98E+00
Soil	-	-	-	-
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BG-SYB_Current	mg/kg ww	1.54E-03	6.19E-02
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	4.82E-03	6.07E-03
	Sediment	mg/kg-d	1.57E-01	4.33E-01
	Soil	-	-	-
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	6.60E-02	4.04E-01
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	2.28E-01	8.43E-01
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	0.19
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	8.71E-06	2.44E-05
	Sediment	mg/kg-d	9.88E-04	4.92E-03
	Soil	-	-	-
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	3.28E-04	1.32E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.32E-03	1.81E-02
		mg/kg-d	-	4.40E+00
SI Value		-	-	0.00
Concentration		mg/kg ww		

Muskrat - 2030 - BC Reach 0 - Page 1/2

Receptor
GiantMuskrat
Timeframe
2030
Aquatic Pathways Source
BC Reach 0
Terrestrial Pathways Source

Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Muskrat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1
Water ingestion rate	Water	m^3/d	1.12E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	4.08E+02
Sediment ingestion rate	Sediment	g (dw)/d	2.70E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.20
Aquatic Vegetation	AquaticVeg	-	0.80
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC0	BG-BC711
Sediment	BC0	BG-BC711
Benthic	BC0	BG-BC711
AquaticVeg	BC0	BG-BC711
Fish	-	-
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Muskrat - 2030 - BC Reach 0 - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC0_2030	mg/L	5.60E-02	9.98E-02
Sediment	Sediment_BC0_2030	mg/kg dw	3.00E+00	1.32E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC0_2030	mg/kg ww	2.34E-01	4.50E+00
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BC0_2030	mg/kg ww	2.24E-01	6.32E-01
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_2030	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_2030	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_2030	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_2030	mg/kg ww	2.68E-02	1.87E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	6.29E-03	1.12E-02
	Sediment	mg/kg-d	8.09E-03	3.56E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.91E-02	3.68E-01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	7.32E-02	2.06E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.07E-01	6.21E-01
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	1.81	0.60
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.81E-04	5.73E-03
	Sediment	mg/kg-d	1.35E-02	8.19E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	3.19E-02	2.24E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	8.75E-03	6.11E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	5.44E-02	2.94E+00
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.92	2.83
Concentration		mg/kg ww		

Muskrat - 2030 - BC Reach 1-3 - Page 1/2

Receptor
GiantMuskrat
Timeframe
2030
Aquatic Pathways Source
BC Reach 1-3
Terrestrial Pathways Source

Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Muskrat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1
Water ingestion rate	Water	m^3/d	1.12E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	4.08E+02
Sediment ingestion rate	Sediment	g (dw)/d	2.70E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.20
Aquatic Vegetation	AquaticVeg	-	0.80
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC13	BG-BC711
Sediment	BC13	BG-BC711
Benthic	BC13	BG-BC711
AquaticVeg	BC13	BG-BC711
Fish	-	-
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Muskrat - 2030 - BC Reach 1-3 - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC13_2030	mg/L	1.01E-01	2.66E-01
Sediment	Sediment_BC13_2030	mg/kg dw	3.00E+00	1.32E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC13_2030	mg/kg ww	2.34E-01	4.50E+00
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BC13_2030	mg/kg ww	4.04E-01	1.60E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_2030	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_2030	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_2030	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_2030	mg/kg ww	2.68E-02	1.87E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.13E-02	2.99E-02
	Sediment	mg/kg-d	8.09E-03	3.56E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.91E-02	3.68E-01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	1.32E-01	5.22E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.71E-01	9.55E-01
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	2.89	0.92
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.81E-04	5.73E-03
	Sediment	mg/kg-d	1.35E-02	8.19E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	3.19E-02	2.24E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	8.75E-03	6.11E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	5.44E-02	2.94E+00
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.92	2.83
Concentration		mg/kg ww		

Muskrat - 2030 - BC Reach 4-5 - Page 1/2

Receptor
GiantMuskrat
Timeframe
2030
Aquatic Pathways Source
BC Reach 4-5
Terrestrial Pathways Source

Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Muskrat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1
Water ingestion rate	Water	m^3/d	1.12E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	4.08E+02
Sediment ingestion rate	Sediment	g (dw)/d	2.70E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.20
Aquatic Vegetation	AquaticVeg	-	0.80
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC45	BG-BC711
Sediment	BC45	BG-BC711
Benthic	BC45	BG-BC711
AquaticVeg	BC45	BG-BC711
Fish	-	-
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Muskrat - 2030 - BC Reach 4-5 - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC45_2030	mg/L	3.74E-02	2.17E-01
Sediment	Sediment_BC45_2030	mg/kg dw	3.00E+00	1.32E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC45_2030	mg/kg ww	2.34E-01	4.50E+00
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BC45_2030	mg/kg ww	1.49E-01	1.30E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_2030	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_2030	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_2030	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_2030	mg/kg ww	2.68E-02	1.87E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	4.19E-03	2.44E-02
	Sediment	mg/kg-d	8.09E-03	3.56E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.91E-02	3.68E-01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	4.88E-02	4.26E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	8.02E-02	8.54E-01
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	1.36	0.82
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.81E-04	5.73E-03
	Sediment	mg/kg-d	1.35E-02	8.19E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	3.19E-02	2.24E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	8.75E-03	6.11E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	5.44E-02	2.94E+00
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.92	2.83
Concentration		mg/kg ww		

Muskrat - 2030 - BC Reach 6 - Page 1/2

Receptor
GiantMuskrat
Timeframe
2030
Aquatic Pathways Source
BC Reach 6
Terrestrial Pathways Source

Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Muskrat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1
Water ingestion rate	Water	m^3/d	1.12E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	4.08E+02
Sediment ingestion rate	Sediment	g (dw)/d	2.70E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.20
Aquatic Vegetation	AquaticVeg	-	0.80
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC6	BG-BC711
Sediment	BC6	BG-BC711
Benthic	BC6	BG-BC711
AquaticVeg	BC6	BG-BC711
Fish	-	-
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Muskrat - 2030 - BC Reach 6 - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC6_2030	mg/L	2.71E-02	3.00E-01
Sediment	Sediment_BC6_2030	mg/kg dw	3.00E+00	1.32E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC6_2030	mg/kg ww	2.34E-01	4.50E+00
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BC6_2030	mg/kg ww	1.08E-01	1.80E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_2030	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_2030	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_2030	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_2030	mg/kg ww	2.68E-02	1.87E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	3.04E-03	3.36E-02
	Sediment	mg/kg-d	8.09E-03	3.56E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.91E-02	3.68E-01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	3.54E-02	5.87E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	6.57E-02	1.02E+00
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	1.11	0.98
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.81E-04	5.73E-03
	Sediment	mg/kg-d	1.35E-02	8.19E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	3.19E-02	2.24E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	8.75E-03	6.11E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	5.44E-02	2.94E+00
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.92	2.83
Concentration		mg/kg ww		

Muskrat - 2030 - Back Bay - Page 1/2

Receptor
GiantMuskrat
Timeframe
2030
Aquatic Pathways Source
Back Bay
Terrestrial Pathways Source

Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - South Yellowknife Bay
Benthic Reference Location
Background - South Yellowknife Bay
Fish Reference Location

Aquatic Vegetation Reference Location
Background - South Yellowknife Bay
Aquatic/Terrestrial Insect Source

Muskrat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1
Water ingestion rate	Water	m^3/d	1.12E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	4.08E+02
Sediment ingestion rate	Sediment	g (dw)/d	2.70E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.20
Aquatic Vegetation	AquaticVeg	-	0.80
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BB	BG-LK
Sediment	BB	BG-SYB
Benthic	BB	BG-SYB
AquaticVeg	BB	BG-SYB
Fish	-	-
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Muskrat - 2030 - Back Bay - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BB_2030	mg/L	1.34E-04	2.18E-03
Sediment	Sediment_BB_2030	mg/kg dw	3.56E+01	2.27E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BB_2030	mg/kg ww	2.77E+00	1.31E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BB_2030	mg/kg ww	1.63E-01	4.78E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_2030	mg/L	2.00E-04	5.60E-04
Sediment	Sediment_BG-SYB_2030	mg/kg dw	1.10E+00	1.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-SYB_2030	mg/kg ww	8.58E-02	6.00E+00
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-SYB_2030	mg/kg ww	6.66E-03	7.51E-01
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.51E-05	2.44E-04
	Sediment	mg/kg-d	9.59E-02	6.13E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	2.27E-01	1.07E+01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	5.32E-02	1.56E+00
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	3.76E-01	1.29E+01
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	6.37	12.39
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.25E-05	6.29E-05
	Sediment	mg/kg-d	2.96E-03	2.80E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	7.01E-03	4.90E-01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	2.17E-03	2.45E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.22E-02	7.63E-01
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.21	0.73
Concentration		mg/kg ww		

Mink - 2030 - BC Lower Reaches (0-6) - Page 1/2

Receptor
GiantMink
Timeframe
2030
Aquatic Pathways Source
BC Lower Reaches (0-6)
Terrestrial Pathways Source
Site Average
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location
Background - BC Reach 7-11
Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

American Mink

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.82
Water ingestion rate	Water	m^3/d	2.49E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.16E+02
Sediment ingestion rate	Sediment	g (dw)/d	1.89E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.35
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	0.40
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	0.25
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC06	BG-BC711
Sediment	BC06	BG-BC711
Benthic	BC06	BG-BC711
AquaticVeg	-	-
Fish	BC06	BG-BC711
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	GiantAvg	BG
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Mink - 2030 - BC Lower Reaches (0-6) - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC06_2030	mg/L	5.54E-02	2.21E-01
Sediment	Sediment_BC06_2030	mg/kg dw	3.00E+00	1.32E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC06_2030	mg/kg ww	2.34E-01	4.50E+00
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BC06_2030	mg/kg ww	1.55E-01	1.39E+00
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	Mouse_GiantAvg_2030	mg/kg ww	8.37E-02	1.18E+00
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_2030	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_2030	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_2030	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BG-BC711_2030	mg/kg ww	7.00E-03	3.84E-01
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	Mouse_BG_2030	mg/kg ww	5.43E-02	6.76E-01
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.68E-03	6.70E-03
	Sediment	mg/kg-d	6.90E-03	3.03E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.16E-02	2.23E-01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	8.79E-03	7.91E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	mg/kg-d	2.96E-03	4.17E-02
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	3.19E-02	3.81E-01
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.54	0.37
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	7.59E-05	1.55E-03
	Sediment	mg/kg-d	1.15E-02	6.98E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.93E-02	1.36E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	3.97E-04	2.18E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	mg/kg-d	1.92E-03	2.40E-02
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	3.32E-02	1.48E+00
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.56	1.42
Concentration		mg/kg ww		

Mink - 2030 - Back Bay - Page 1/2

Receptor
GiantMink
Timeframe
2030
Aquatic Pathways Source
Back Bay
Terrestrial Pathways Source
Giant Townsite
Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - South Yellowknife Bay
Benthic Reference Location
Background - South Yellowknife Bay
Fish Reference Location
Background - South Yellowknife Bay
Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

American Mink

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.82
Water ingestion rate	Water	m^3/d	2.49E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.16E+02
Sediment ingestion rate	Sediment	g (dw)/d	1.89E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.35
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	0.40
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	0.25
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BB	BG-LK
Sediment	BB	BG-SYB
Benthic	BB	BG-SYB
AquaticVeg	-	-
Fish	BB	BG-SYB
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	Townsite	BG
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Mink - 2030 - Back Bay - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BB_2030	mg/L	1.34E-04	2.18E-03
Sediment	Sediment_BB_2030	mg/kg dw	3.56E+01	2.27E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BB_2030	mg/kg ww	2.77E+00	1.31E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BB_2030	mg/kg ww	4.98E-02	1.07E+00
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	Mouse_Townsite_2030	mg/kg ww	6.75E-02	5.97E-01
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_2030	mg/L	2.00E-04	5.60E-04
Sediment	Sediment_BG-SYB_2030	mg/kg dw	1.10E+00	1.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-SYB_2030	mg/kg ww	8.58E-02	6.00E+00
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BG-SYB_2030	mg/kg ww	1.54E-03	6.19E-02
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	Mouse_BG_2030	mg/kg ww	5.43E-02	6.76E-01
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	4.08E-06	6.61E-05
	Sediment	mg/kg-d	8.18E-02	5.23E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.38E-01	6.51E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	2.82E-03	6.05E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	mg/kg-d	2.39E-03	2.11E-02
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	2.25E-01	7.11E+00
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	3.81	6.84
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	6.07E-06	1.70E-05
	Sediment	mg/kg-d	2.53E-03	2.39E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	4.26E-03	2.98E-01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	8.73E-05	3.51E-03
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	mg/kg-d	1.92E-03	2.40E-02
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	8.80E-03	3.49E-01
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.15	0.34
Concentration		mg/kg ww		

Mallard - 2030 - BC Lower Reaches (0-6) - Page 1/2

Receptor
GiantMallard
Timeframe
2030
Aquatic Pathways Source
BC Lower Reaches (0-6)
Terrestrial Pathways Source

Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Mallard

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.2
Water ingestion rate	Water	m^3/d	6.26E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.08E+02
Sediment ingestion rate	Sediment	g (dw)/d	2.03E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.75
Aquatic Vegetation	AquaticVeg	-	0.25
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC06	BG-BC711
Sediment	BC06	BG-BC711
Benthic	BC06	BG-BC711
AquaticVeg	BC06	BG-BC711
Fish	-	-
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Mallard - 2030 - BC Lower Reaches (0-6) - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC06_2030	mg/L	5.54E-02	2.21E-01
Sediment	Sediment_BC06_2030	mg/kg dw	3.00E+00	1.32E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC06_2030	mg/kg ww	2.34E-01	4.50E+00
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BC06_2030	mg/kg ww	2.22E-01	1.32E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_2030	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_2030	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_2030	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_2030	mg/kg ww	2.68E-02	1.87E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.89E-03	1.15E-02
	Sediment	mg/kg-d	5.08E-03	2.23E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	4.50E-02	8.66E-01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	1.42E-02	8.49E-02
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	6.72E-02	9.84E-01
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	0.22
Concentration		mg/kg ww	8.06E-03	1.18E+00

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.31E-04	2.66E-03
	Sediment	mg/kg-d	8.46E-03	5.14E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	7.50E-02	5.28E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	1.72E-03	1.20E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	8.53E-02	5.45E+00
		mg/kg-d	-	4.40E+00
SI Value		-	-	1.24
Concentration		mg/kg ww	1.02E-02	6.55E+00

Mallard - 2030 - Back Bay - Page 1/2

Receptor
GiantMallard
Timeframe
2030
Aquatic Pathways Source
Back Bay
Terrestrial Pathways Source

Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - South Yellowknife Bay
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Mallard

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.2
Water ingestion rate	Water	m^3/d	6.26E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.08E+02
Sediment ingestion rate	Sediment	g (dw)/d	2.03E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.75
Aquatic Vegetation	AquaticVeg	-	0.25
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BB	BG-LK
Sediment	BB	BG-SYB
Benthic	BB	BG-BC711
AquaticVeg	BB	BG-BC711
Fish	-	-
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Mallard - 2030 - Back Bay - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BB_2030	mg/L	1.34E-04	2.18E-03
Sediment	Sediment_BB_2030	mg/kg dw	3.56E+01	2.27E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BB_2030	mg/kg ww	2.77E+00	1.31E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BB_2030	mg/kg ww	1.63E-01	4.78E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_2030	mg/L	2.00E-04	5.60E-04
Sediment	Sediment_BG-SYB_2030	mg/kg dw	1.10E+00	1.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_2030	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_2030	mg/kg ww	2.68E-02	1.87E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	7.02E-06	1.14E-04
	Sediment	mg/kg-d	6.02E-02	3.85E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	5.34E-01	2.52E+01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	1.04E-02	3.06E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	6.04E-01	2.59E+01
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	5.89
Concentration		mg/kg ww	7.25E-02	3.11E+01

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.04E-05	2.92E-05
	Sediment	mg/kg-d	1.86E-03	1.76E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	7.50E-02	5.28E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	1.72E-03	1.20E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	7.86E-02	5.42E+00
		mg/kg-d	-	4.40E+00
SI Value		-	-	1.23
Concentration		mg/kg ww	9.43E-03	6.50E+00

Grebe - 2030 - BC Lower Reaches (0-6) - Page 1/2

Receptor
GiantGrebe
Timeframe
2030
Aquatic Pathways Source
BC Lower Reaches (0-6)
Terrestrial Pathways Source

Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location
Background - BC Reach 7-11
Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Horned Grebe

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.44
Water ingestion rate	Water	m^3/d	3.40E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.70E+02
Sediment ingestion rate	Sediment	g (dw)/d	1.60E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.90
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	0.10
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC06	BG-BC711
Sediment	BC06	BG-BC711
Benthic	BC06	BG-BC711
AquaticVeg	-	-
Fish	BC06	BG-BC711
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Grebe - 2030 - BC Lower Reaches (0-6) - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC06_2030	mg/L	5.54E-02	2.21E-01
Sediment	Sediment_BC06_2030	mg/kg dw	3.00E+00	1.32E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC06_2030	mg/kg ww	2.34E-01	4.50E+00
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BC06_2030	mg/kg ww	1.55E-01	1.39E+00
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_2030	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_2030	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_2030	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BG-BC711_2030	mg/kg ww	7.00E-03	3.84E-01
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	4.28E-03	1.71E-02
	Sediment	mg/kg-d	1.09E-02	4.80E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	8.14E-02	1.56E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	5.99E-03	5.39E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.03E-01	1.68E+00
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	0.38
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.93E-04	3.94E-03
	Sediment	mg/kg-d	1.82E-02	1.10E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.36E-01	9.55E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	2.70E-04	1.49E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.54E-01	9.67E+00
		mg/kg-d	-	4.40E+00
SI Value		-	-	2.20
Concentration		mg/kg ww		

Grebe - 2030 - Back Bay - Page 1/2

Receptor
GiantGrebe
Timeframe
2030
Aquatic Pathways Source
Back Bay
Terrestrial Pathways Source

Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - South Yellowknife Bay
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location
Background - South Yellowknife Bay
Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Horned Grebe

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.44
Water ingestion rate	Water	m^3/d	3.40E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.70E+02
Sediment ingestion rate	Sediment	g (dw)/d	1.60E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.90
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	0.10
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BB	BG-LK
Sediment	BB	BG-SYB
Benthic	BB	BG-BC711
AquaticVeg	-	-
Fish	BB	BG-SYB
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Grebe - 2030 - Back Bay - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BB_2030	mg/L	1.34E-04	2.18E-03
Sediment	Sediment_BB_2030	mg/kg dw	3.56E+01	2.27E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BB_2030	mg/kg ww	2.77E+00	1.31E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BB_2030	mg/kg ww	4.98E-02	1.07E+00
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_2030	mg/L	2.00E-04	5.60E-04
Sediment	Sediment_BG-SYB_2030	mg/kg dw	1.10E+00	1.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_2030	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BG-SYB_2030	mg/kg ww	1.54E-03	6.19E-02
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.04E-05	1.68E-04
	Sediment	mg/kg-d	1.29E-01	8.27E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	9.65E-01	4.56E+01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	1.92E-03	4.12E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.10E+00	4.65E+01
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	10.56
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.55E-05	4.33E-05
	Sediment	mg/kg-d	4.00E-03	3.78E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.36E-01	9.55E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	5.95E-05	2.39E-03
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.40E-01	9.59E+00
		mg/kg-d	-	4.40E+00
SI Value		-	-	2.18
Concentration		mg/kg ww		

Merganser - 2030 - BC Lower Reaches (0-6) - Page 1/2

Receptor
GiantMerganser
Timeframe
2030
Aquatic Pathways Source
BC Lower Reaches (0-6)
Terrestrial Pathways Source

Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location
Background - BC Reach 7-11
Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Common Merganser

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.5
Water ingestion rate	Water	m^3/d	7.75E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.79E+02
Sediment ingestion rate	Sediment	g (dw)/d	1.51E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.08
Aquatic Vegetation	AquaticVeg	-	0.02
Fish	Fish	-	0.90
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC06	BG-BC711
Sediment	BC06	BG-BC711
Benthic	BC06	BG-BC711
AquaticVeg	BC06	BG-BC711
Fish	BC06	BG-BC711
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Merganser - 2030 - BC Lower Reaches (0-6) - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC06_2030	mg/L	5.54E-02	2.21E-01
Sediment	Sediment_BC06_2030	mg/kg dw	3.00E+00	1.32E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC06_2030	mg/kg ww	2.34E-01	4.50E+00
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BC06_2030	mg/kg ww	2.22E-01	1.32E+00
Fish	Fish_BC06_2030	mg/kg ww	1.55E-01	1.39E+00
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_2030	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_2030	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_2030	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_2030	mg/kg ww	2.68E-02	1.87E+00
Fish	Fish_BG-BC711_2030	mg/kg ww	7.00E-03	3.84E-01
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.86E-03	1.14E-02
	Sediment	mg/kg-d	3.03E-03	1.33E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	4.73E-03	9.09E-02
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	1.12E-03	6.69E-03
	Fish	mg/kg-d	3.52E-02	3.17E-01
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	4.70E-02	4.39E-01
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	0.10
Concentration		mg/kg ww	7.04E-03	6.59E-01

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.29E-04	2.63E-03
	Sediment	mg/kg-d	5.05E-03	3.07E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	7.88E-03	5.54E-01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	1.35E-04	9.44E-03
	Fish	mg/kg-d	1.59E-03	8.74E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.48E-02	6.84E-01
		mg/kg-d	-	4.40E+00
SI Value		-	-	0.16
Concentration		mg/kg ww	2.22E-03	1.03E+00

Merganser - 2030 - Back Bay - Page 1/2

Receptor
GiantMerganser
Timeframe
2030
Aquatic Pathways Source
Back Bay
Terrestrial Pathways Source

Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - South Yellowknife Bay
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location
Background - South Yellowknife Bay
Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Common Merganser

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.5
Water ingestion rate	Water	m^3/d	7.75E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.79E+02
Sediment ingestion rate	Sediment	g (dw)/d	1.51E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.08
Aquatic Vegetation	AquaticVeg	-	0.02
Fish	Fish	-	0.90
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BB	BG-LK
Sediment	BB	BG-SYB
Benthic	BB	BG-BC711
AquaticVeg	BB	BG-BC711
Fish	BB	BG-SYB
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Merganser - 2030 - Back Bay - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BB_2030	mg/L	1.34E-04	2.18E-03
Sediment	Sediment_BB_2030	mg/kg dw	3.56E+01	2.27E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BB_2030	mg/kg ww	2.77E+00	1.31E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BB_2030	mg/kg ww	1.63E-01	4.78E+00
Fish	Fish_BB_2030	mg/kg ww	4.98E-02	1.07E+00
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_2030	mg/L	2.00E-04	5.60E-04
Sediment	Sediment_BG-SYB_2030	mg/kg dw	1.10E+00	1.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_2030	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_2030	mg/kg ww	2.68E-02	1.87E+00
Fish	Fish_BG-SYB_2030	mg/kg ww	1.54E-03	6.19E-02
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	6.94E-06	1.12E-04
	Sediment	mg/kg-d	3.59E-02	2.30E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	5.60E-02	2.65E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	8.23E-04	2.41E-02
	Fish	mg/kg-d	1.13E-02	2.42E-01
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.04E-01	3.15E+00
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	0.71
Concentration		mg/kg ww	1.56E-02	4.72E+00

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.03E-05	2.89E-05
	Sediment	mg/kg-d	1.11E-03	1.05E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	7.88E-03	5.54E-01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	1.35E-04	9.44E-03
	Fish	mg/kg-d	3.50E-04	1.41E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	9.48E-03	5.88E-01
		mg/kg-d	-	4.40E+00
SI Value		-	-	0.13
Concentration		mg/kg ww	1.42E-03	8.83E-01

Bat - 2030 - BC Lower Reaches (0-6) - Page 1/2

Receptor
GiantBat
Timeframe
2030
Aquatic Pathways Source
BC Lower Reaches (0-6)
Terrestrial Pathways Source
Site Average
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
Benthic

Little Brown Bat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.01
Water ingestion rate	Water	m^3/d	1.51E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.75E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BC06	BG-BC711	
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	GiantAvg	BG	
TerrInsects	-	-	
Foliage	-	-	
WoodyVeg	-	-	
FruitsFlowers	-	-	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	BC06	BG-BC711	Emergent assumed to be 1/10 benthic

Bat - 2030 - BC Lower Reaches (0-6) - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC06_2030	mg/L	5.54E-02	2.21E-01
Sediment	-	-	-	-
Soil	Soil_GiantAvg_2030	mg/kg dw	1.12E+02	6.50E+02
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BC06_2030	mg/kg ww	2.34E-02	4.50E-01
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_2030	mg/L	2.50E-03	5.10E-02
Sediment	-	-	-	-
Soil	Soil_BG_2030	mg/kg dw	2.20E+00	3.57E+01
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BG-BC711_2030	mg/kg ww	3.90E-02	2.75E+00
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	8.37E-03	3.34E-02
	Sediment	-	-	-
	Soil	mg/kg-d	3.36E-01	1.95E+00
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	8.78E-03	1.69E-01
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	3.53E-01	2.15E+00
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	5.99	2.07
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	3.78E-04	7.71E-03
	Sediment	-	-	-
	Soil	mg/kg-d	6.60E-03	1.07E-01
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.46E-02	1.03E+00
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	2.16E-02	1.14E+00
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.37	1.10
Concentration		mg/kg ww		

Bat - 2030 - Back Bay - Page 1/2

Receptor
GiantBat
Timeframe
2030
Aquatic Pathways Source
Back Bay
Terrestrial Pathways Source
Giant Townsite
Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - South Yellowknife Bay
Benthic Reference Location
Background - South Yellowknife Bay
Fish Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
Benthic

Little Brown Bat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.01
Water ingestion rate	Water	m^3/d	1.51E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.75E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BB	BG-LK	
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	Townsite	BG	
TerrInsects	-	-	
Foliage	-	-	
WoodyVeg	-	-	
FruitsFlowers	-	-	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	BB	BG-SYB	Emergent assumed to be 1/10 benthic

Bat - 2030 - Back Bay - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BB_2030	mg/L	1.34E-04	2.18E-03
Sediment	-	-	-	-
Soil	Soil_Townsite_2030	mg/kg dw	1.60E+01	4.80E+01
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BB_2030	mg/kg ww	2.77E-01	1.31E+01
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_2030	mg/L	2.00E-04	5.60E-04
Sediment	-	-	-	-
Soil	Soil_BG_2030	mg/kg dw	2.20E+00	3.57E+01
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BG-SYB_2030	mg/kg ww	8.58E-03	6.00E-01
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.03E-05	3.29E-04
	Sediment	-	-	-
	Soil	mg/kg-d	4.80E-02	1.44E-01
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.04E-01	4.92E+00
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.52E-01	5.06E+00
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	2.58	4.87
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	3.02E-05	8.46E-05
	Sediment	-	-	-
	Soil	mg/kg-d	6.60E-03	1.07E-01
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	3.22E-03	2.25E-01
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	9.85E-03	3.32E-01
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.17	0.32
Concentration		mg/kg ww		

Swallow - 2030 - BC Lower Reaches (0-6) - Page 1/2

Receptor
GiantSwallow
Timeframe
2030
Aquatic Pathways Source
BC Lower Reaches (0-6)
Terrestrial Pathways Source
Site Average
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
Benthic

Barn Swallow

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0187
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.23E+01
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.50E-01
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BC06	BG-BC711	
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	GiantAvg	BG	
TerrInsects	-	-	
Foliage	-	-	
WoodyVeg	-	-	
FruitsFlowers	-	-	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	BC06	BG-BC711	Emergent assumed to be 1/10 benthic

Swallow - 2030 - BC Lower Reaches (0-6) - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC06_2030	mg/L	5.54E-02	2.21E-01
Sediment	-	-	-	-
Soil	Soil_GiantAvg_2030	mg/kg dw	1.12E+02	6.50E+02
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BC06_2030	mg/kg ww	2.34E-02	4.50E-01
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_2030	mg/L	2.50E-03	5.10E-02
Sediment	-	-	-	-
Soil	Soil_BG_2030	mg/kg dw	2.20E+00	3.57E+01
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BG-BC711_2030	mg/kg ww	3.90E-02	2.75E+00
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.21E-02	4.84E-02
	Sediment	-	-	-
	Soil	mg/kg-d	2.70E+00	1.56E+01
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.53E-02	2.95E-01
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	2.72E+00	1.60E+01
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	3.63
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	5.48E-04	1.12E-02
	Sediment	-	-	-
	Soil	mg/kg-d	5.29E-02	8.60E-01
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	2.55E-02	1.80E+00
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	7.90E-02	2.67E+00
		mg/kg-d	-	4.40E+00
SI Value		-	-	0.61
Concentration		mg/kg ww		

Swallow - 2030 - Back Bay - Page 1/2

Receptor
GiantSwallow
Timeframe
2030
Aquatic Pathways Source
Back Bay
Terrestrial Pathways Source
Giant Townsite
Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - South Yellowknife Bay
Benthic Reference Location
Background - South Yellowknife Bay
Fish Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
Benthic

Barn Swallow

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0187
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.23E+01
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.50E-01
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BB	BG-LK	
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	Townsite	BG	
TerrInsects	-	-	
Foliage	-	-	
WoodyVeg	-	-	
FruitsFlowers	-	-	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	BB	BG-SYB	Emergent assumed to be 1/10 benthic

Swallow - 2030 - Back Bay - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BB_2030	mg/L	1.34E-04	2.18E-03
Sediment	-	-	-	-
Soil	Soil_Townsite_2030	mg/kg dw	1.60E+01	4.80E+01
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BB_2030	mg/kg ww	2.77E-01	1.31E+01
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_2030	mg/L	2.00E-04	5.60E-04
Sediment	-	-	-	-
Soil	Soil_BG_2030	mg/kg dw	2.20E+00	3.57E+01
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BG-SYB_2030	mg/kg ww	8.58E-03	6.00E-01
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.95E-05	4.77E-04
	Sediment	-	-	-
	Soil	mg/kg-d	3.85E-01	1.16E+00
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.82E-01	8.59E+00
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	5.67E-01	9.75E+00
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	2.22
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	4.39E-05	1.23E-04
	Sediment	-	-	-
	Soil	mg/kg-d	5.29E-02	8.60E-01
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	5.62E-03	3.93E-01
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	5.86E-02	1.25E+00
		mg/kg-d	-	4.40E+00
SI Value		-	-	0.28
Concentration		mg/kg ww		

Osprey - 2030 - Back Bay/ Baker Creek - Page 1/2

Receptor
GiantOsprey
Timeframe
2030
Aquatic Pathways Source
Back Bay/ Baker Creek
Terrestrial Pathways Source

Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - All Locations
Benthic Reference Location

Fish Reference Location
Background - South Yellowknife Bay
Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Osprey

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.7
Water ingestion rate	Water	m^3/d	7.40E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.62E+02
Sediment ingestion rate	Sediment	g (dw)/d	1.40E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	1.00
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BBBC	BG-LK
Sediment	BBBC	BG-All
Benthic	-	-
AquaticVeg	-	-
Fish	BBBC	BG-SYB
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Osprey - 2030 - Back Bay/ Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BBBC_2030	mg/L	2.78E-02	1.11E-01
Sediment	Sediment_BBBC_2030	mg/kg dw	1.93E+01	1.58E+02
Soil	-	-	-	-
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BBBC_2030	mg/kg ww	7.77E-02	6.87E-01
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_2030	mg/L	2.00E-04	5.60E-04
Sediment	Sediment_BG-All_2030	mg/kg dw	1.20E+00	5.98E+00
Soil	-	-	-	-
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BG-SYB_2030	mg/kg ww	1.54E-03	6.19E-02
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.21E-03	4.85E-03
	Sediment	mg/kg-d	1.59E-02	1.30E-01
	Soil	-	-	-
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	1.65E-02	1.46E-01
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	3.36E-02	2.81E-01
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	0.06
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	8.71E-06	2.44E-05
	Sediment	mg/kg-d	9.88E-04	4.92E-03
	Soil	-	-	-
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	3.28E-04	1.32E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.32E-03	1.81E-02
		mg/kg-d	-	4.40E+00
SI Value		-	-	0.00
Concentration		mg/kg ww		

Muskrat - 2120 - BC Reach 0 - Page 1/2

Receptor
GiantMuskrat
Timeframe
2120
Aquatic Pathways Source
BC Reach 0
Terrestrial Pathways Source

Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Muskrat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1
Water ingestion rate	Water	m^3/d	1.12E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	4.08E+02
Sediment ingestion rate	Sediment	g (dw)/d	2.70E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.20
Aquatic Vegetation	AquaticVeg	-	0.80
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC0	BG-BC711
Sediment	BC0	BG-BC711
Benthic	BC0	BG-BC711
AquaticVeg	BC0	BG-BC711
Fish	-	-
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Muskrat - 2120 - BC Reach 0 - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC0_2120	mg/L	5.57E-02	9.87E-02
Sediment	Sediment_BC0_2120	mg/kg dw	1.04E+02	2.03E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC0_2120	mg/kg ww	8.08E+00	6.93E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BC0_2120	mg/kg ww	4.36E-01	3.26E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_2120	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_2120	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_2120	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_2120	mg/kg ww	2.68E-02	1.87E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	6.25E-03	1.11E-02
	Sediment	mg/kg-d	2.79E-01	5.48E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	6.60E-01	5.66E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	1.42E-01	1.06E+00
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.09E+00	7.28E+00
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	18.43	7.00
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.81E-04	5.73E-03
	Sediment	mg/kg-d	1.35E-02	8.19E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	3.19E-02	2.24E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	8.75E-03	6.11E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	5.44E-02	2.94E+00
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.92	2.83
Concentration		mg/kg ww		

Muskrat - 2120 - BC Reach 1-3 - Page 1/2

Receptor
GiantMuskrat
Timeframe
2120
Aquatic Pathways Source
BC Reach 1-3
Terrestrial Pathways Source

Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Muskrat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1
Water ingestion rate	Water	m^3/d	1.12E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	4.08E+02
Sediment ingestion rate	Sediment	g (dw)/d	2.70E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.20
Aquatic Vegetation	AquaticVeg	-	0.80
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC13	BG-BC711
Sediment	BC13	BG-BC711
Benthic	BC13	BG-BC711
AquaticVeg	BC13	BG-BC711
Fish	-	-
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Muskrat - 2120 - BC Reach 1-3 - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC13_2120	mg/L	1.00E-01	2.63E-01
Sediment	Sediment_BC13_2120	mg/kg dw	1.85E+02	5.20E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC13_2120	mg/kg ww	1.44E+01	1.77E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BC13_2120	mg/kg ww	7.41E-01	5.73E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_2120	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_2120	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_2120	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_2120	mg/kg ww	2.68E-02	1.87E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.13E-02	2.96E-02
	Sediment	mg/kg-d	4.97E-01	1.40E+00
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.18E+00	1.45E+01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	2.42E-01	1.87E+00
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.93E+00	1.78E+01
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	32.65	17.11
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.81E-04	5.73E-03
	Sediment	mg/kg-d	1.35E-02	8.19E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	3.19E-02	2.24E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	8.75E-03	6.11E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	5.44E-02	2.94E+00
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.92	2.83
Concentration		mg/kg ww		

Muskrat - 2120 - BC Reach 4-5 - Page 1/2

Receptor
GiantMuskrat
Timeframe
2120
Aquatic Pathways Source
BC Reach 4-5
Terrestrial Pathways Source

Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Muskrat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1
Water ingestion rate	Water	m^3/d	1.12E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	4.08E+02
Sediment ingestion rate	Sediment	g (dw)/d	2.70E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.20
Aquatic Vegetation	AquaticVeg	-	0.80
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC45	BG-BC711
Sediment	BC45	BG-BC711
Benthic	BC45	BG-BC711
AquaticVeg	BC45	BG-BC711
Fish	-	-
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Muskrat - 2120 - BC Reach 4-5 - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC45_2120	mg/L	3.62E-02	2.14E-01
Sediment	Sediment_BC45_2120	mg/kg dw	6.89E+01	4.26E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC45_2120	mg/kg ww	5.37E+00	1.45E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BC45_2120	mg/kg ww	2.99E-01	5.08E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_2120	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_2120	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_2120	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_2120	mg/kg ww	2.68E-02	1.87E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	4.07E-03	2.40E-02
	Sediment	mg/kg-d	1.86E-01	1.15E+00
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	4.39E-01	1.19E+01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	9.77E-02	1.66E+00
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	7.26E-01	1.47E+01
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	12.31	14.13
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.81E-04	5.73E-03
	Sediment	mg/kg-d	1.35E-02	8.19E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	3.19E-02	2.24E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	8.75E-03	6.11E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	5.44E-02	2.94E+00
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.92	2.83
Concentration		mg/kg ww		

Muskrat - 2120 - BC Reach 6 - Page 1/2

Receptor
GiantMuskrat
Timeframe
2120
Aquatic Pathways Source
BC Reach 6
Terrestrial Pathways Source

Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Muskrat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1
Water ingestion rate	Water	m^3/d	1.12E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	4.08E+02
Sediment ingestion rate	Sediment	g (dw)/d	2.70E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.20
Aquatic Vegetation	AquaticVeg	-	0.80
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC6	BG-BC711
Sediment	BC6	BG-BC711
Benthic	BC6	BG-BC711
AquaticVeg	BC6	BG-BC711
Fish	-	-
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Muskrat - 2120 - BC Reach 6 - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC6_2120	mg/L	2.70E-02	2.99E-01
Sediment	Sediment_BC6_2120	mg/kg dw	5.18E+01	5.88E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC6_2120	mg/kg ww	4.04E+00	2.00E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BC6_2120	mg/kg ww	2.30E-01	6.16E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_2120	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_2120	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_2120	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_2120	mg/kg ww	2.68E-02	1.87E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	3.03E-03	3.36E-02
	Sediment	mg/kg-d	1.40E-01	1.58E+00
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	3.30E-01	1.64E+01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	7.52E-02	2.01E+00
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	5.48E-01	2.00E+01
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	9.29	19.23
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.81E-04	5.73E-03
	Sediment	mg/kg-d	1.35E-02	8.19E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	3.19E-02	2.24E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	8.75E-03	6.11E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	5.44E-02	2.94E+00
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.92	2.83
Concentration		mg/kg ww		

Muskrat - 2120 - Back Bay - Page 1/2

Receptor
GiantMuskrat
Timeframe
2120
Aquatic Pathways Source
Back Bay
Terrestrial Pathways Source

Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - South Yellowknife Bay
Benthic Reference Location
Background - South Yellowknife Bay
Fish Reference Location

Aquatic Vegetation Reference Location
Background - South Yellowknife Bay
Aquatic/Terrestrial Insect Source

Muskrat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1
Water ingestion rate	Water	m^3/d	1.12E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	4.08E+02
Sediment ingestion rate	Sediment	g (dw)/d	2.70E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.20
Aquatic Vegetation	AquaticVeg	-	0.80
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BB	BG-LK
Sediment	BB	BG-SYB
Benthic	BB	BG-SYB
AquaticVeg	BB	BG-SYB
Fish	-	-
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Muskrat - 2120 - Back Bay - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BB_2120	mg/L	1.32E-04	2.15E-03
Sediment	Sediment_BB_2120	mg/kg dw	2.67E+01	1.71E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BB_2120	mg/kg ww	2.09E+00	9.85E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BB_2120	mg/kg ww	1.25E-01	4.02E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_2120	mg/L	2.00E-04	5.60E-04
Sediment	Sediment_BG-SYB_2120	mg/kg dw	1.10E+00	1.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-SYB_2120	mg/kg ww	8.58E-02	6.00E+00
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-SYB_2120	mg/kg ww	6.66E-03	7.51E-01
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.48E-05	2.41E-04
	Sediment	mg/kg-d	7.21E-02	4.60E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.70E-01	8.05E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	4.09E-02	1.31E+00
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	2.83E-01	9.82E+00
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	4.80	9.44
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.25E-05	6.29E-05
	Sediment	mg/kg-d	2.96E-03	2.80E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	7.01E-03	4.90E-01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	2.17E-03	2.45E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.22E-02	7.63E-01
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.21	0.73
Concentration		mg/kg ww		

Mink - 2120 - BC Lower Reaches (0-6) - Page 1/2

Receptor
GiantMink
Timeframe
2120
Aquatic Pathways Source
BC Lower Reaches (0-6)
Terrestrial Pathways Source
Site Average
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location
Background - BC Reach 7-11
Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

American Mink

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.82
Water ingestion rate	Water	m^3/d	2.49E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.16E+02
Sediment ingestion rate	Sediment	g (dw)/d	1.89E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.35
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	0.40
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	0.25
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC06	BG-BC711
Sediment	BC06	BG-BC711
Benthic	BC06	BG-BC711
AquaticVeg	-	-
Fish	BC06	BG-BC711
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	GiantAvg	BG
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Mink - 2120 - BC Lower Reaches (0-6) - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC06_2120	mg/L	5.48E-02	2.19E-01
Sediment	Sediment_BC06_2120	mg/kg dw	1.02E+02	4.34E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC06_2120	mg/kg ww	7.97E+00	1.48E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BC06_2120	mg/kg ww	1.54E-01	1.38E+00
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	Mouse_GiantAvg_2120	mg/kg ww	8.37E-02	1.18E+00
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_2120	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_2120	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_2120	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BG-BC711_2120	mg/kg ww	7.00E-03	3.84E-01
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	Mouse_BG_2120	mg/kg ww	5.43E-02	6.76E-01
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.67E-03	6.64E-03
	Sediment	mg/kg-d	2.35E-01	9.99E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	3.95E-01	7.35E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	8.70E-03	7.83E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	mg/kg-d	2.96E-03	4.17E-02
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	6.44E-01	8.47E+00
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	10.91	8.14
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	7.59E-05	1.55E-03
	Sediment	mg/kg-d	1.15E-02	6.98E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.93E-02	1.36E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	3.97E-04	2.18E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	mg/kg-d	1.92E-03	2.40E-02
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	3.32E-02	1.48E+00
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.56	1.42
Concentration		mg/kg ww		

Mink - 2120 - Back Bay - Page 1/2

Receptor
GiantMink
Timeframe
2120
Aquatic Pathways Source
Back Bay
Terrestrial Pathways Source
Giant Townsite
Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - South Yellowknife Bay
Benthic Reference Location
Background - South Yellowknife Bay
Fish Reference Location
Background - South Yellowknife Bay
Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

American Mink

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.82
Water ingestion rate	Water	m^3/d	2.49E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.16E+02
Sediment ingestion rate	Sediment	g (dw)/d	1.89E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.35
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	0.40
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	0.25
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BB	BG-LK
Sediment	BB	BG-SYB
Benthic	BB	BG-SYB
AquaticVeg	-	-
Fish	BB	BG-SYB
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	Townsite	BG
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Mink - 2120 - Back Bay - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BB_2120	mg/L	1.32E-04	2.15E-03
Sediment	Sediment_BB_2120	mg/kg dw	2.67E+01	1.71E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BB_2120	mg/kg ww	2.09E+00	9.85E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BB_2120	mg/kg ww	3.74E-02	8.01E-01
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	Mouse_Townsite_2120	mg/kg ww	6.75E-02	5.97E-01
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_2120	mg/L	2.00E-04	5.60E-04
Sediment	Sediment_BG-SYB_2120	mg/kg dw	1.10E+00	1.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-SYB_2120	mg/kg ww	8.58E-02	6.00E+00
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BG-SYB_2120	mg/kg ww	1.54E-03	6.19E-02
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	Mouse_BG_2120	mg/kg ww	5.43E-02	6.76E-01
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	4.00E-06	6.52E-05
	Sediment	mg/kg-d	6.15E-02	3.93E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.03E-01	4.89E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	2.12E-03	4.54E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	mg/kg-d	2.39E-03	2.11E-02
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.69E-01	5.35E+00
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	2.87	5.14
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	6.07E-06	1.70E-05
	Sediment	mg/kg-d	2.53E-03	2.39E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	4.26E-03	2.98E-01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	8.73E-05	3.51E-03
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	mg/kg-d	1.92E-03	2.40E-02
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	8.80E-03	3.49E-01
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.15	0.34
Concentration		mg/kg ww		

Mallard - 2120 - BC Lower Reaches (0-6) - Page 1/2

Receptor
GiantMallard
Timeframe
2120
Aquatic Pathways Source
BC Lower Reaches (0-6)
Terrestrial Pathways Source

Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Mallard

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.2
Water ingestion rate	Water	m^3/d	6.26E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.08E+02
Sediment ingestion rate	Sediment	g (dw)/d	2.03E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.75
Aquatic Vegetation	AquaticVeg	-	0.25
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC06	BG-BC711
Sediment	BC06	BG-BC711
Benthic	BC06	BG-BC711
AquaticVeg	BC06	BG-BC711
Fish	-	-
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Mallard - 2120 - BC Lower Reaches (0-6) - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC06_2120	mg/L	5.48E-02	2.19E-01
Sediment	Sediment_BC06_2120	mg/kg dw	1.02E+02	4.34E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC06_2120	mg/kg ww	7.97E+00	1.48E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BC06_2120	mg/kg ww	4.30E-01	5.14E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_2120	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_2120	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_2120	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_2120	mg/kg ww	2.68E-02	1.87E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.86E-03	1.14E-02
	Sediment	mg/kg-d	1.73E-01	7.35E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.53E+00	2.85E+01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	2.76E-02	3.30E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.74E+00	2.96E+01
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	6.72
Concentration		mg/kg ww	2.08E-01	3.55E+01

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.31E-04	2.66E-03
	Sediment	mg/kg-d	8.46E-03	5.14E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	7.50E-02	5.28E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	1.72E-03	1.20E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	8.53E-02	5.45E+00
		mg/kg-d	-	4.40E+00
SI Value		-	-	1.24
Concentration		mg/kg ww	1.02E-02	6.55E+00

Mallard - 2120 - Back Bay - Page 1/2

Receptor
GiantMallard
Timeframe
2120
Aquatic Pathways Source
Back Bay
Terrestrial Pathways Source

Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - South Yellowknife Bay
Benthic Reference Location
Background - South Yellowknife Bay
Fish Reference Location

Aquatic Vegetation Reference Location
Background - South Yellowknife Bay
Aquatic/Terrestrial Insect Source

Mallard

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.2
Water ingestion rate	Water	m^3/d	6.26E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.08E+02
Sediment ingestion rate	Sediment	g (dw)/d	2.03E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.75
Aquatic Vegetation	AquaticVeg	-	0.25
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BB	BG-LK
Sediment	BB	BG-SYB
Benthic	BB	BG-SYB
AquaticVeg	BB	BG-SYB
Fish	-	-
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Mallard - 2120 - Back Bay - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BB_2120	mg/L	1.32E-04	2.15E-03
Sediment	Sediment_BB_2120	mg/kg dw	2.67E+01	1.71E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BB_2120	mg/kg ww	2.09E+00	9.85E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BB_2120	mg/kg ww	1.25E-01	4.02E+00
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_2120	mg/L	2.00E-04	5.60E-04
Sediment	Sediment_BG-SYB_2120	mg/kg dw	1.10E+00	1.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-SYB_2120	mg/kg ww	8.58E-02	6.00E+00
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-SYB_2120	mg/kg ww	6.66E-03	7.51E-01
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	6.88E-06	1.12E-04
	Sediment	mg/kg-d	4.53E-02	2.89E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	4.01E-01	1.89E+01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	8.04E-03	2.58E-01
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	4.54E-01	1.95E+01
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	4.43
Concentration		mg/kg ww	5.45E-02	2.34E+01

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.04E-05	2.92E-05
	Sediment	mg/kg-d	1.86E-03	1.76E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.65E-02	1.15E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	4.27E-04	4.81E-02
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.88E-02	1.22E+00
		mg/kg-d	-	4.40E+00
SI Value		-	-	0.28
Concentration		mg/kg ww	2.26E-03	1.46E+00

Grebe - 2120 - BC Lower Reaches (0-6) - Page 1/2

Receptor
GiantGrebe
Timeframe
2120
Aquatic Pathways Source
BC Lower Reaches (0-6)
Terrestrial Pathways Source

Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location
Background - BC Reach 7-11
Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Horned Grebe

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.44
Water ingestion rate	Water	m^3/d	3.40E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.70E+02
Sediment ingestion rate	Sediment	g (dw)/d	1.60E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.90
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	0.10
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC06	BG-BC711
Sediment	BC06	BG-BC711
Benthic	BC06	BG-BC711
AquaticVeg	-	-
Fish	BC06	BG-BC711
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Grebe - 2120 - BC Lower Reaches (0-6) - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC06_2120	mg/L	5.48E-02	2.19E-01
Sediment	Sediment_BC06_2120	mg/kg dw	1.02E+02	4.34E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC06_2120	mg/kg ww	7.97E+00	1.48E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BC06_2120	mg/kg ww	1.54E-01	1.38E+00
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_2120	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_2120	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_2120	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BG-BC711_2120	mg/kg ww	7.00E-03	3.84E-01
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	4.24E-03	1.69E-02
	Sediment	mg/kg-d	3.72E-01	1.58E+00
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	2.77E+00	5.15E+01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	5.93E-03	5.34E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	3.15E+00	5.31E+01
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	12.08
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.93E-04	3.94E-03
	Sediment	mg/kg-d	1.82E-02	1.10E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.36E-01	9.55E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	2.70E-04	1.49E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.54E-01	9.67E+00
		mg/kg-d	-	4.40E+00
SI Value		-	-	2.20
Concentration		mg/kg ww		

Grebe - 2120 - Back Bay - Page 1/2

Receptor
GiantGrebe
Timeframe
2120
Aquatic Pathways Source
Back Bay
Terrestrial Pathways Source

Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - South Yellowknife Bay
Benthic Reference Location
Background - South Yellowknife Bay
Fish Reference Location
Background - South Yellowknife Bay
Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Horned Grebe

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.44
Water ingestion rate	Water	m^3/d	3.40E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.70E+02
Sediment ingestion rate	Sediment	g (dw)/d	1.60E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.90
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	0.10
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BB	BG-LK
Sediment	BB	BG-SYB
Benthic	BB	BG-SYB
AquaticVeg	-	-
Fish	BB	BG-SYB
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Grebe - 2120 - Back Bay - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BB_2120	mg/L	1.32E-04	2.15E-03
Sediment	Sediment_BB_2120	mg/kg dw	2.67E+01	1.71E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BB_2120	mg/kg ww	2.09E+00	9.85E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BB_2120	mg/kg ww	3.74E-02	8.01E-01
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_2120	mg/L	2.00E-04	5.60E-04
Sediment	Sediment_BG-SYB_2120	mg/kg dw	1.10E+00	1.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-SYB_2120	mg/kg ww	8.58E-02	6.00E+00
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BG-SYB_2120	mg/kg ww	1.54E-03	6.19E-02
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.02E-05	1.66E-04
	Sediment	mg/kg-d	9.72E-02	6.21E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	7.25E-01	3.43E+01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	1.45E-03	3.10E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	8.24E-01	3.49E+01
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	7.93
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.55E-05	4.33E-05
	Sediment	mg/kg-d	4.00E-03	3.78E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	2.98E-02	2.09E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	5.95E-05	2.39E-03
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	3.39E-02	2.13E+00
		mg/kg-d	-	4.40E+00
SI Value		-	-	0.48
Concentration		mg/kg ww		

Merganser - 2120 - BC Lower Reaches (0-6) - Page 1/2

Receptor
GiantMerganser
Timeframe
2120
Aquatic Pathways Source
BC Lower Reaches (0-6)
Terrestrial Pathways Source

Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location
Background - BC Reach 7-11
Aquatic Vegetation Reference Location
Background - BC Reach 7-11
Aquatic/Terrestrial Insect Source

Common Merganser

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.5
Water ingestion rate	Water	m^3/d	7.75E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.79E+02
Sediment ingestion rate	Sediment	g (dw)/d	1.51E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.08
Aquatic Vegetation	AquaticVeg	-	0.02
Fish	Fish	-	0.90
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC06	BG-BC711
Sediment	BC06	BG-BC711
Benthic	BC06	BG-BC711
AquaticVeg	BC06	BG-BC711
Fish	BC06	BG-BC711
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Merganser - 2120 - BC Lower Reaches (0-6) - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC06_2120	mg/L	5.48E-02	2.19E-01
Sediment	Sediment_BC06_2120	mg/kg dw	1.02E+02	4.34E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BC06_2120	mg/kg ww	7.97E+00	1.48E+02
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BC06_2120	mg/kg ww	4.30E-01	5.14E+00
Fish	Fish_BC06_2120	mg/kg ww	1.54E-01	1.38E+00
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_2120	mg/L	2.50E-03	5.10E-02
Sediment	Sediment_BG-BC711_2120	mg/kg dw	5.00E+00	3.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-BC711_2120	mg/kg ww	3.90E-01	2.75E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-BC711_2120	mg/kg ww	2.68E-02	1.87E+00
Fish	Fish_BG-BC711_2120	mg/kg ww	7.00E-03	3.84E-01
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.83E-03	1.13E-02
	Sediment	mg/kg-d	1.03E-01	4.39E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.61E-01	2.99E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	2.17E-03	2.59E-02
	Fish	mg/kg-d	3.49E-02	3.14E-01
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	3.04E-01	3.78E+00
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	0.86
Concentration		mg/kg ww	4.56E-02	5.67E+00

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.29E-04	2.63E-03
	Sediment	mg/kg-d	5.05E-03	3.07E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	7.88E-03	5.54E-01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	1.35E-04	9.44E-03
	Fish	mg/kg-d	1.59E-03	8.74E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.48E-02	6.84E-01
		mg/kg-d	-	4.40E+00
SI Value		-	-	0.16
Concentration		mg/kg ww	2.22E-03	1.03E+00

Merganser - 2120 - Back Bay - Page 1/2

Receptor
GiantMerganser
Timeframe
2120
Aquatic Pathways Source
Back Bay
Terrestrial Pathways Source

Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - South Yellowknife Bay
Benthic Reference Location
Background - South Yellowknife Bay
Fish Reference Location
Background - South Yellowknife Bay
Aquatic Vegetation Reference Location
Background - South Yellowknife Bay
Aquatic/Terrestrial Insect Source

Common Merganser

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.5
Water ingestion rate	Water	m^3/d	7.75E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.79E+02
Sediment ingestion rate	Sediment	g (dw)/d	1.51E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	0.08
Aquatic Vegetation	AquaticVeg	-	0.02
Fish	Fish	-	0.90
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BB	BG-LK
Sediment	BB	BG-SYB
Benthic	BB	BG-SYB
AquaticVeg	BB	BG-SYB
Fish	BB	BG-SYB
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Merganser - 2120 - Back Bay - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BB_2120	mg/L	1.32E-04	2.15E-03
Sediment	Sediment_BB_2120	mg/kg dw	2.67E+01	1.71E+02
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BB_2120	mg/kg ww	2.09E+00	9.85E+01
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BB_2120	mg/kg ww	1.25E-01	4.02E+00
Fish	Fish_BB_2120	mg/kg ww	3.74E-02	8.01E-01
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_2120	mg/L	2.00E-04	5.60E-04
Sediment	Sediment_BG-SYB_2120	mg/kg dw	1.10E+00	1.04E+01
Soil	-	-	-	-
Benthic Invertebrates	Benthic_BG-SYB_2120	mg/kg ww	8.58E-02	6.00E+00
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	AquaticVeg_BG-SYB_2120	mg/kg ww	6.66E-03	7.51E-01
Fish	Fish_BG-SYB_2120	mg/kg ww	1.54E-03	6.19E-02
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	6.81E-06	1.11E-04
	Sediment	mg/kg-d	2.70E-02	1.72E-01
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	4.21E-02	1.99E+00
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	6.33E-04	2.03E-02
	Fish	mg/kg-d	8.50E-03	1.82E-01
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	7.83E-02	2.36E+00
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	0.54
Concentration		mg/kg ww	1.17E-02	3.55E+00

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.03E-05	2.89E-05
	Sediment	mg/kg-d	1.11E-03	1.05E-02
	Soil	-	-	-
	Benthic Invertebrates	mg/kg-d	1.73E-03	1.21E-01
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	mg/kg-d	3.36E-05	3.79E-03
	Fish	mg/kg-d	3.50E-04	1.41E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	3.24E-03	1.50E-01
		mg/kg-d	-	4.40E+00
SI Value		-	-	0.03
Concentration		mg/kg ww	4.86E-04	2.24E-01

Bat - 2120 - BC Lower Reaches (0-6) - Page 1/2

Receptor
GiantBat
Timeframe
2120
Aquatic Pathways Source
BC Lower Reaches (0-6)
Terrestrial Pathways Source
Site Average
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
Benthic

Little Brown Bat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.01
Water ingestion rate	Water	m^3/d	1.51E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.75E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BC06	BG-BC711	
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	GiantAvg	BG	
TerrInsects	-	-	
Foliage	-	-	
WoodyVeg	-	-	
FruitsFlowers	-	-	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	BC06	BG-BC711	Emergent assumed to be 1/10 benthic

Bat - 2120 - BC Lower Reaches (0-6) - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC06_2120	mg/L	5.48E-02	2.19E-01
Sediment	-	-	-	-
Soil	Soil_GiantAvg_2120	mg/kg dw	1.12E+02	6.50E+02
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BC06_2120	mg/kg ww	7.97E-01	1.48E+01
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_2120	mg/L	2.50E-03	5.10E-02
Sediment	-	-	-	-
Soil	Soil_BG_2120	mg/kg dw	2.20E+00	3.57E+01
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BG-BC711_2120	mg/kg ww	3.90E-02	2.75E+00
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	8.29E-03	3.31E-02
	Sediment	-	-	-
	Soil	mg/kg-d	3.36E-01	1.95E+00
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	2.99E-01	5.55E+00
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	6.43E-01	7.54E+00
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	10.90	7.25
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	3.78E-04	7.71E-03
	Sediment	-	-	-
	Soil	mg/kg-d	6.60E-03	1.07E-01
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.46E-02	1.03E+00
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	2.16E-02	1.14E+00
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.37	1.10
Concentration		mg/kg ww		

Bat - 2120 - Back Bay - Page 1/2

Receptor
GiantBat
Timeframe
2120
Aquatic Pathways Source
Back Bay
Terrestrial Pathways Source
Giant Townsite
Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - South Yellowknife Bay
Benthic Reference Location
Background - South Yellowknife Bay
Fish Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
Benthic

Little Brown Bat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.01
Water ingestion rate	Water	m^3/d	1.51E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.75E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BB	BG-LK	
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	Townsite	BG	
TerrInsects	-	-	
Foliage	-	-	
WoodyVeg	-	-	
FruitsFlowers	-	-	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	BB	BG-SYB	Emergent assumed to be 1/10 benthic

Bat - 2120 - Back Bay - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BB_2120	mg/L	1.32E-04	2.15E-03
Sediment	-	-	-	-
Soil	Soil_Townsite_2120	mg/kg dw	1.60E+01	4.80E+01
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BB_2120	mg/kg ww	2.09E-01	9.85E+00
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_2120	mg/L	2.00E-04	5.60E-04
Sediment	-	-	-	-
Soil	Soil_BG_2120	mg/kg dw	2.20E+00	3.57E+01
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BG-SYB_2120	mg/kg ww	8.58E-03	6.00E-01
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.99E-05	3.24E-04
	Sediment	-	-	-
	Soil	mg/kg-d	4.80E-02	1.44E-01
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	7.82E-02	3.69E+00
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.26E-01	3.84E+00
TRV		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	2.14	3.69
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	3.02E-05	8.46E-05
	Sediment	-	-	-
	Soil	mg/kg-d	6.60E-03	1.07E-01
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	3.22E-03	2.25E-01
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	9.85E-03	3.32E-01
		mg/kg-d	5.90E-02	1.04E+00
SI Value		-	0.17	0.32
Concentration		mg/kg ww		

Swallow - 2120 - BC Lower Reaches (0-6) - Page 1/2

Receptor
GiantSwallow
Timeframe
2120
Aquatic Pathways Source
BC Lower Reaches (0-6)
Terrestrial Pathways Source
Site Average
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location
Background - BC Reach 7-11
Benthic Reference Location
Background - BC Reach 7-11
Fish Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
Benthic

Barn Swallow

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0187
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.23E+01
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.50E-01
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BC06	BG-BC711	
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	GiantAvg	BG	
TerrInsects	-	-	
Foliage	-	-	
WoodyVeg	-	-	
FruitsFlowers	-	-	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	BC06	BG-BC711	Emergent assumed to be 1/10 benthic

Swallow - 2120 - BC Lower Reaches (0-6) - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BC06_2120	mg/L	5.48E-02	2.19E-01
Sediment	-	-	-	-
Soil	Soil_GiantAvg_2120	mg/kg dw	1.12E+02	6.50E+02
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BC06_2120	mg/kg ww	7.97E-01	1.48E+01
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-BC711_2120	mg/L	2.50E-03	5.10E-02
Sediment	-	-	-	-
Soil	Soil_BG_2120	mg/kg dw	2.20E+00	3.57E+01
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BG-BC711_2120	mg/kg ww	3.90E-02	2.75E+00
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.20E-02	4.80E-02
	Sediment	-	-	-
	Soil	mg/kg-d	2.70E+00	1.56E+01
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	5.22E-01	9.70E+00
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	3.23E+00	2.54E+01
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	5.77
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	5.48E-04	1.12E-02
	Sediment	-	-	-
	Soil	mg/kg-d	5.29E-02	8.60E-01
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	2.55E-02	1.80E+00
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	7.90E-02	2.67E+00
		mg/kg-d	-	4.40E+00
SI Value		-	-	0.61
Concentration		mg/kg ww		

Swallow - 2120 - Back Bay - Page 1/2

Receptor
GiantSwallow
Timeframe
2120
Aquatic Pathways Source
Back Bay
Terrestrial Pathways Source
Giant Townsite
Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - South Yellowknife Bay
Benthic Reference Location
Background - South Yellowknife Bay
Fish Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
Benthic

Barn Swallow

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0187
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.23E+01
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.50E-01
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BB	BG-LK	
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	Townsite	BG	
TerrInsects	-	-	
Foliage	-	-	
WoodyVeg	-	-	
FruitsFlowers	-	-	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	BB	BG-SYB	Emergent assumed to be 1/10 benthic

Swallow - 2120 - Back Bay - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BB_2120	mg/L	1.32E-04	2.15E-03
Sediment	-	-	-	-
Soil	Soil_Townsite_2120	mg/kg dw	1.60E+01	4.80E+01
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BB_2120	mg/kg ww	2.09E-01	9.85E+00
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_2120	mg/L	2.00E-04	5.60E-04
Sediment	-	-	-	-
Soil	Soil_BG_2120	mg/kg dw	2.20E+00	3.57E+01
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	Benthic_BG-SYB_2120	mg/kg ww	8.58E-03	6.00E-01
Aquatic Vegetation	-	-	-	-
Fish	-	-	-	-
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	2.89E-05	4.71E-04
	Sediment	-	-	-
	Soil	mg/kg-d	3.85E-01	1.16E+00
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.37E-01	6.45E+00
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	5.22E-01	7.61E+00
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	1.73
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	4.39E-05	1.23E-04
	Sediment	-	-	-
	Soil	mg/kg-d	5.29E-02	8.60E-01
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	5.62E-03	3.93E-01
	Aquatic Vegetation	-	-	-
	Fish	-	-	-
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	5.86E-02	1.25E+00
		mg/kg-d	-	4.40E+00
SI Value		-	-	0.28
Concentration		mg/kg ww		

Osprey - 2120 - Back Bay/ Baker Creek - Page 1/2

Receptor
GiantOsprey
Timeframe
2120
Aquatic Pathways Source
Back Bay/ Baker Creek
Terrestrial Pathways Source

Water Reference Location
Background - Prosperous/Yellowknife Bay Locations
Sediment Reference Location
Background - All Locations
Benthic Reference Location

Fish Reference Location
Background - South Yellowknife Bay
Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Osprey

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.7
Water ingestion rate	Water	m^3/d	7.40E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.62E+02
Sediment ingestion rate	Sediment	g (dw)/d	1.40E+00
Soil ingestion rate	Soil	g (dw)/d	-
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	1.00
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BBBC	BG-LK
Sediment	BBBC	BG-All
Benthic	-	-
AquaticVeg	-	-
Fish	BBBC	BG-SYB
Duck	-	-
Soil	-	-
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Osprey - 2120 - Back Bay/ Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic
Water	Water_BBBC_2120	mg/L	2.75E-02	1.10E-01
Sediment	Sediment_BBBC_2120	mg/kg dw	6.45E+01	2.88E+02
Soil	-	-	-	-
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BBBC_2120	mg/kg ww	9.03E-02	1.04E+00
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic
Water	Water_BG-LK_2120	mg/L	2.00E-04	5.60E-04
Sediment	Sediment_BG-All_2120	mg/kg dw	1.20E+00	5.98E+00
Soil	-	-	-	-
Benthic Invertebrates	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-
Aquatic Vegetation	-	-	-	-
Fish	Fish_BG-SYB_2120	mg/kg ww	1.54E-03	6.19E-02
Duck	-	-	-	-
Terrestrial Insects	-	-	-	-
Foliage	-	-	-	-
Woody Vegetation	-	-	-	-
Fruits and Flowers	-	-	-	-
Caribou	-	-	-	-
Grouse/Ptarmigan	-	-	-	-
Shrew	-	-	-	-
Mouse	-	-	-	-
Moose	-	-	-	-
Hare	-	-	-	-

Exposure		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	1.20E-03	4.81E-03
	Sediment	mg/kg-d	5.31E-02	2.37E-01
	Soil	-	-	-
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	1.92E-02	2.21E-01
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	7.35E-02	4.63E-01
TRV		mg/kg-d	-	4.40E+00
SI Value		-	-	0.11
Concentration		mg/kg ww		

Background		Units	Antimony	Arsenic
Intake	Water	mg/kg-d	8.71E-06	2.44E-05
	Sediment	mg/kg-d	9.88E-04	4.92E-03
	Soil	-	-	-
	Benthic Invertebrates	-	-	-
	Aquatic/Terrestrial Insects	-	-	-
	Aquatic Vegetation	-	-	-
	Fish	mg/kg-d	3.28E-04	1.32E-02
	Duck	-	-	-
	Terrestrial Insects	-	-	-
	Foliage	-	-	-
	Woody Vegetation	-	-	-
	Fruits and Flowers	-	-	-
	Caribou	-	-	-
	Grouse/Ptarmigan	-	-	-
	Shrew	-	-	-
	Mouse	-	-	-
	Moose	-	-	-
	Hare	-	-	-
Total Intake		mg/kg-d	1.32E-03	1.81E-02
		mg/kg-d	-	4.40E+00
SI Value		-	-	0.00
Concentration		mg/kg ww		

Mouse - Current - Trapper Lake North - Page 1/2

Receptor
GiantMouse
Timeframe
Current
Terrestrial Pathways Source
Trapper Lake North
Aquatic Pathways Source
Trapper Lake
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
Trapper Lake

Deer Mouse

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0217
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	5.90E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	0.50
Foliage	Foliage	-	0.20
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	0.30
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	TL	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	TLN	BG
TerrInsects	TLN	BG
Foliage	TLN	BG
WoodyVeg	-	-
FruitsFlowers	TLN	BG
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Mouse - Current - Trapper Lake North - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_TL_Current	mg/L	2.11E-02	1.66E-01	9.92E-04	2.84E-02	6.07E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_TLN_Current	mg/kg dw	3.60E+01	2.40E+02	9.20E+01	1.01E+03	9.40E+01
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_TLN_Current	mg/kg ww	2.14E-01	2.35E+00	1.50E+00	3.85E+02	5.49E-01
Foliage	Foliage_TLN_Current	mg/kg ww	2.14E-01	7.89E-01	1.50E+00	3.85E+02	5.49E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	FruitsFlowers_TLN_Current	mg/kg ww	2.14E-01	2.35E+00	1.50E+00	3.85E+02	5.49E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Foliage	Foliage_BG_Current	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	FruitsFlowers_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	3.99E-03	3.14E-02	1.87E-04	5.37E-03	1.15E-03
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	6.64E-02	4.43E-01	1.70E-01	1.87E+00	1.73E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	2.91E-02	3.20E-01	2.04E-01	5.24E+01	7.46E-02
	Foliage	mg/kg-d	1.17E-02	4.29E-02	8.16E-02	2.10E+01	2.98E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	mg/kg-d	1.75E-02	1.92E-01	1.22E-01	3.14E+01	4.48E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.29E-01	1.03E+00	5.78E-01	1.07E+02	3.24E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	2.18	0.99	0.10	2.07	0.00
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	4.72E-04	9.64E-03	3.36E-04	3.12E-02	6.99E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	4.06E-03	6.58E-02	5.71E-02	3.04E-01	2.52E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	1.49E-02	1.27E-01	2.04E-01	8.52E+00	7.77E-02
	Foliage	mg/kg-d	5.96E-03	1.71E-02	8.16E-02	3.41E+00	3.11E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	mg/kg-d	8.94E-03	7.65E-02	1.22E-01	5.11E+00	4.66E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.43E-02	2.96E-01	4.65E-01	1.74E+01	4.08E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.58	0.29	0.08	0.34	0.01
Concentration		mg/kg ww					

Mouse - Current - West of Baker Creek - Page 1/2

Receptor
GiantMouse
Timeframe
Current
Terrestrial Pathways Source
West of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 6

Deer Mouse

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0217
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	5.90E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	0.50
Foliage	Foliage	-	0.20
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	0.30
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC6	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	WBC	BG
TerrInsects	WBC	BG
Foliage	WBC	BG
WoodyVeg	-	-
FruitsFlowers	WBC	BG
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Mouse - Current - West of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Current	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_WBC_Current	mg/kg dw	1.65E+02	9.07E+02	5.60E+01	8.07E+02	1.00E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_WBC_Current	mg/kg ww	3.09E-01	4.40E+00	1.50E+00	3.07E+02	5.52E-01
Foliage	Foliage_WBC_Current	mg/kg ww	3.09E-01	1.47E+00	1.50E+00	3.07E+02	5.52E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	FruitsFlowers_WBC_Current	mg/kg ww	3.09E-01	4.40E+00	1.50E+00	3.07E+02	5.52E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Foliage	Foliage_BG_Current	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	FruitsFlowers_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.40E-02	7.43E-02	1.77E-03	8.18E-03	9.01E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	3.04E-01	1.67E+00	1.03E-01	1.49E+00	1.84E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	4.20E-02	5.98E-01	2.04E-01	4.17E+01	7.51E-02
	Foliage	mg/kg-d	1.68E-02	8.01E-02	8.16E-02	1.67E+01	3.00E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	mg/kg-d	2.52E-02	3.59E-01	1.22E-01	2.50E+01	4.51E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	4.42E-01	2.78E+00	5.13E-01	8.49E+01	3.35E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	7.49	2.68	0.09	1.65	0.00
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	4.72E-04	9.64E-03	3.36E-04	3.12E-02	6.99E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	4.06E-03	6.58E-02	5.71E-02	3.04E-01	2.52E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	1.49E-02	1.27E-01	2.04E-01	8.52E+00	7.77E-02
	Foliage	mg/kg-d	5.96E-03	1.71E-02	8.16E-02	3.41E+00	3.11E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	mg/kg-d	8.94E-03	7.65E-02	1.22E-01	5.11E+00	4.66E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.43E-02	2.96E-01	4.65E-01	1.74E+01	4.08E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.58	0.29	0.08	0.34	0.01
Concentration		mg/kg ww					

Mouse - Current - East of Baker Creek - Page 1/2

Receptor
GiantMouse
Timeframe
Current
Terrestrial Pathways Source
East of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 6

Deer Mouse

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0217
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	5.90E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	0.50
Foliage	Foliage	-	0.20
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	0.30
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC6	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	EBC	BG
TerrInsects	EBC	BG
Foliage	EBC	BG
WoodyVeg	-	-
FruitsFlowers	EBC	BG
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Mouse - Current - East of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Current	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_EBC_Current	mg/kg dw	3.06E+02	1.65E+03	2.71E+02	1.07E+03	2.67E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_EBC_Current	mg/kg ww	3.58E-01	5.82E+00	1.50E+00	4.07E+02	6.15E-01
Foliage	Foliage_EBC_Current	mg/kg ww	3.58E-01	1.95E+00	1.50E+00	4.07E+02	6.15E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	FruitsFlowers_EBC_Current	mg/kg ww	3.58E-01	4.94E+01	1.50E+00	4.07E+02	6.15E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Foliage	Foliage_BG_Current	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	FruitsFlowers_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.40E-02	7.43E-02	1.77E-03	8.18E-03	9.01E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	5.64E-01	3.04E+00	5.00E-01	1.98E+00	4.92E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	4.87E-02	7.91E-01	2.04E-01	5.54E+01	8.37E-02
	Foliage	mg/kg-d	1.95E-02	1.06E-01	8.16E-02	2.22E+01	3.35E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	mg/kg-d	2.92E-02	4.03E+00	1.22E-01	3.32E+01	5.02E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	7.16E-01	8.04E+00	9.09E-01	1.13E+02	6.60E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	12.13	7.73	0.16	2.19	0.01
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	4.72E-04	9.64E-03	3.36E-04	3.12E-02	6.99E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	4.06E-03	6.58E-02	5.71E-02	3.04E-01	2.52E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	1.49E-02	1.27E-01	2.04E-01	8.52E+00	7.77E-02
	Foliage	mg/kg-d	5.96E-03	1.71E-02	8.16E-02	3.41E+00	3.11E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	mg/kg-d	8.94E-03	7.65E-02	1.22E-01	5.11E+00	4.66E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.43E-02	2.96E-01	4.65E-01	1.74E+01	4.08E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.58	0.29	0.08	0.34	0.01
Concentration		mg/kg ww					

Mouse - Current - South of Baker Creek - Page 1/2

Receptor
GiantMouse
Timeframe
Current
Terrestrial Pathways Source
South of Baker Creek
Aquatic Pathways Source
BC Reach 1-3
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 1-3

Deer Mouse

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0217
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	5.90E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	0.50
Foliage	Foliage	-	0.20
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	0.30
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC13	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	SBC	BG
TerrInsects	SBC	BG
Foliage	SBC	BG
WoodyVeg	-	-
FruitsFlowers	SBC	BG
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Mouse - Current - South of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC13_Current	mg/L	2.17E-01	3.18E-01	1.00E-02	3.16E-01	1.50E-01
Sediment	-	-	-	-	-	-	-
Soil	Soil_SBC_Current	mg/kg dw	1.20E+02	1.27E+03	1.04E+02	1.16E+03	1.33E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_SBC_Current	mg/kg ww	2.86E-01	5.14E+00	1.50E+00	4.40E+02	5.70E-01
Foliage	Foliage_SBC_Current	mg/kg ww	2.86E-01	1.72E+00	1.50E+00	4.40E+02	5.70E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	FruitsFlowers_SBC_Current	mg/kg ww	2.86E-01	5.14E+00	1.50E+00	4.40E+02	5.70E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Foliage	Foliage_BG_Current	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	FruitsFlowers_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
	Water	mg/kg-d	4.09E-02	6.00E-02	1.89E-03	5.97E-02	2.83E-02
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	2.21E-01	2.34E+00	1.92E-01	2.14E+00	2.45E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
Intake	Terrestrial Insects	mg/kg-d	3.89E-02	6.99E-01	2.04E-01	5.99E+01	7.75E-02
	Foliage	mg/kg-d	1.56E-02	9.37E-02	8.16E-02	2.39E+01	3.10E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	mg/kg-d	2.33E-02	4.20E-01	1.22E-01	3.59E+01	4.65E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.40E-01	3.61E+00	6.01E-01	1.22E+02	4.28E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	5.76	3.47	0.11	2.37	0.01
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
	Water	mg/kg-d	4.72E-04	9.64E-03	3.36E-04	3.12E-02	6.99E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	4.06E-03	6.58E-02	5.71E-02	3.04E-01	2.52E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
Intake	Terrestrial Insects	mg/kg-d	1.49E-02	1.27E-01	2.04E-01	8.52E+00	7.77E-02
	Foliage	mg/kg-d	5.96E-03	1.71E-02	8.16E-02	3.41E+00	3.11E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	mg/kg-d	8.94E-03	7.65E-02	1.22E-01	5.11E+00	4.66E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.43E-02	2.96E-01	4.65E-01	1.74E+01	4.08E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.58	0.29	0.08	0.34	0.01
Concentration		mg/kg ww					

Hare - Current - Trapper Lake North - Page 1/2

Receptor
GiantHare
Timeframe
Current
Terrestrial Pathways Source
Trapper Lake North
Aquatic Pathways Source
Trapper Lake
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
Trapper Lake

Snowshoe Hare

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.3
Water ingestion rate	Water	m^3/d	1.31E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	2.73E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	5.17E+00
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	0.30
Woody Vegetation	WoodyVeg	-	0.60
Fruits and Flowers	FruitsFlowers	-	0.10
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	TL	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	TLN	BG
TerrInsects	-	-
Foliage	TLN	BG
WoodyVeg	TLN	BG
FruitsFlowers	TLN	BG
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Hare - Current - Trapper Lake North - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_TL_Current	mg/L	2.11E-02	1.66E-01	9.92E-04	2.84E-02	6.07E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_TLN_Current	mg/kg dw	3.60E+01	2.40E+02	9.20E+01	1.01E+03	9.40E+01
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_TLN_Current	mg/kg ww	2.14E-01	7.89E-01	1.50E+00	3.85E+02	5.49E-01
Woody Vegetation	WoodyVeg_TLN_Current	mg/kg ww	2.14E-01	2.35E+00	1.50E+00	3.85E+02	5.49E-01
Fruits and Flowers	FruitsFlowers_TLN_Current	mg/kg ww	2.14E-01	2.35E+00	1.50E+00	3.85E+02	5.49E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_BG_Current	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	WoodyVeg_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Fruits and Flowers	FruitsFlowers_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	2.12E-03	1.67E-02	9.97E-05	2.85E-03	6.10E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.43E-01	9.54E-01	3.66E-01	4.03E+00	3.74E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	1.35E-02	4.98E-02	9.46E-02	2.43E+01	3.46E-02
	Woody Vegetation	mg/kg-d	2.70E-02	2.97E-01	1.89E-01	4.86E+01	6.92E-02
	Fruits and Flowers	mg/kg-d	4.51E-03	4.95E-02	3.15E-02	8.10E+00	1.15E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.90E-01	1.37E+00	6.81E-01	8.50E+01	4.90E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	3.22	1.31	0.12	1.65	0.01
Concentration		mg/kg ww	1.19E-02	1.78E+00	8.82E-01	1.08E+01	4.40E+00

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	2.51E-04	5.12E-03	1.79E-04	1.66E-02	3.72E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	8.74E-03	1.42E-01	1.23E-01	6.56E-01	5.43E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	6.91E-03	1.98E-02	9.46E-02	3.95E+00	3.61E-02
	Woody Vegetation	mg/kg-d	1.38E-02	1.18E-01	1.89E-01	7.91E+00	7.21E-02
	Fruits and Flowers	mg/kg-d	2.30E-03	1.97E-02	3.15E-02	1.32E+00	1.20E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.20E-02	3.05E-01	4.39E-01	1.39E+01	6.64E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.54	0.29	0.08	0.27	0.01
Concentration		mg/kg ww	2.00E-03	3.96E-01	5.68E-01	1.77E+00	5.97E+00

Hare - Current - West of Baker Creek - Page 1/2

Receptor
GiantHare
Timeframe
Current
Terrestrial Pathways Source
West of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 6

Snowshoe Hare

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.3
Water ingestion rate	Water	m^3/d	1.31E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	2.73E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	5.17E+00
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	0.30
Woody Vegetation	WoodyVeg	-	0.60
Fruits and Flowers	FruitsFlowers	-	0.10
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC6	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	WBC	BG
TerrInsects	-	-
Foliage	WBC	BG
WoodyVeg	WBC	BG
FruitsFlowers	WBC	BG
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Hare - Current - West of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Current	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_WBC_Current	mg/kg dw	1.65E+02	9.07E+02	5.60E+01	8.07E+02	1.00E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_WBC_Current	mg/kg ww	3.09E-01	1.47E+00	1.50E+00	3.07E+02	5.52E-01
Woody Vegetation	WoodyVeg_WBC_Current	mg/kg ww	3.09E-01	4.40E+00	1.50E+00	3.07E+02	5.52E-01
Fruits and Flowers	FruitsFlowers_WBC_Current	mg/kg ww	3.09E-01	4.40E+00	1.50E+00	3.07E+02	5.52E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_BG_Current	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	WoodyVeg_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Fruits and Flowers	FruitsFlowers_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	2.87E-02	3.95E-02	9.43E-04	4.35E-03	4.79E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	6.56E-01	3.60E+00	2.23E-01	3.21E+00	3.97E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	1.95E-02	9.29E-02	9.46E-02	1.93E+01	3.48E-02
	Woody Vegetation	mg/kg-d	3.90E-02	5.55E-01	1.89E-01	3.87E+01	6.97E-02
	Fruits and Flowers	mg/kg-d	6.50E-03	9.24E-02	3.15E-02	6.45E+00	1.16E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	7.49E-01	4.38E+00	5.39E-01	6.77E+01	5.14E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	12.70	4.21	0.10	1.31	0.01
Concentration		mg/kg ww	4.68E-02	5.70E+00	6.98E-01	8.62E+00	4.62E+00

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	2.51E-04	5.12E-03	1.79E-04	1.66E-02	3.72E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	8.74E-03	1.42E-01	1.23E-01	6.56E-01	5.43E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	6.91E-03	1.98E-02	9.46E-02	3.95E+00	3.61E-02
	Woody Vegetation	mg/kg-d	1.38E-02	1.18E-01	1.89E-01	7.91E+00	7.21E-02
	Fruits and Flowers	mg/kg-d	2.30E-03	1.97E-02	3.15E-02	1.32E+00	1.20E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.20E-02	3.05E-01	4.39E-01	1.39E+01	6.64E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.54	0.29	0.08	0.27	0.01
Concentration		mg/kg ww	2.00E-03	3.96E-01	5.68E-01	1.77E+00	5.97E+00

Hare - Current - East of Baker Creek - Page 1/2

Receptor
GiantHare
Timeframe
Current
Terrestrial Pathways Source
East of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 6

Snowshoe Hare

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.3
Water ingestion rate	Water	m^3/d	1.31E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	2.73E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	5.17E+00
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	0.30
Woody Vegetation	WoodyVeg	-	0.60
Fruits and Flowers	FruitsFlowers	-	0.10
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC6	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	EBC	BG
TerrInsects	-	-
Foliage	EBC	BG
WoodyVeg	EBC	BG
FruitsFlowers	EBC	BG
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Hare - Current - East of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Current	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_EBC_Current	mg/kg dw	3.06E+02	1.65E+03	2.71E+02	1.07E+03	2.67E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_EBC_Current	mg/kg ww	3.58E-01	1.95E+00	1.50E+00	4.07E+02	6.15E-01
Woody Vegetation	WoodyVeg_EBC_Current	mg/kg ww	3.58E-01	2.23E+01	1.50E+00	4.07E+02	6.15E-01
Fruits and Flowers	FruitsFlowers_EBC_Current	mg/kg ww	3.58E-01	4.94E+01	1.50E+00	4.07E+02	6.15E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_BG_Current	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	WoodyVeg_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Fruits and Flowers	FruitsFlowers_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	2.87E-02	3.95E-02	9.43E-04	4.35E-03	4.79E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.22E+00	6.54E+00	1.08E+00	4.26E+00	1.06E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	2.26E-02	1.23E-01	9.46E-02	2.57E+01	3.88E-02
	Woody Vegetation	mg/kg-d	4.52E-02	2.81E+00	1.89E-01	5.14E+01	7.76E-02
	Fruits and Flowers	mg/kg-d	7.53E-03	1.04E+00	3.15E-02	8.57E+00	1.29E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.32E+00	1.06E+01	1.39E+00	8.99E+01	1.19E+00
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	22.37	10.15	0.25	1.75	0.02
Concentration		mg/kg ww	8.24E-02	1.37E+01	1.80E+00	1.15E+01	1.07E+01

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	2.51E-04	5.12E-03	1.79E-04	1.66E-02	3.72E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	8.74E-03	1.42E-01	1.23E-01	6.56E-01	5.43E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	6.91E-03	1.98E-02	9.46E-02	3.95E+00	3.61E-02
	Woody Vegetation	mg/kg-d	1.38E-02	1.18E-01	1.89E-01	7.91E+00	7.21E-02
	Fruits and Flowers	mg/kg-d	2.30E-03	1.97E-02	3.15E-02	1.32E+00	1.20E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.20E-02	3.05E-01	4.39E-01	1.39E+01	6.64E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.54	0.29	0.08	0.27	0.01
Concentration		mg/kg ww	2.00E-03	3.96E-01	5.68E-01	1.77E+00	5.97E+00

Hare - Current - South of Baker Creek - Page 1/2

Receptor
GiantHare
Timeframe
Current
Terrestrial Pathways Source
South of Baker Creek
Aquatic Pathways Source
BC Reach 1-3
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 1-3

Snowshoe Hare

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.3
Water ingestion rate	Water	m^3/d	1.31E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	2.73E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	5.17E+00
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	0.30
Woody Vegetation	WoodyVeg	-	0.60
Fruits and Flowers	FruitsFlowers	-	0.10
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC13	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	SBC	BG
TerrInsects	-	-
Foliage	SBC	BG
WoodyVeg	SBC	BG
FruitsFlowers	SBC	BG
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Hare - Current - South of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC13_Current	mg/L	2.17E-01	3.18E-01	1.00E-02	3.16E-01	1.50E-01
Sediment	-	-	-	-	-	-	-
Soil	Soil_SBC_Current	mg/kg dw	1.20E+02	1.27E+03	1.04E+02	1.16E+03	1.33E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_SBC_Current	mg/kg ww	2.86E-01	1.72E+00	1.50E+00	4.40E+02	5.70E-01
Woody Vegetation	WoodyVeg_SBC_Current	mg/kg ww	2.86E-01	5.14E+00	1.50E+00	4.40E+02	5.70E-01
Fruits and Flowers	FruitsFlowers_SBC_Current	mg/kg ww	2.86E-01	5.14E+00	1.50E+00	4.40E+02	5.70E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_BG_Current	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	WoodyVeg_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Fruits and Flowers	FruitsFlowers_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	2.18E-02	3.19E-02	1.00E-03	3.18E-02	1.51E-02
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	4.77E-01	5.03E+00	4.13E-01	4.61E+00	5.29E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	1.81E-02	1.09E-01	9.46E-02	2.78E+01	3.60E-02
	Woody Vegetation	mg/kg-d	3.61E-02	6.49E-01	1.89E-01	5.56E+01	7.19E-02
	Fruits and Flowers	mg/kg-d	6.02E-03	1.08E-01	3.15E-02	9.26E+00	1.20E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	5.59E-01	5.93E+00	7.30E-01	9.72E+01	6.63E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	9.47	5.70	0.13	1.89	0.01
Concentration		mg/kg ww	3.49E-02	7.71E+00	9.45E-01	1.24E+01	5.97E+00

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	2.51E-04	5.12E-03	1.79E-04	1.66E-02	3.72E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	8.74E-03	1.42E-01	1.23E-01	6.56E-01	5.43E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	6.91E-03	1.98E-02	9.46E-02	3.95E+00	3.61E-02
	Woody Vegetation	mg/kg-d	1.38E-02	1.18E-01	1.89E-01	7.91E+00	7.21E-02
	Fruits and Flowers	mg/kg-d	2.30E-03	1.97E-02	3.15E-02	1.32E+00	1.20E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.20E-02	3.05E-01	4.39E-01	1.39E+01	6.64E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.54	0.29	0.08	0.27	0.01
Concentration		mg/kg ww	2.00E-03	3.96E-01	5.68E-01	1.77E+00	5.97E+00

Bat - Current - Trapper Lake North - Page 1/2

Receptor
GiantBat
Timeframe
Current
Terrestrial Pathways Source
Trapper Lake North
Aquatic Pathways Source
Trapper Lake
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
TerrInsects

Suggested Aquatic linking:
Trapper Lake

Little Brown Bat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.01
Water ingestion rate	Water	m^3/d	1.51E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.75E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	TL	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	TLN	BG
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	TLN	BG

Bat - Current - Trapper Lake North - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_TL_Current	mg/L	2.11E-02	1.66E-01	9.92E-04	2.84E-02	6.07E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_TLN_Current	mg/kg dw	3.60E+01	2.40E+02	9.20E+01	1.01E+03	9.40E+01
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_TLN_Current	mg/kg ww	2.14E-01	2.35E+00	1.50E+00	3.85E+02	5.49E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	3.19E-03	2.51E-02	1.50E-04	4.29E-03	9.17E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.08E-01	7.20E-01	2.76E-01	3.04E+00	2.82E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	8.04E-02	8.83E-01	5.63E-01	1.44E+02	2.06E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.92E-01	1.63E+00	8.39E-01	1.48E+02	4.89E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	3.25	1.57	0.15	2.86	0.01
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	3.78E-04	7.71E-03	2.69E-04	2.49E-02	5.59E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	6.60E-03	1.07E-01	9.30E-02	4.95E-01	4.10E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	4.11E-02	3.52E-01	5.63E-01	2.35E+01	2.14E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	4.81E-02	4.66E-01	6.56E-01	2.40E+01	6.25E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.81	0.45	0.12	0.47	0.01
Concentration		mg/kg ww					

Bat - Current - West of Baker Creek - Page 1/2

Receptor
GiantBat
Timeframe
Current
Terrestrial Pathways Source
West of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
TerrInsects

Suggested Aquatic linking:
BC Reach 6

Little Brown Bat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.01
Water ingestion rate	Water	m^3/d	1.51E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.75E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC6	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	WBC	BG
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	WBC	BG

Bat - Current - West of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Current	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_WBC_Current	mg/kg dw	1.65E+02	9.07E+02	5.60E+01	8.07E+02	1.00E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_WBC_Current	mg/kg ww	3.09E-01	4.40E+00	1.50E+00	3.07E+02	5.52E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	4.32E-02	5.94E-02	1.42E-03	6.54E-03	7.21E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	4.95E-01	2.72E+00	1.68E-01	2.42E+00	3.00E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.16E-01	1.65E+00	5.63E-01	1.15E+02	2.07E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	6.54E-01	4.43E+00	7.32E-01	1.17E+02	5.08E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	11.09	4.26	0.13	2.28	0.01
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	3.78E-04	7.71E-03	2.69E-04	2.49E-02	5.59E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	6.60E-03	1.07E-01	9.30E-02	4.95E-01	4.10E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	4.11E-02	3.52E-01	5.63E-01	2.35E+01	2.14E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	4.81E-02	4.66E-01	6.56E-01	2.40E+01	6.25E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.81	0.45	0.12	0.47	0.01
Concentration		mg/kg ww					

Bat - Current - East of Baker Creek - Page 1/2

Receptor
GiantBat
Timeframe
Current
Terrestrial Pathways Source
East of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
TerrInsects

Suggested Aquatic linking:
BC Reach 6

Little Brown Bat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.01
Water ingestion rate	Water	m^3/d	1.51E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.75E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC6	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	EBC	BG
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	EBC	BG

Bat - Current - East of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Current	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_EBC_Current	mg/kg dw	3.06E+02	1.65E+03	2.71E+02	1.07E+03	2.67E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_EBC_Current	mg/kg ww	3.58E-01	5.82E+00	1.50E+00	4.07E+02	6.15E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	4.32E-02	5.94E-02	1.42E-03	6.54E-03	7.21E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	9.18E-01	4.94E+00	8.13E-01	3.22E+00	8.01E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.34E-01	2.18E+00	5.63E-01	1.53E+02	2.31E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.10E+00	7.18E+00	1.38E+00	1.56E+02	1.03E+00
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	18.57	6.91	0.25	3.03	0.01
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	3.78E-04	7.71E-03	2.69E-04	2.49E-02	5.59E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	6.60E-03	1.07E-01	9.30E-02	4.95E-01	4.10E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	4.11E-02	3.52E-01	5.63E-01	2.35E+01	2.14E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	4.81E-02	4.66E-01	6.56E-01	2.40E+01	6.25E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.81	0.45	0.12	0.47	0.01
Concentration		mg/kg ww					

Bat - Current - South of Baker Creek - Page 1/2

Receptor
GiantBat
Timeframe
Current
Terrestrial Pathways Source
South of Baker Creek
Aquatic Pathways Source
BC Reach 1-3
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
TerrInsects

Suggested Aquatic linking:
BC Reach 1-3

Little Brown Bat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.01
Water ingestion rate	Water	m^3/d	1.51E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.75E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC13	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	SBC	BG
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	SBC	BG

Bat - Current - South of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC13_Current	mg/L	2.17E-01	3.18E-01	1.00E-02	3.16E-01	1.50E-01
Sediment	-	-	-	-	-	-	-
Soil	Soil_SBC_Current	mg/kg dw	1.20E+02	1.27E+03	1.04E+02	1.16E+03	1.33E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_SBC_Current	mg/kg ww	2.86E-01	5.14E+00	1.50E+00	4.40E+02	5.70E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	3.27E-02	4.80E-02	1.51E-03	4.78E-02	2.27E-02
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	3.60E-01	3.80E+00	3.12E-01	3.48E+00	3.99E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.07E-01	1.93E+00	5.63E-01	1.65E+02	2.14E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	5.00E-01	5.78E+00	8.76E-01	1.69E+02	6.35E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	8.48	5.56	0.16	3.28	0.01
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	3.78E-04	7.71E-03	2.69E-04	2.49E-02	5.59E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	6.60E-03	1.07E-01	9.30E-02	4.95E-01	4.10E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	4.11E-02	3.52E-01	5.63E-01	2.35E+01	2.14E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	4.81E-02	4.66E-01	6.56E-01	2.40E+01	6.25E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.81	0.45	0.12	0.47	0.01
Concentration		mg/kg ww					

Ptarmigan - Current - Trapper Lake North - Page 1/2

Receptor
GiantPtarmigan
Timeframe
Current
Terrestrial Pathways Source
Trapper Lake North
Aquatic Pathways Source
Trapper Lake
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
Trapper Lake

Willow Ptarmigan

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.65
Water ingestion rate	Water	m^3/d	4.32E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.43E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.99E+00
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	0.50
Woody Vegetation	WoodyVeg	-	0.15
Fruits and Flowers	FruitsFlowers	-	0.35
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	TL	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	TLN	BG
TerrInsects	-	-
Foliage	TLN	BG
WoodyVeg	TLN	BG
FruitsFlowers	TLN	BG
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Ptarmigan - Current - Trapper Lake North - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_TL_Current	mg/L	2.11E-02	1.66E-01	9.92E-04	2.84E-02	6.07E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_TLN_Current	mg/kg dw	3.60E+01	2.40E+02	9.20E+01	1.01E+03	9.40E+01
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_TLN_Current	mg/kg ww	2.14E-01	7.89E-01	1.50E+00	3.85E+02	5.49E-01
Woody Vegetation	WoodyVeg_TLN_Current	mg/kg ww	2.14E-01	2.35E+00	1.50E+00	3.85E+02	5.49E-01
Fruits and Flowers	FruitsFlowers_TLN_Current	mg/kg ww	2.14E-01	2.35E+00	1.50E+00	3.85E+02	5.49E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_BG_Current	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	WoodyVeg_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Fruits and Flowers	FruitsFlowers_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.40E-03	1.10E-02	6.59E-05	1.89E-03	4.03E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	2.21E-01	1.48E+00	5.65E-01	6.23E+00	5.77E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	2.36E-02	8.68E-02	1.65E-01	4.24E+01	6.04E-02
	Woody Vegetation	mg/kg-d	7.08E-03	7.78E-02	4.95E-02	1.27E+01	1.81E-02
	Fruits and Flowers	mg/kg-d	1.65E-02	1.81E-01	1.16E-01	2.97E+01	4.23E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	2.70E-01	1.83E+00	8.95E-01	9.11E+01	6.99E-01
TRV		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.42	0.20	0.51	0.01
Concentration		mg/kg ww	1.75E-02	1.19E+00	5.80E-01	2.96E+00	4.09E+00

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.66E-04	3.39E-03	1.18E-04	1.10E-02	2.46E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.35E-02	2.19E-01	1.90E-01	1.01E+00	8.40E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	1.21E-02	3.46E-02	1.65E-01	6.90E+00	6.29E-02
	Woody Vegetation	mg/kg-d	3.62E-03	3.10E-02	4.95E-02	2.07E+00	1.89E-02
	Fruits and Flowers	mg/kg-d	8.45E-03	7.22E-02	1.16E-01	4.83E+00	4.41E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.78E-02	3.61E-01	5.21E-01	1.48E+01	9.66E-01
		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.08	0.12	0.08	0.01
Concentration		mg/kg ww	2.46E-03	2.34E-01	3.37E-01	4.82E-01	5.65E+00

Ptarmigan - Current - West of Baker Creek - Page 1/2

Receptor
GiantPtarmigan
Timeframe
Current
Terrestrial Pathways Source
West of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 6

Willow Ptarmigan

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.65
Water ingestion rate	Water	m^3/d	4.32E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.43E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.99E+00
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	0.50
Woody Vegetation	WoodyVeg	-	0.15
Fruits and Flowers	FruitsFlowers	-	0.35
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC6	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	WBC	BG
TerrInsects	-	-
Foliage	WBC	BG
WoodyVeg	WBC	BG
FruitsFlowers	WBC	BG
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Ptarmigan - Current - West of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Current	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_WBC_Current	mg/kg dw	1.65E+02	9.07E+02	5.60E+01	8.07E+02	1.00E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_WBC_Current	mg/kg ww	3.09E-01	1.47E+00	1.50E+00	3.07E+02	5.52E-01
Woody Vegetation	WoodyVeg_WBC_Current	mg/kg ww	3.09E-01	4.40E+00	1.50E+00	3.07E+02	5.52E-01
Fruits and Flowers	FruitsFlowers_WBC_Current	mg/kg ww	3.09E-01	4.40E+00	1.50E+00	3.07E+02	5.52E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_BG_Current	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	WoodyVeg_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Fruits and Flowers	FruitsFlowers_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.90E-02	2.61E-02	6.24E-04	2.88E-03	3.17E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.01E+00	5.57E+00	3.44E-01	4.96E+00	6.14E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	3.40E-02	1.62E-01	1.65E-01	3.38E+01	6.08E-02
	Woody Vegetation	mg/kg-d	1.02E-02	1.45E-01	4.95E-02	1.01E+01	1.82E-02
	Fruits and Flowers	mg/kg-d	2.38E-02	3.39E-01	1.16E-01	2.36E+01	4.26E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.10E+00	6.24E+00	6.75E-01	7.25E+01	7.36E-01
TRV		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	1.42	0.15	0.40	0.01
Concentration		mg/kg ww	7.15E-02	4.06E+00	4.37E-01	2.36E+00	4.31E+00

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.66E-04	3.39E-03	1.18E-04	1.10E-02	2.46E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.35E-02	2.19E-01	1.90E-01	1.01E+00	8.40E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	1.21E-02	3.46E-02	1.65E-01	6.90E+00	6.29E-02
	Woody Vegetation	mg/kg-d	3.62E-03	3.10E-02	4.95E-02	2.07E+00	1.89E-02
	Fruits and Flowers	mg/kg-d	8.45E-03	7.22E-02	1.16E-01	4.83E+00	4.41E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.78E-02	3.61E-01	5.21E-01	1.48E+01	9.66E-01
		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.08	0.12	0.08	0.01
Concentration		mg/kg ww	2.46E-03	2.34E-01	3.37E-01	4.82E-01	5.65E+00

Ptarmigan - Current - East of Baker Creek - Page 1/2

Receptor
GiantPtarmigan
Timeframe
Current
Terrestrial Pathways Source
East of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 6

Willow Ptarmigan

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.65
Water ingestion rate	Water	m^3/d	4.32E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.43E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.99E+00
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	0.50
Woody Vegetation	WoodyVeg	-	0.15
Fruits and Flowers	FruitsFlowers	-	0.35
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC6	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	EBC	BG
TerrInsects	-	-
Foliage	EBC	BG
WoodyVeg	EBC	BG
FruitsFlowers	EBC	BG
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Ptarmigan - Current - East of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Current	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_EBC_Current	mg/kg dw	3.06E+02	1.65E+03	2.71E+02	1.07E+03	2.67E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_EBC_Current	mg/kg ww	3.58E-01	1.95E+00	1.50E+00	4.07E+02	6.15E-01
Woody Vegetation	WoodyVeg_EBC_Current	mg/kg ww	3.58E-01	2.23E+01	1.50E+00	4.07E+02	6.15E-01
Fruits and Flowers	FruitsFlowers_EBC_Current	mg/kg ww	3.58E-01	4.94E+01	1.50E+00	4.07E+02	6.15E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_BG_Current	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	WoodyVeg_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Fruits and Flowers	FruitsFlowers_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.90E-02	2.61E-02	6.24E-04	2.88E-03	3.17E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.88E+00	1.01E+01	1.66E+00	6.59E+00	1.64E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	3.94E-02	2.15E-01	1.65E-01	4.48E+01	6.78E-02
	Woody Vegetation	mg/kg-d	1.18E-02	7.36E-01	4.95E-02	1.35E+01	2.03E-02
	Fruits and Flowers	mg/kg-d	2.76E-02	3.81E+00	1.16E-01	3.14E+01	4.74E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.98E+00	1.49E+01	2.00E+00	9.63E+01	1.78E+00
TRV		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	3.39	0.44	0.54	0.03
Concentration		mg/kg ww	1.29E-01	9.69E+00	1.29E+00	3.13E+00	1.04E+01

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.66E-04	3.39E-03	1.18E-04	1.10E-02	2.46E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.35E-02	2.19E-01	1.90E-01	1.01E+00	8.40E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	1.21E-02	3.46E-02	1.65E-01	6.90E+00	6.29E-02
	Woody Vegetation	mg/kg-d	3.62E-03	3.10E-02	4.95E-02	2.07E+00	1.89E-02
	Fruits and Flowers	mg/kg-d	8.45E-03	7.22E-02	1.16E-01	4.83E+00	4.41E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.78E-02	3.61E-01	5.21E-01	1.48E+01	9.66E-01
		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.08	0.12	0.08	0.01
Concentration		mg/kg ww	2.46E-03	2.34E-01	3.37E-01	4.82E-01	5.65E+00

Ptarmigan - Current - South of Baker Creek - Page 1/2

Receptor
GiantPtarmigan
Timeframe
Current
Terrestrial Pathways Source
South of Baker Creek
Aquatic Pathways Source
BC Reach 1-3
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 1-3

Willow Ptarmigan

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.65
Water ingestion rate	Water	m^3/d	4.32E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.43E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.99E+00
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	0.50
Woody Vegetation	WoodyVeg	-	0.15
Fruits and Flowers	FruitsFlowers	-	0.35
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC13	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	SBC	BG
TerrInsects	-	-
Foliage	SBC	BG
WoodyVeg	SBC	BG
FruitsFlowers	SBC	BG
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Ptarmigan - Current - South of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC13_Current	mg/L	2.17E-01	3.18E-01	1.00E-02	3.16E-01	1.50E-01
Sediment	-	-	-	-	-	-	-
Soil	Soil_SBC_Current	mg/kg dw	1.20E+02	1.27E+03	1.04E+02	1.16E+03	1.33E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_SBC_Current	mg/kg ww	2.86E-01	1.72E+00	1.50E+00	4.40E+02	5.70E-01
Woody Vegetation	WoodyVeg_SBC_Current	mg/kg ww	2.86E-01	5.14E+00	1.50E+00	4.40E+02	5.70E-01
Fruits and Flowers	FruitsFlowers_SBC_Current	mg/kg ww	2.86E-01	5.14E+00	1.50E+00	4.40E+02	5.70E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_BG_Current	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	WoodyVeg_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Fruits and Flowers	FruitsFlowers_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.44E-02	2.11E-02	6.64E-04	2.10E-02	9.97E-03
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	7.37E-01	7.78E+00	6.39E-01	7.12E+00	8.17E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	3.15E-02	1.90E-01	1.65E-01	4.85E+01	6.28E-02
	Woody Vegetation	mg/kg-d	9.45E-03	1.70E-01	4.95E-02	1.45E+01	1.88E-02
	Fruits and Flowers	mg/kg-d	2.21E-02	3.96E-01	1.16E-01	3.39E+01	4.39E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	8.15E-01	8.56E+00	9.70E-01	1.04E+02	9.52E-01
TRV		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	1.95	0.22	0.58	0.01
Concentration		mg/kg ww	5.29E-02	5.56E+00	6.28E-01	3.38E+00	5.57E+00

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.66E-04	3.39E-03	1.18E-04	1.10E-02	2.46E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.35E-02	2.19E-01	1.90E-01	1.01E+00	8.40E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	1.21E-02	3.46E-02	1.65E-01	6.90E+00	6.29E-02
	Woody Vegetation	mg/kg-d	3.62E-03	3.10E-02	4.95E-02	2.07E+00	1.89E-02
	Fruits and Flowers	mg/kg-d	8.45E-03	7.22E-02	1.16E-01	4.83E+00	4.41E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.78E-02	3.61E-01	5.21E-01	1.48E+01	9.66E-01
		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.08	0.12	0.08	0.01
Concentration		mg/kg ww	2.46E-03	2.34E-01	3.37E-01	4.82E-01	5.65E+00

Swallow - Current - Trapper Lake North - Page 1/2

Receptor
GiantSwallow
Timeframe
Current
Terrestrial Pathways Source
Trapper Lake North
Aquatic Pathways Source
Trapper Lake
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
TerrInsects

Suggested Aquatic linking:
Trapper Lake

Barn Swallow

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0187
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.23E+01
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.50E-01
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	TL	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	TLN	BG
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	TLN	BG

Swallow - Current - Trapper Lake North - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_TL_Current	mg/L	2.11E-02	1.66E-01	9.92E-04	2.84E-02	6.07E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_TLN_Current	mg/kg dw	3.60E+01	2.40E+02	9.20E+01	1.01E+03	9.40E+01
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_TLN_Current	mg/kg ww	2.14E-01	2.35E+00	1.50E+00	3.85E+02	5.49E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	4.63E-03	3.64E-02	2.17E-04	6.23E-03	1.33E-03
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	8.66E-01	5.78E+00	2.21E+00	2.44E+01	2.26E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.40E-01	1.54E+00	9.83E-01	2.52E+02	3.59E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.01E+00	7.36E+00	3.20E+00	2.77E+02	2.62E+00
TRV		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	1.67	0.71	1.55	0.04
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.48E-04	1.12E-02	3.90E-04	3.62E-02	8.11E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	5.29E-02	8.60E-01	7.46E-01	3.97E+00	3.29E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	7.18E-02	6.14E-01	9.83E-01	4.11E+01	3.75E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.25E-01	1.48E+00	1.73E+00	4.51E+01	3.66E+00
		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.34	0.38	0.25	0.06
Concentration		mg/kg ww					

Swallow - Current - West of Baker Creek - Page 1/2

Receptor
GiantSwallow
Timeframe
Current
Terrestrial Pathways Source
West of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
TerrInsects

Suggested Aquatic linking:
BC Reach 6

Barn Swallow

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0187
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.23E+01
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.50E-01
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC6	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	WBC	BG
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	WBC	BG

Swallow - Current - West of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Current	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_WBC_Current	mg/kg dw	1.65E+02	9.07E+02	5.60E+01	8.07E+02	1.00E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_WBC_Current	mg/kg ww	3.09E-01	4.40E+00	1.50E+00	3.07E+02	5.52E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	6.27E-02	8.62E-02	2.06E-03	9.49E-03	1.05E-03
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	3.97E+00	2.18E+01	1.35E+00	1.94E+01	2.41E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	2.02E-01	2.88E+00	9.83E-01	2.01E+02	3.62E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	4.24E+00	2.48E+01	2.33E+00	2.20E+02	2.77E+00
TRV		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	5.63	0.52	1.23	0.04
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.48E-04	1.12E-02	3.90E-04	3.62E-02	8.11E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	5.29E-02	8.60E-01	7.46E-01	3.97E+00	3.29E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	7.18E-02	6.14E-01	9.83E-01	4.11E+01	3.75E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.25E-01	1.48E+00	1.73E+00	4.51E+01	3.66E+00
		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.34	0.38	0.25	0.06
Concentration		mg/kg ww					

Swallow - Current - East of Baker Creek - Page 1/2

Receptor
GiantSwallow
Timeframe
Current
Terrestrial Pathways Source
East of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
TerrInsects

Suggested Aquatic linking:
BC Reach 6

Barn Swallow

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0187
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.23E+01
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.50E-01
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC6	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	EBC	BG
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	EBC	BG

Swallow - Current - East of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Current	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_EBC_Current	mg/kg dw	3.06E+02	1.65E+03	2.71E+02	1.07E+03	2.67E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_EBC_Current	mg/kg ww	3.58E-01	5.82E+00	1.50E+00	4.07E+02	6.15E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	6.27E-02	8.62E-02	2.06E-03	9.49E-03	1.05E-03
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	7.36E+00	3.96E+01	6.52E+00	2.58E+01	6.43E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	2.35E-01	3.81E+00	9.83E-01	2.67E+02	4.03E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	7.66E+00	4.35E+01	7.51E+00	2.93E+02	6.83E+00
TRV		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	9.89	1.67	1.63	0.10
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.48E-04	1.12E-02	3.90E-04	3.62E-02	8.11E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	5.29E-02	8.60E-01	7.46E-01	3.97E+00	3.29E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	7.18E-02	6.14E-01	9.83E-01	4.11E+01	3.75E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.25E-01	1.48E+00	1.73E+00	4.51E+01	3.66E+00
		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.34	0.38	0.25	0.06
Concentration		mg/kg ww					

Swallow - Current - South of Baker Creek - Page 1/2

Receptor
GiantSwallow
Timeframe
Current
Terrestrial Pathways Source
South of Baker Creek
Aquatic Pathways Source
BC Reach 1-3
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
TerrInsects

Suggested Aquatic linking:
BC Reach 1-3

Barn Swallow

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0187
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.23E+01
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.50E-01
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC13	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	SBC	BG
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	SBC	BG

Swallow - Current - South of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC13_Current	mg/L	2.17E-01	3.18E-01	1.00E-02	3.16E-01	1.50E-01
Sediment	-	-	-	-	-	-	-
Soil	Soil_SBC_Current	mg/kg dw	1.20E+02	1.27E+03	1.04E+02	1.16E+03	1.33E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_SBC_Current	mg/kg ww	2.86E-01	5.14E+00	1.50E+00	4.40E+02	5.70E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	4.75E-02	6.96E-02	2.19E-03	6.93E-02	3.29E-02
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	2.89E+00	3.05E+01	2.50E+00	2.79E+01	3.20E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.87E-01	3.37E+00	9.83E-01	2.89E+02	3.73E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.12E+00	3.39E+01	3.49E+00	3.16E+02	3.61E+00
TRV		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	7.71	0.77	1.77	0.05
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.48E-04	1.12E-02	3.90E-04	3.62E-02	8.11E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	5.29E-02	8.60E-01	7.46E-01	3.97E+00	3.29E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	7.18E-02	6.14E-01	9.83E-01	4.11E+01	3.75E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.25E-01	1.48E+00	1.73E+00	4.51E+01	3.66E+00
		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.34	0.38	0.25	0.06
Concentration		mg/kg ww					

Shrew - Current - Trapper Lake North - Page 1/2

Receptor
GiantShrew
Timeframe
Current
Terrestrial Pathways Source
Trapper Lake North
Aquatic Pathways Source
Trapper Lake
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
Trapper Lake

Masked Shrew

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.004
Water ingestion rate	Water	m^3/d	8.34E-07
Food ingestion rate – wet weight basis	Food	g (ww)/d	5.02E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.61E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	0.95
Foliage	Foliage	-	0.05
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	TL	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	TLN	BG
TerrInsects	TLN	BG
Foliage	TLN	BG
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Shrew - Current - Trapper Lake North - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_TL_Current	mg/L	2.11E-02	1.66E-01	9.92E-04	2.84E-02	6.07E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_TLN_Current	mg/kg dw	3.60E+01	2.40E+02	9.20E+01	1.01E+03	9.40E+01
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_TLN_Current	mg/kg ww	2.14E-01	2.35E+00	1.50E+00	3.85E+02	5.49E-01
Foliage	Foliage_TLN_Current	mg/kg ww	2.14E-01	7.89E-01	1.50E+00	3.85E+02	5.49E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Foliage	Foliage_BG_Current	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	4.40E-03	3.46E-02	2.07E-04	5.92E-03	1.27E-03
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	3.25E-01	2.17E+00	8.31E-01	9.16E+00	8.49E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	2.56E-01	2.81E+00	1.79E+00	4.59E+02	6.54E-01
	Foliage	mg/kg-d	1.35E-02	4.95E-02	9.41E-02	2.42E+01	3.44E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	5.99E-01	5.06E+00	2.71E+00	4.93E+02	1.54E+00
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	10.15	4.87	0.48	9.57	0.02
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.21E-04	1.06E-02	3.71E-04	3.44E-02	7.72E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.99E-02	3.23E-01	2.80E-01	1.49E+00	1.24E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	1.31E-01	1.12E+00	1.79E+00	7.47E+01	6.82E-01
	Foliage	mg/kg-d	6.88E-03	1.97E-02	9.41E-02	3.93E+00	3.59E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.58E-01	1.47E+00	2.16E+00	8.02E+01	1.95E+00
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	2.68	1.41	0.39	1.56	0.03
Concentration		mg/kg ww					

Shrew - Current - West of Baker Creek - Page 1/2

Receptor
GiantShrew
Timeframe
Current
Terrestrial Pathways Source
West of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 6

Masked Shrew

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.004
Water ingestion rate	Water	m^3/d	8.34E-07
Food ingestion rate – wet weight basis	Food	g (ww)/d	5.02E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.61E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	0.95
Foliage	Foliage	-	0.05
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC6	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	WBC	BG
TerrInsects	WBC	BG
Foliage	WBC	BG
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Shrew - Current - West of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Current	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_WBC_Current	mg/kg dw	1.65E+02	9.07E+02	5.60E+01	8.07E+02	1.00E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_WBC_Current	mg/kg ww	3.09E-01	4.40E+00	1.50E+00	3.07E+02	5.52E-01
Foliage	Foliage_WBC_Current	mg/kg ww	3.09E-01	1.47E+00	1.50E+00	3.07E+02	5.52E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Foliage	Foliage_BG_Current	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.96E-02	8.20E-02	1.96E-03	9.03E-03	9.95E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.49E+00	8.19E+00	5.06E-01	7.29E+00	9.04E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	3.68E-01	5.24E+00	1.79E+00	3.66E+02	6.59E-01
	Foliage	mg/kg-d	1.94E-02	9.24E-02	9.41E-02	1.92E+01	3.47E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.94E+00	1.36E+01	2.39E+00	3.92E+02	1.60E+00
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	32.85	13.09	0.43	7.61	0.02
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.21E-04	1.06E-02	3.71E-04	3.44E-02	7.72E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.99E-02	3.23E-01	2.80E-01	1.49E+00	1.24E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	1.31E-01	1.12E+00	1.79E+00	7.47E+01	6.82E-01
	Foliage	mg/kg-d	6.88E-03	1.97E-02	9.41E-02	3.93E+00	3.59E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.58E-01	1.47E+00	2.16E+00	8.02E+01	1.95E+00
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	2.68	1.41	0.39	1.56	0.03
Concentration		mg/kg ww					

Shrew - Current - East of Baker Creek - Page 1/2

Receptor
GiantShrew
Timeframe
Current
Terrestrial Pathways Source
East of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 6

Masked Shrew

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.004
Water ingestion rate	Water	m^3/d	8.34E-07
Food ingestion rate – wet weight basis	Food	g (ww)/d	5.02E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.61E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	0.95
Foliage	Foliage	-	0.05
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC6	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	EBC	BG
TerrInsects	EBC	BG
Foliage	EBC	BG
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Shrew - Current - East of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Current	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_EBC_Current	mg/kg dw	3.06E+02	1.65E+03	2.71E+02	1.07E+03	2.67E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_EBC_Current	mg/kg ww	3.58E-01	5.82E+00	1.50E+00	4.07E+02	6.15E-01
Foliage	Foliage_EBC_Current	mg/kg ww	3.58E-01	1.95E+00	1.50E+00	4.07E+02	6.15E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Foliage	Foliage_BG_Current	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.96E-02	8.20E-02	1.96E-03	9.03E-03	9.95E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	2.76E+00	1.49E+01	2.45E+00	9.69E+00	2.41E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	4.27E-01	6.94E+00	1.79E+00	4.86E+02	7.34E-01
	Foliage	mg/kg-d	2.25E-02	1.22E-01	9.41E-02	2.56E+01	3.86E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.27E+00	2.20E+01	4.33E+00	5.21E+02	3.19E+00
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	55.49	21.18	0.77	10.11	0.04
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.21E-04	1.06E-02	3.71E-04	3.44E-02	7.72E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.99E-02	3.23E-01	2.80E-01	1.49E+00	1.24E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	1.31E-01	1.12E+00	1.79E+00	7.47E+01	6.82E-01
	Foliage	mg/kg-d	6.88E-03	1.97E-02	9.41E-02	3.93E+00	3.59E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.58E-01	1.47E+00	2.16E+00	8.02E+01	1.95E+00
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	2.68	1.41	0.39	1.56	0.03
Concentration		mg/kg ww					

Shrew - Current - South of Baker Creek - Page 1/2

Receptor
GiantShrew
Timeframe
Current
Terrestrial Pathways Source
South of Baker Creek
Aquatic Pathways Source
BC Reach 1-3
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 1-3

Masked Shrew

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.004
Water ingestion rate	Water	m^3/d	8.34E-07
Food ingestion rate – wet weight basis	Food	g (ww)/d	5.02E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.61E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	0.95
Foliage	Foliage	-	0.05
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC13	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	SBC	BG
TerrInsects	SBC	BG
Foliage	SBC	BG
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Shrew - Current - South of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC13_Current	mg/L	2.17E-01	3.18E-01	1.00E-02	3.16E-01	1.50E-01
Sediment	-	-	-	-	-	-	-
Soil	Soil_SBC_Current	mg/kg dw	1.20E+02	1.27E+03	1.04E+02	1.16E+03	1.33E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_SBC_Current	mg/kg ww	2.86E-01	5.14E+00	1.50E+00	4.40E+02	5.70E-01
Foliage	Foliage_SBC_Current	mg/kg ww	2.86E-01	1.72E+00	1.50E+00	4.40E+02	5.70E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Foliage	Foliage_BG_Current	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	4.52E-02	6.62E-02	2.09E-03	6.59E-02	3.13E-02
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.08E+00	1.14E+01	9.40E-01	1.05E+01	1.20E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	3.41E-01	6.13E+00	1.79E+00	5.25E+02	6.80E-01
	Foliage	mg/kg-d	1.80E-02	1.08E-01	9.41E-02	2.76E+01	3.58E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.49E+00	1.78E+01	2.82E+00	5.63E+02	1.95E+00
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	25.23	17.07	0.50	10.94	0.03
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.21E-04	1.06E-02	3.71E-04	3.44E-02	7.72E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.99E-02	3.23E-01	2.80E-01	1.49E+00	1.24E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	1.31E-01	1.12E+00	1.79E+00	7.47E+01	6.82E-01
	Foliage	mg/kg-d	6.88E-03	1.97E-02	9.41E-02	3.93E+00	3.59E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.58E-01	1.47E+00	2.16E+00	8.02E+01	1.95E+00
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	2.68	1.41	0.39	1.56	0.03
Concentration		mg/kg ww					

Fox - Current - Site Average - Page 1/2

Receptor
GiantFox
Timeframe
Current
Terrestrial Pathways Source
Site Average
Aquatic Pathways Source
BC Lower Reaches (0-6)
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
TerrInsects

Suggested Aquatic linking:
BC Lower Reaches (0-6)

Red Fox

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	3.8
Water ingestion rate	Water	m^3/d	3.26E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.40E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	2.85E+00
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	0.25
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	0.15
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	0.20
Shrew	Shrew	-	-
Mouse	Mouse	-	0.20
Moose	Moose	-	-
Hare	Hare	-	0.20
		Total	1.00

Location:	Exposure	Reference
Water	BC06	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	GiantAvg	BG
TerrInsects	GiantAvg	BG
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	GiantAvg	BG
Hare	GiantAvg	BG
Grouse	GiantAvg	BG
Shrew	-	-
Mouse	GiantAvg	BG
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Fox - Current - Site Average - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC06_Current	mg/L	2.21E-01	2.76E-01	8.17E-03	1.50E-01	4.48E-02
Sediment	-	-	-	-	-	-	-
Soil	Soil_GiantAvg_Current	mg/kg dw	1.62E+02	9.96E+02	1.30E+02	9.69E+02	1.34E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_GiantAvg_Current	mg/kg ww	3.08E-01	4.59E+00	1.50E+00	3.68E+02	5.71E-01
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	FruitsFlowers_GiantAvg_Current	mg/kg ww	3.08E-01	4.59E+00	1.50E+00	3.68E+02	5.71E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	Grouse_GiantAvg_Current	mg/kg ww	6.76E-02	1.95E+00	7.34E-01	2.96E+00	6.68E+00
Shrew	-	-	-	-	-	-	-
Mouse	Mouse_GiantAvg_Current	mg/kg ww	8.71E-02	1.33E+00	6.83E-01	5.76E+00	3.22E+01
Moose	-	-	-	-	-	-	-
Hare	Hare_GiantAvg_Current	mg/kg ww	4.40E-02	2.75E+00	1.08E+00	1.08E+01	6.43E+00

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	FruitsFlowers_BG_Current	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	Grouse_BG_Current	mg/kg ww	2.46E-03	1.17E-01	3.37E-01	4.82E-01	5.65E+00
Shrew	-	-	-	-	-	-	-
Mouse	Mouse_BG_Current	mg/kg ww	5.43E-02	6.76E-01	6.02E-01	9.81E-01	3.22E+01
Moose	-	-	-	-	-	-	-
Hare	Hare_BG_Current	mg/kg ww	2.00E-03	1.98E-01	5.68E-01	1.77E+00	5.97E+00

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.90E-02	2.37E-02	7.02E-04	1.29E-02	3.85E-03
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.21E-01	7.46E-01	9.74E-02	7.26E-01	1.00E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	6.88E-03	1.03E-01	3.36E-02	8.24E+00	1.28E-02
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	mg/kg-d	4.13E-03	6.17E-02	2.01E-02	4.94E+00	7.66E-03
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	mg/kg-d	1.21E-03	3.48E-02	1.31E-02	5.29E-02	1.20E-01
	Shrew	-	-	-	-	-	-
	Mouse	mg/kg-d	1.56E-03	2.37E-02	1.22E-02	1.03E-01	5.76E-01
	Moose	-	-	-	-	-	-
	Hare	mg/kg-d	7.87E-04	4.92E-02	1.94E-02	1.94E-01	1.15E-01
Total Intake		mg/kg-d	1.55E-01	1.04E+00	1.97E-01	1.43E+01	9.35E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	2.63	1.00	0.04	0.28	0.01
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	2.15E-04	4.38E-03	1.53E-04	1.42E-02	3.18E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.65E-03	2.68E-02	2.32E-02	1.24E-01	1.02E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	2.45E-03	2.10E-02	3.36E-02	1.40E+00	1.28E-02
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	mg/kg-d	1.47E-03	1.26E-02	2.01E-02	8.42E-01	7.67E-03
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	mg/kg-d	4.40E-05	2.10E-03	6.03E-03	8.62E-03	1.01E-01
	Shrew	-	-	-	-	-	-
	Mouse	mg/kg-d	9.72E-04	1.21E-02	1.08E-02	1.76E-02	5.77E-01
	Moose	-	-	-	-	-	-
	Hare	mg/kg-d	3.58E-05	3.55E-03	1.02E-02	3.16E-02	1.07E-01
Total Intake		mg/kg-d	6.84E-03	8.24E-02	1.04E-01	2.44E+00	9.08E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.12	0.08	0.02	0.05	0.01
Concentration		mg/kg ww					

Falcon - Current - Site Average - Page 1/2

Receptor
GiantFalcon
Timeframe
Current
Terrestrial Pathways Source
Site Average
Aquatic Pathways Source
BC Lower Reaches (0-6)
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Lower Reaches (0-6)

Peregrine Falcon

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.815
Water ingestion rate	Water	m^3/d	5.10E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.63E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	9.80E-01
Fraction of time on site	Frac	-	0.5
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	0.90
Shrew	Shrew	-	-
Mouse	Mouse	-	0.10
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC06	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	GiantAvg	BG
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	GiantAvg	BG
Shrew	-	-
Mouse	GiantAvg	BG
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Falcon - Current - Site Average - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC06_Current	mg/L	2.21E-01	2.76E-01	8.17E-03	1.50E-01	4.48E-02
Sediment	-	-	-	-	-	-	-
Soil	Soil_GiantAvg_Current	mg/kg dw	1.62E+02	9.96E+02	1.30E+02	9.69E+02	1.34E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	Grouse_GiantAvg_Current	mg/kg ww	6.76E-02	1.95E+00	7.34E-01	2.96E+00	6.68E+00
Shrew	-	-	-	-	-	-	-
Mouse	Mouse_GiantAvg_Current	mg/kg ww	8.71E-02	1.33E+00	6.83E-01	5.76E+00	3.22E+01
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	Grouse_BG_Current	mg/kg ww	2.46E-03	1.17E-01	3.37E-01	4.82E-01	5.65E+00
Shrew	-	-	-	-	-	-	-
Mouse	Mouse_BG_Current	mg/kg ww	5.43E-02	6.76E-01	6.02E-01	9.81E-01	3.22E+01
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	6.99E-03	1.02E-02	3.11E-04	9.85E-03	1.52E-03
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	9.87E-02	6.20E-01	9.68E-02	6.82E-01	1.63E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	mg/kg-d	6.31E-03	1.86E-01	9.64E-02	3.10E-01	1.11E+00
	Shrew	-	-	-	-	-	-
	Mouse	mg/kg-d	1.41E-03	2.00E-02	1.28E-02	6.74E-02	6.44E-01
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.13E-01	8.36E-01	2.06E-01	1.07E+00	1.92E+00
TRV		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.19	0.05	0.01	0.03
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.56E-04	3.19E-03	1.11E-04	1.03E-02	2.32E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	2.65E-03	4.30E-02	3.73E-02	1.98E-01	1.64E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	mg/kg-d	4.42E-04	2.11E-02	6.07E-02	8.68E-02	1.02E+00
	Shrew	-	-	-	-	-	-
	Mouse	mg/kg-d	1.09E-03	1.35E-02	1.20E-02	1.96E-02	6.44E-01
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	4.33E-03	8.08E-02	1.10E-01	3.15E-01	1.83E+00
		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.02	0.02	0.00	0.03
Concentration		mg/kg ww					

Owl - Current - Site Average - Page 1/2

Receptor
GiantOwl
Timeframe
Current
Terrestrial Pathways Source
Site Average
Aquatic Pathways Source
BC Lower Reaches (0-6)
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Lower Reaches (0-6)

Great Horned Owl

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.5
Water ingestion rate	Water	m^3/d	7.70E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	2.50E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	5.00E+00
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	0.30
Shrew	Shrew	-	0.20
Mouse	Mouse	-	0.20
Moose	Moose	-	-
Hare	Hare	-	0.30
		Total	1.00

Location:	Exposure	Reference
Water	BC06	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	GiantAvg	BG
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	GiantAvg	BG
Grouse	GiantAvg	BG
Shrew	GiantAvg	BG
Mouse	GiantAvg	BG
Moose	-	-
Caribou	-	-
EmergInsect	-	-

Owl - Current - Site Average - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC06_Current	mg/L	2.21E-01	2.76E-01	8.17E-03	1.50E-01	4.48E-02
Sediment	-	-	-	-	-	-	-
Soil	Soil_GiantAvg_Current	mg/kg dw	1.62E+02	9.96E+02	1.30E+02	9.69E+02	1.34E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	Grouse_GiantAvg_Current	mg/kg ww	6.76E-02	1.95E+00	7.34E-01	2.96E+00	6.68E+00
Shrew	Shrew_GiantAvg_Current	mg/kg ww	8.71E-02	1.33E+00	6.83E-01	5.76E+00	3.22E+01
Mouse	Mouse_GiantAvg_Current	mg/kg ww	8.71E-02	1.33E+00	6.83E-01	5.76E+00	3.22E+01
Moose	-	-	-	-	-	-	-
Hare	Hare_GiantAvg_Current	mg/kg ww	4.40E-02	2.75E+00	1.08E+00	1.08E+01	6.43E+00

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	Grouse_BG_Current	mg/kg ww	2.46E-03	1.17E-01	3.37E-01	4.82E-01	5.65E+00
Shrew	Shrew_BG_Current	mg/kg ww	5.43E-02	6.76E-01	6.02E-01	9.81E-01	3.22E+01
Mouse	Mouse_BG_Current	mg/kg ww	5.43E-02	6.76E-01	6.02E-01	9.81E-01	3.22E+01
Moose	-	-	-	-	-	-	-
Hare	Hare_BG_Current	mg/kg ww	2.00E-03	1.98E-01	5.68E-01	1.77E+00	5.97E+00

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.13E-02	1.42E-02	4.20E-04	7.69E-03	2.30E-03
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	5.40E-01	3.32E+00	4.33E-01	3.23E+00	4.47E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	mg/kg-d	3.38E-03	9.74E-02	3.67E-02	1.48E-01	3.34E-01
	Shrew	mg/kg-d	2.90E-03	4.42E-02	2.28E-02	1.92E-01	1.07E+00
	Mouse	mg/kg-d	2.90E-03	4.42E-02	2.28E-02	1.92E-01	1.07E+00
	Moose	-	-	-	-	-	-
	Hare	mg/kg-d	2.20E-03	1.37E-01	5.41E-02	5.41E-01	3.21E-01
Total Intake		mg/kg-d	5.63E-01	3.66E+00	5.70E-01	4.31E+00	3.25E+00
TRV		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.83	0.13	0.02	0.05
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.28E-04	2.62E-03	9.14E-05	8.47E-03	1.90E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	7.33E-03	1.19E-01	1.03E-01	5.50E-01	4.56E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	mg/kg-d	1.23E-04	5.86E-03	1.69E-02	2.41E-02	2.83E-01
	Shrew	mg/kg-d	1.81E-03	2.25E-02	2.01E-02	3.27E-02	1.07E+00
	Mouse	mg/kg-d	1.81E-03	2.25E-02	2.01E-02	3.27E-02	1.07E+00
	Moose	-	-	-	-	-	-
	Hare	mg/kg-d	1.00E-04	9.91E-03	2.84E-02	8.83E-02	2.99E-01
Total Intake		mg/kg-d	1.13E-02	1.83E-01	1.89E-01	7.36E-01	3.18E+00
		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.04	0.04	0.00	0.05
Concentration		mg/kg ww					

Lynx - Current - Site Average - Page 1/2

Receptor
GiantLynx
Timeframe
Current
Terrestrial Pathways Source
Site Average
Aquatic Pathways Source
BC Lower Reaches (0-6)
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Lower Reaches (0-6)

Canada Lynx

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	11
Water ingestion rate	Water	m^3/d	8.55E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.64E+03
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	1.38E+01
Fraction of time on site	Frac	-	0.5
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	0.08
Grouse/Ptarmigan	Grouse	-	0.09
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	0.08
Hare	Hare	-	0.75
		Total	1.00

Location:	Exposure	Reference
Water	BC06	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	GiantAvg	BG
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	GiantAvg	BG
Grouse	GiantAvg	BG
Shrew	-	-
Mouse	-	-
Moose	GiantAvg	BG
Caribou	GiantAvg	BG
EmergInsect	-	-

Lynx - Current - Site Average - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC06_Current	mg/L	2.21E-01	2.76E-01	8.17E-03	1.50E-01	4.48E-02
Sediment	-	-	-	-	-	-	-
Soil	Soil_GiantAvg_Current	mg/kg dw	1.62E+02	9.96E+02	1.30E+02	9.69E+02	1.34E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	Caribou_GiantAvg_Current	mg/kg ww	1.00E-03	8.15E-03	3.27E+00	4.35E-01	2.33E+01
Grouse/Ptarmigan	Grouse_GiantAvg_Current	mg/kg ww	6.76E-02	1.95E+00	7.34E-01	2.96E+00	6.68E+00
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	Moose_GiantAvg_Current	mg/kg ww	1.40E-03	1.98E-01	1.24E+00	2.28E-01	1.00E-02
Hare	Hare_GiantAvg_Current	mg/kg ww	4.40E-02	2.75E+00	1.08E+00	1.08E+01	6.43E+00

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Current	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Current	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	Caribou_BG_Current	mg/kg ww	1.00E-03	8.15E-03	3.27E+00	4.35E-01	2.33E+01
Grouse/Ptarmigan	Grouse_BG_Current	mg/kg ww	2.46E-03	1.17E-01	3.37E-01	4.82E-01	5.65E+00
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	Moose_BG_Current	mg/kg ww	1.60E-03	6.10E-03	9.05E-01	2.23E-01	1.00E-02
Hare	Hare_BG_Current	mg/kg ww	2.00E-03	1.98E-01	5.68E-01	1.77E+00	5.97E+00

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	8.68E-03	1.27E-02	3.87E-04	1.22E-02	1.88E-03
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.03E-01	6.45E-01	1.01E-01	7.09E-01	1.69E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	mg/kg-d	1.19E-05	9.71E-05	3.90E-02	5.18E-03	2.78E-01
	Grouse/Ptarmigan	mg/kg-d	4.70E-04	1.38E-02	7.18E-03	2.30E-02	8.27E-02
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	mg/kg-d	1.79E-05	1.22E-03	1.27E-02	2.69E-03	1.19E-04
	Hare	mg/kg-d	2.57E-03	1.64E-01	9.21E-02	7.03E-01	6.92E-01
Total Intake		mg/kg-d	1.14E-01	8.38E-01	2.52E-01	1.46E+00	1.22E+00
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	1.94	0.81	0.05	0.03	0.02
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.94E-04	3.96E-03	1.38E-04	1.28E-02	2.88E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	2.75E-03	4.47E-02	3.88E-02	2.06E-01	1.71E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	mg/kg-d	1.19E-05	9.71E-05	3.90E-02	5.18E-03	2.78E-01
	Grouse/Ptarmigan	mg/kg-d	3.29E-05	1.57E-03	4.52E-03	6.46E-03	7.57E-02
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	mg/kg-d	1.91E-05	7.27E-05	1.08E-02	2.66E-03	1.19E-04
	Hare	mg/kg-d	2.23E-04	2.21E-02	6.34E-02	1.97E-01	6.67E-01
Total Intake		mg/kg-d	3.23E-03	7.25E-02	1.57E-01	4.31E-01	1.19E+00
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.05	0.07	0.03	0.01	0.02
Concentration		mg/kg ww					

Mouse - Future - Trapper Lake North - Page 1/2

Receptor
GiantMouse
Timeframe
Future
Terrestrial Pathways Source
Trapper Lake North
Aquatic Pathways Source
Trapper Lake
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
Trapper Lake

Deer Mouse

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0217
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	5.90E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	0.50
Foliage	Foliage	-	0.20
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	0.30
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	TL	BG-BC711	NOTE: Uses current water concentrations
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	TLN	BG	
TerrInsects	TLN	BG	
Foliage	TLN	BG	
WoodyVeg	-	-	
FruitsFlowers	TLN	BG	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	-	-	

Mouse - Future - Trapper Lake North - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_TL_Future	mg/L	2.11E-02	1.66E-01	9.92E-04	2.84E-02	6.07E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_TLN_Future	mg/kg dw	3.60E+01	2.40E+02	9.20E+01	1.01E+03	9.40E+01
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_TLN_Future	mg/kg ww	2.14E-01	2.35E+00	1.50E+00	3.85E+02	5.49E-01
Foliage	Foliage_TLN_Future	mg/kg ww	2.14E-01	7.89E-01	1.50E+00	3.85E+02	5.49E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	FruitsFlowers_TLN_Future	mg/kg ww	2.14E-01	2.35E+00	1.50E+00	3.85E+02	5.49E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Foliage	Foliage_BG_Future	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	FruitsFlowers_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	3.99E-03	3.14E-02	1.87E-04	5.37E-03	1.15E-03
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	6.64E-02	4.43E-01	1.70E-01	1.87E+00	1.73E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	2.91E-02	3.20E-01	2.04E-01	5.24E+01	7.46E-02
	Foliage	mg/kg-d	1.17E-02	4.29E-02	8.16E-02	2.10E+01	2.98E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	mg/kg-d	1.75E-02	1.92E-01	1.22E-01	3.14E+01	4.48E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.29E-01	1.03E+00	5.78E-01	1.07E+02	3.24E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	2.18	0.99	0.10	2.07	0.00
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	4.72E-04	9.64E-03	3.36E-04	3.12E-02	6.99E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	4.06E-03	6.58E-02	5.71E-02	3.04E-01	2.52E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	1.49E-02	1.27E-01	2.04E-01	8.52E+00	7.77E-02
	Foliage	mg/kg-d	5.96E-03	1.71E-02	8.16E-02	3.41E+00	3.11E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	mg/kg-d	8.94E-03	7.65E-02	1.22E-01	5.11E+00	4.66E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.43E-02	2.96E-01	4.65E-01	1.74E+01	4.08E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.58	0.29	0.08	0.34	0.01
Concentration		mg/kg ww					

Mouse - Future - West of Baker Creek - Page 1/2

Receptor
GiantMouse
Timeframe
Future
Terrestrial Pathways Source
West of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 6

Deer Mouse

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0217
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	5.90E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	0.50
Foliage	Foliage	-	0.20
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	0.30
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BC6	BG-BC711	NOTE: Uses current water concentrations
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	WBC	BG	
TerrInsects	WBC	BG	
Foliage	WBC	BG	
WoodyVeg	-	-	
FruitsFlowers	WBC	BG	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	-	-	

Mouse - Future - West of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Future	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_WBC_Future	mg/kg dw	1.65E+02	9.07E+02	5.60E+01	8.07E+02	1.00E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_WBC_Future	mg/kg ww	3.09E-01	4.40E+00	1.50E+00	3.07E+02	5.52E-01
Foliage	Foliage_WBC_Future	mg/kg ww	3.09E-01	1.47E+00	1.50E+00	3.07E+02	5.52E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	FruitsFlowers_WBC_Future	mg/kg ww	3.09E-01	4.40E+00	1.50E+00	3.07E+02	5.52E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Foliage	Foliage_BG_Future	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	FruitsFlowers_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.40E-02	7.43E-02	1.77E-03	8.18E-03	9.01E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	3.04E-01	1.67E+00	1.03E-01	1.49E+00	1.84E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	4.20E-02	5.98E-01	2.04E-01	4.17E+01	7.51E-02
	Foliage	mg/kg-d	1.68E-02	8.01E-02	8.16E-02	1.67E+01	3.00E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	mg/kg-d	2.52E-02	3.59E-01	1.22E-01	2.50E+01	4.51E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	4.42E-01	2.78E+00	5.13E-01	8.49E+01	3.35E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	7.49	2.68	0.09	1.65	0.00
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	4.72E-04	9.64E-03	3.36E-04	3.12E-02	6.99E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	4.06E-03	6.58E-02	5.71E-02	3.04E-01	2.52E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	1.49E-02	1.27E-01	2.04E-01	8.52E+00	7.77E-02
	Foliage	mg/kg-d	5.96E-03	1.71E-02	8.16E-02	3.41E+00	3.11E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	mg/kg-d	8.94E-03	7.65E-02	1.22E-01	5.11E+00	4.66E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.43E-02	2.96E-01	4.65E-01	1.74E+01	4.08E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.58	0.29	0.08	0.34	0.01
Concentration		mg/kg ww					

Mouse - Future - East of Baker Creek - Page 1/2

Receptor
GiantMouse
Timeframe
Future
Terrestrial Pathways Source
East of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 6

Deer Mouse

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0217
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	5.90E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	0.50
Foliage	Foliage	-	0.20
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	0.30
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BC6	BG-BC711	NOTE: Uses current water concentrations
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	EBC	BG	
TerrInsects	EBC	BG	
Foliage	EBC	BG	
WoodyVeg	-	-	
FruitsFlowers	EBC	BG	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	-	-	

Mouse - Future - East of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Future	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_EBC_Future	mg/kg dw	1.01E+02	5.84E+02	1.26E+02	9.95E+02	2.53E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_EBC_Future	mg/kg ww	2.75E-01	3.57E+00	1.50E+00	3.78E+02	6.12E-01
Foliage	Foliage_EBC_Future	mg/kg ww	2.75E-01	1.20E+00	1.50E+00	3.78E+02	6.12E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	FruitsFlowers_EBC_Future	mg/kg ww	2.75E-01	3.03E+01	1.50E+00	3.78E+02	6.12E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Foliage	Foliage_BG_Future	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	FruitsFlowers_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.40E-02	7.43E-02	1.77E-03	8.18E-03	9.01E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.86E-01	1.08E+00	2.32E-01	1.83E+00	4.66E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	3.73E-02	4.86E-01	2.04E-01	5.14E+01	8.32E-02
	Foliage	mg/kg-d	1.49E-02	6.51E-02	8.16E-02	2.06E+01	3.33E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	mg/kg-d	2.24E-02	2.47E+00	1.22E-01	3.08E+01	4.99E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.15E-01	4.18E+00	6.42E-01	1.05E+02	6.34E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	5.34	4.01	0.11	2.03	0.01
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	4.72E-04	9.64E-03	3.36E-04	3.12E-02	6.99E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	4.06E-03	6.58E-02	5.71E-02	3.04E-01	2.52E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	1.49E-02	1.27E-01	2.04E-01	8.52E+00	7.77E-02
	Foliage	mg/kg-d	5.96E-03	1.71E-02	8.16E-02	3.41E+00	3.11E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	mg/kg-d	8.94E-03	7.65E-02	1.22E-01	5.11E+00	4.66E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.43E-02	2.96E-01	4.65E-01	1.74E+01	4.08E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.58	0.29	0.08	0.34	0.01
Concentration		mg/kg ww					

Mouse - Future - South of Baker Creek - Page 1/2

Receptor
GiantMouse
Timeframe
Future
Terrestrial Pathways Source
South of Baker Creek
Aquatic Pathways Source
BC Reach 1-3
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 1-3

Deer Mouse

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0217
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	5.90E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	0.50
Foliage	Foliage	-	0.20
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	0.30
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BC13	BG-BC711	NOTE: Uses current water concentrations
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	SBC	BG	
TerrInsects	SBC	BG	
Foliage	SBC	BG	
WoodyVeg	-	-	
FruitsFlowers	SBC	BG	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	-	-	

Mouse - Future - South of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC13_Future	mg/L	2.17E-01	3.18E-01	1.00E-02	3.16E-01	1.50E-01
Sediment	-	-	-	-	-	-	-
Soil	Soil_SBC_Future	mg/kg dw	1.12E+02	1.01E+03	1.04E+02	1.50E+03	1.33E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_SBC_Future	mg/kg ww	2.82E-01	4.63E+00	1.50E+00	5.70E+02	5.70E-01
Foliage	Foliage_SBC_Future	mg/kg ww	2.82E-01	1.55E+00	1.50E+00	5.70E+02	5.70E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	FruitsFlowers_SBC_Future	mg/kg ww	2.82E-01	4.63E+00	1.50E+00	5.70E+02	5.70E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Foliage	Foliage_BG_Future	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	FruitsFlowers_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	4.09E-02	6.00E-02	1.89E-03	5.97E-02	2.83E-02
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	2.07E-01	1.87E+00	1.92E-01	2.77E+00	2.45E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	3.83E-02	6.30E-01	2.04E-01	7.75E+01	7.75E-02
	Foliage	mg/kg-d	1.53E-02	8.44E-02	8.16E-02	3.10E+01	3.10E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	mg/kg-d	2.30E-02	3.78E-01	1.22E-01	4.65E+01	4.65E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.24E-01	3.02E+00	6.01E-01	1.58E+02	4.28E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	5.50	2.91	0.11	3.07	0.01
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	4.72E-04	9.64E-03	3.36E-04	3.12E-02	6.99E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	4.06E-03	6.58E-02	5.71E-02	3.04E-01	2.52E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	1.49E-02	1.27E-01	2.04E-01	8.52E+00	7.77E-02
	Foliage	mg/kg-d	5.96E-03	1.71E-02	8.16E-02	3.41E+00	3.11E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	mg/kg-d	8.94E-03	7.65E-02	1.22E-01	5.11E+00	4.66E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.43E-02	2.96E-01	4.65E-01	1.74E+01	4.08E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.58	0.29	0.08	0.34	0.01
Concentration		mg/kg ww					

Hare - Future - Trapper Lake North - Page 1/2

Receptor
GiantHare
Timeframe
Future
Terrestrial Pathways Source
Trapper Lake North
Aquatic Pathways Source
Trapper Lake
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
Trapper Lake

Snowshoe Hare

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.3
Water ingestion rate	Water	m^3/d	1.31E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	2.73E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	5.17E+00
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	0.30
Woody Vegetation	WoodyVeg	-	0.60
Fruits and Flowers	FruitsFlowers	-	0.10
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	TL	BG-BC711	NOTE: Uses current water concentrations
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	TLN	BG	
TerrInsects	-	-	
Foliage	TLN	BG	
WoodyVeg	TLN	BG	
FruitsFlowers	TLN	BG	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	-	-	

Hare - Future - Trapper Lake North - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_TL_Future	mg/L	2.11E-02	1.66E-01	9.92E-04	2.84E-02	6.07E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_TLN_Future	mg/kg dw	3.60E+01	2.40E+02	9.20E+01	1.01E+03	9.40E+01
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_TLN_Future	mg/kg ww	2.14E-01	7.89E-01	1.50E+00	3.85E+02	5.49E-01
Woody Vegetation	WoodyVeg_TLN_Future	mg/kg ww	2.14E-01	2.35E+00	1.50E+00	3.85E+02	5.49E-01
Fruits and Flowers	FruitsFlowers_TLN_Future	mg/kg ww	2.14E-01	2.35E+00	1.50E+00	3.85E+02	5.49E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_BG_Future	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	WoodyVeg_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Fruits and Flowers	FruitsFlowers_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	2.12E-03	1.67E-02	9.97E-05	2.85E-03	6.10E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.43E-01	9.54E-01	3.66E-01	4.03E+00	3.74E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	1.35E-02	4.98E-02	9.46E-02	2.43E+01	3.46E-02
	Woody Vegetation	mg/kg-d	2.70E-02	2.97E-01	1.89E-01	4.86E+01	6.92E-02
	Fruits and Flowers	mg/kg-d	4.51E-03	4.95E-02	3.15E-02	8.10E+00	1.15E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.90E-01	1.37E+00	6.81E-01	8.50E+01	4.90E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	3.22	1.31	0.12	1.65	0.01
Concentration		mg/kg ww	1.19E-02	1.78E+00	8.82E-01	1.08E+01	4.40E+00

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	2.51E-04	5.12E-03	1.79E-04	1.66E-02	3.72E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	8.74E-03	1.42E-01	1.23E-01	6.56E-01	5.43E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	6.91E-03	1.98E-02	9.46E-02	3.95E+00	3.61E-02
	Woody Vegetation	mg/kg-d	1.38E-02	1.18E-01	1.89E-01	7.91E+00	7.21E-02
	Fruits and Flowers	mg/kg-d	2.30E-03	1.97E-02	3.15E-02	1.32E+00	1.20E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.20E-02	3.05E-01	4.39E-01	1.39E+01	6.64E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.54	0.29	0.08	0.27	0.01
Concentration		mg/kg ww	2.00E-03	3.96E-01	5.68E-01	1.77E+00	5.97E+00

Hare - Future - West of Baker Creek - Page 1/2

Receptor
GiantHare
Timeframe
Future
Terrestrial Pathways Source
West of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 6

Snowshoe Hare

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.3
Water ingestion rate	Water	m^3/d	1.31E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	2.73E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	5.17E+00
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	0.30
Woody Vegetation	WoodyVeg	-	0.60
Fruits and Flowers	FruitsFlowers	-	0.10
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC6	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	WBC	BG
TerrInsects	-	-
Foliage	WBC	BG
WoodyVeg	WBC	BG
FruitsFlowers	WBC	BG
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

NOTE: Uses current water concentrations

Hare - Future - West of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Future	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_WBC_Future	mg/kg dw	1.65E+02	9.07E+02	5.60E+01	8.07E+02	1.00E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_WBC_Future	mg/kg ww	3.09E-01	1.47E+00	1.50E+00	3.07E+02	5.52E-01
Woody Vegetation	WoodyVeg_WBC_Future	mg/kg ww	3.09E-01	4.40E+00	1.50E+00	3.07E+02	5.52E-01
Fruits and Flowers	FruitsFlowers_WBC_Future	mg/kg ww	3.09E-01	4.40E+00	1.50E+00	3.07E+02	5.52E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_BG_Future	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	WoodyVeg_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Fruits and Flowers	FruitsFlowers_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	2.87E-02	3.95E-02	9.43E-04	4.35E-03	4.79E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	6.56E-01	3.60E+00	2.23E-01	3.21E+00	3.97E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	1.95E-02	9.29E-02	9.46E-02	1.93E+01	3.48E-02
	Woody Vegetation	mg/kg-d	3.90E-02	5.55E-01	1.89E-01	3.87E+01	6.97E-02
	Fruits and Flowers	mg/kg-d	6.50E-03	9.24E-02	3.15E-02	6.45E+00	1.16E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	7.49E-01	4.38E+00	5.39E-01	6.77E+01	5.14E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	12.70	4.21	0.10	1.31	0.01
Concentration		mg/kg ww	4.68E-02	5.70E+00	6.98E-01	8.62E+00	4.62E+00

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	2.51E-04	5.12E-03	1.79E-04	1.66E-02	3.72E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	8.74E-03	1.42E-01	1.23E-01	6.56E-01	5.43E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	6.91E-03	1.98E-02	9.46E-02	3.95E+00	3.61E-02
	Woody Vegetation	mg/kg-d	1.38E-02	1.18E-01	1.89E-01	7.91E+00	7.21E-02
	Fruits and Flowers	mg/kg-d	2.30E-03	1.97E-02	3.15E-02	1.32E+00	1.20E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.20E-02	3.05E-01	4.39E-01	1.39E+01	6.64E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.54	0.29	0.08	0.27	0.01
Concentration		mg/kg ww	2.00E-03	3.96E-01	5.68E-01	1.77E+00	5.97E+00

Hare - Future - East of Baker Creek - Page 1/2

Receptor
GiantHare
Timeframe
Future
Terrestrial Pathways Source
East of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 6

Snowshoe Hare

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.3
Water ingestion rate	Water	m^3/d	1.31E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	2.73E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	5.17E+00
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	0.30
Woody Vegetation	WoodyVeg	-	0.60
Fruits and Flowers	FruitsFlowers	-	0.10
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BC6	BG-BC711	NOTE: Uses current water concentrations
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	EBC	BG	
TerrInsects	-	-	
Foliage	EBC	BG	
WoodyVeg	EBC	BG	
FruitsFlowers	EBC	BG	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	-	-	

Hare - Future - East of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Future	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_EBC_Future	mg/kg dw	1.01E+02	5.84E+02	1.26E+02	9.95E+02	2.53E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_EBC_Future	mg/kg ww	2.75E-01	1.20E+00	1.50E+00	3.78E+02	6.12E-01
Woody Vegetation	WoodyVeg_EBC_Future	mg/kg ww	2.75E-01	1.37E+01	1.50E+00	3.78E+02	6.12E-01
Fruits and Flowers	FruitsFlowers_EBC_Future	mg/kg ww	2.75E-01	3.03E+01	1.50E+00	3.78E+02	6.12E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_BG_Future	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	WoodyVeg_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Fruits and Flowers	FruitsFlowers_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	2.87E-02	3.95E-02	9.43E-04	4.35E-03	4.79E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	4.01E-01	2.32E+00	5.00E-01	3.95E+00	1.01E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	1.73E-02	7.55E-02	9.46E-02	2.38E+01	3.86E-02
	Woody Vegetation	mg/kg-d	3.46E-02	1.73E+00	1.89E-01	4.77E+01	7.72E-02
	Fruits and Flowers	mg/kg-d	5.77E-03	6.38E-01	3.15E-02	7.95E+00	1.29E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	4.88E-01	4.80E+00	8.17E-01	8.35E+01	1.13E+00
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	8.27	4.61	0.15	1.62	0.02
Concentration		mg/kg ww	3.04E-02	6.24E+00	1.06E+00	1.06E+01	1.02E+01

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	2.51E-04	5.12E-03	1.79E-04	1.66E-02	3.72E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	8.74E-03	1.42E-01	1.23E-01	6.56E-01	5.43E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	6.91E-03	1.98E-02	9.46E-02	3.95E+00	3.61E-02
	Woody Vegetation	mg/kg-d	1.38E-02	1.18E-01	1.89E-01	7.91E+00	7.21E-02
	Fruits and Flowers	mg/kg-d	2.30E-03	1.97E-02	3.15E-02	1.32E+00	1.20E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.20E-02	3.05E-01	4.39E-01	1.39E+01	6.64E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.54	0.29	0.08	0.27	0.01
Concentration		mg/kg ww	2.00E-03	3.96E-01	5.68E-01	1.77E+00	5.97E+00

Hare - Future - South of Baker Creek - Page 1/2

Receptor
GiantHare
Timeframe
Future
Terrestrial Pathways Source
South of Baker Creek
Aquatic Pathways Source
BC Reach 1-3
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 1-3

Snowshoe Hare

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.3
Water ingestion rate	Water	m^3/d	1.31E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	2.73E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	5.17E+00
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	0.30
Woody Vegetation	WoodyVeg	-	0.60
Fruits and Flowers	FruitsFlowers	-	0.10
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BC13	BG-BC711	NOTE: Uses current water concentrations
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	SBC	BG	
TerrInsects	-	-	
Foliage	SBC	BG	
WoodyVeg	SBC	BG	
FruitsFlowers	SBC	BG	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	-	-	

Hare - Future - South of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC13_Future	mg/L	2.17E-01	3.18E-01	1.00E-02	3.16E-01	1.50E-01
Sediment	-	-	-	-	-	-	-
Soil	Soil_SBC_Future	mg/kg dw	1.12E+02	1.01E+03	1.04E+02	1.50E+03	1.33E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_SBC_Future	mg/kg ww	2.82E-01	1.55E+00	1.50E+00	5.70E+02	5.70E-01
Woody Vegetation	WoodyVeg_SBC_Future	mg/kg ww	2.82E-01	4.63E+00	1.50E+00	5.70E+02	5.70E-01
Fruits and Flowers	FruitsFlowers_SBC_Future	mg/kg ww	2.82E-01	4.63E+00	1.50E+00	5.70E+02	5.70E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_BG_Future	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	WoodyVeg_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Fruits and Flowers	FruitsFlowers_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	2.18E-02	3.19E-02	1.00E-03	3.18E-02	1.51E-02
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	4.46E-01	4.03E+00	4.13E-01	5.96E+00	5.29E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	1.78E-02	9.79E-02	9.46E-02	3.60E+01	3.60E-02
	Woody Vegetation	mg/kg-d	3.55E-02	5.85E-01	1.89E-01	7.20E+01	7.19E-02
	Fruits and Flowers	mg/kg-d	5.92E-03	9.74E-02	3.15E-02	1.20E+01	1.20E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	5.27E-01	4.84E+00	7.30E-01	1.26E+02	6.63E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	8.93	4.66	0.13	2.45	0.01
Concentration		mg/kg ww	3.29E-02	6.30E+00	9.45E-01	1.60E+01	5.97E+00

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	2.51E-04	5.12E-03	1.79E-04	1.66E-02	3.72E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	8.74E-03	1.42E-01	1.23E-01	6.56E-01	5.43E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	6.91E-03	1.98E-02	9.46E-02	3.95E+00	3.61E-02
	Woody Vegetation	mg/kg-d	1.38E-02	1.18E-01	1.89E-01	7.91E+00	7.21E-02
	Fruits and Flowers	mg/kg-d	2.30E-03	1.97E-02	3.15E-02	1.32E+00	1.20E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.20E-02	3.05E-01	4.39E-01	1.39E+01	6.64E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.54	0.29	0.08	0.27	0.01
Concentration		mg/kg ww	2.00E-03	3.96E-01	5.68E-01	1.77E+00	5.97E+00

Bat - Future - Trapper Lake North - Page 1/2

Receptor
GiantBat
Timeframe
Future
Terrestrial Pathways Source
Trapper Lake North
Aquatic Pathways Source
Trapper Lake
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
TerrInsects

Suggested Aquatic linking:
Trapper Lake

Little Brown Bat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.01
Water ingestion rate	Water	m^3/d	1.51E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.75E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	TL	BG-BC711	NOTE: Uses current water concentrations
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	TLN	BG	
TerrInsects	-	-	
Foliage	-	-	
WoodyVeg	-	-	
FruitsFlowers	-	-	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	TLN	BG	

Bat - Future - Trapper Lake North - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_TL_Future	mg/L	2.11E-02	1.66E-01	9.92E-04	2.84E-02	6.07E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_TLN_Future	mg/kg dw	3.60E+01	2.40E+02	9.20E+01	1.01E+03	9.40E+01
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_TLN_Future	mg/kg ww	2.14E-01	2.35E+00	1.50E+00	3.85E+02	5.49E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	3.19E-03	2.51E-02	1.50E-04	4.29E-03	9.17E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.08E-01	7.20E-01	2.76E-01	3.04E+00	2.82E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	8.04E-02	8.83E-01	5.63E-01	1.44E+02	2.06E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.92E-01	1.63E+00	8.39E-01	1.48E+02	4.89E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	3.25	1.57	0.15	2.86	0.01
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	3.78E-04	7.71E-03	2.69E-04	2.49E-02	5.59E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	6.60E-03	1.07E-01	9.30E-02	4.95E-01	4.10E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	4.11E-02	3.52E-01	5.63E-01	2.35E+01	2.14E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	4.81E-02	4.66E-01	6.56E-01	2.40E+01	6.25E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.81	0.45	0.12	0.47	0.01
Concentration		mg/kg ww					

Bat - Future - West of Baker Creek - Page 1/2

Receptor
GiantBat
Timeframe
Future
Terrestrial Pathways Source
West of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
TerrInsects

Suggested Aquatic linking:
BC Reach 6

Little Brown Bat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.01
Water ingestion rate	Water	m^3/d	1.51E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.75E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BC6	BG-BC711	NOTE: Uses current water concentrations
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	WBC	BG	
TerrInsects	-	-	
Foliage	-	-	
WoodyVeg	-	-	
FruitsFlowers	-	-	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	WBC	BG	

Bat - Future - West of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Future	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_WBC_Future	mg/kg dw	1.65E+02	9.07E+02	5.60E+01	8.07E+02	1.00E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_WBC_Future	mg/kg ww	3.09E-01	4.40E+00	1.50E+00	3.07E+02	5.52E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	4.32E-02	5.94E-02	1.42E-03	6.54E-03	7.21E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	4.95E-01	2.72E+00	1.68E-01	2.42E+00	3.00E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.16E-01	1.65E+00	5.63E-01	1.15E+02	2.07E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	6.54E-01	4.43E+00	7.32E-01	1.17E+02	5.08E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	11.09	4.26	0.13	2.28	0.01
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	3.78E-04	7.71E-03	2.69E-04	2.49E-02	5.59E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	6.60E-03	1.07E-01	9.30E-02	4.95E-01	4.10E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	4.11E-02	3.52E-01	5.63E-01	2.35E+01	2.14E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	4.81E-02	4.66E-01	6.56E-01	2.40E+01	6.25E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.81	0.45	0.12	0.47	0.01
Concentration		mg/kg ww					

Bat - Future - East of Baker Creek - Page 1/2

Receptor
GiantBat
Timeframe
Future
Terrestrial Pathways Source
East of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
TerrInsects

Suggested Aquatic linking:
BC Reach 6

Little Brown Bat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.01
Water ingestion rate	Water	m^3/d	1.51E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.75E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BC6	BG-BC711	NOTE: Uses current water concentrations
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	EBC	BG	
TerrInsects	-	-	
Foliage	-	-	
WoodyVeg	-	-	
FruitsFlowers	-	-	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	EBC	BG	

Bat - Future - East of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Future	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_EBC_Future	mg/kg dw	1.01E+02	5.84E+02	1.26E+02	9.95E+02	2.53E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_EBC_Future	mg/kg ww	2.75E-01	3.57E+00	1.50E+00	3.78E+02	6.12E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	4.32E-02	5.94E-02	1.42E-03	6.54E-03	7.21E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	3.03E-01	1.75E+00	3.78E-01	2.99E+00	7.59E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.03E-01	1.34E+00	5.63E-01	1.42E+02	2.29E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	4.49E-01	3.15E+00	9.42E-01	1.45E+02	9.89E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	7.61	3.03	0.17	2.81	0.01
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	3.78E-04	7.71E-03	2.69E-04	2.49E-02	5.59E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	6.60E-03	1.07E-01	9.30E-02	4.95E-01	4.10E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	4.11E-02	3.52E-01	5.63E-01	2.35E+01	2.14E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	4.81E-02	4.66E-01	6.56E-01	2.40E+01	6.25E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.81	0.45	0.12	0.47	0.01
Concentration		mg/kg ww					

Bat - Future - South of Baker Creek - Page 1/2

Receptor
GiantBat
Timeframe
Future
Terrestrial Pathways Source
South of Baker Creek
Aquatic Pathways Source
BC Reach 1-3
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
TerrInsects

Suggested Aquatic linking:
BC Reach 1-3

Little Brown Bat

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.01
Water ingestion rate	Water	m^3/d	1.51E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.75E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.00E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC13	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	SBC	BG
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	SBC	BG

NOTE: Uses current water concentrations

Bat - Future - South of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC13_Future	mg/L	2.17E-01	3.18E-01	1.00E-02	3.16E-01	1.50E-01
Sediment	-	-	-	-	-	-	-
Soil	Soil_SBC_Future	mg/kg dw	1.12E+02	1.01E+03	1.04E+02	1.50E+03	1.33E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_SBC_Future	mg/kg ww	2.82E-01	4.63E+00	1.50E+00	5.70E+02	5.70E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	3.27E-02	4.80E-02	1.51E-03	4.78E-02	2.27E-02
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	3.37E-01	3.04E+00	3.12E-01	4.50E+00	3.99E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.06E-01	1.74E+00	5.63E-01	2.14E+02	2.14E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	4.75E-01	4.83E+00	8.76E-01	2.18E+02	6.35E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	8.05	4.64	0.16	4.24	0.01
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	3.78E-04	7.71E-03	2.69E-04	2.49E-02	5.59E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	6.60E-03	1.07E-01	9.30E-02	4.95E-01	4.10E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	4.11E-02	3.52E-01	5.63E-01	2.35E+01	2.14E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	4.81E-02	4.66E-01	6.56E-01	2.40E+01	6.25E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.81	0.45	0.12	0.47	0.01
Concentration		mg/kg ww					

Ptarmigan - Future - Trapper Lake North - Page 1/2

Receptor
GiantPtarmigan
Timeframe
Future
Terrestrial Pathways Source
Trapper Lake North
Aquatic Pathways Source
Trapper Lake
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
Trapper Lake

Willow Ptarmigan

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.65
Water ingestion rate	Water	m^3/d	4.32E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.43E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.99E+00
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	0.50
Woody Vegetation	WoodyVeg	-	0.15
Fruits and Flowers	FruitsFlowers	-	0.35
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	TL	BG-BC711	NOTE: Uses current water concentrations
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	TLN	BG	
TerrInsects	-	-	
Foliage	TLN	BG	
WoodyVeg	TLN	BG	
FruitsFlowers	TLN	BG	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	-	-	

Ptarmigan - Future - Trapper Lake North - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_TL_Future	mg/L	2.11E-02	1.66E-01	9.92E-04	2.84E-02	6.07E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_TLN_Future	mg/kg dw	3.60E+01	2.40E+02	9.20E+01	1.01E+03	9.40E+01
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_TLN_Future	mg/kg ww	2.14E-01	7.89E-01	1.50E+00	3.85E+02	5.49E-01
Woody Vegetation	WoodyVeg_TLN_Future	mg/kg ww	2.14E-01	2.35E+00	1.50E+00	3.85E+02	5.49E-01
Fruits and Flowers	FruitsFlowers_TLN_Future	mg/kg ww	2.14E-01	2.35E+00	1.50E+00	3.85E+02	5.49E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_BG_Future	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	WoodyVeg_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Fruits and Flowers	FruitsFlowers_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.40E-03	1.10E-02	6.59E-05	1.89E-03	4.03E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	2.21E-01	1.48E+00	5.65E-01	6.23E+00	5.77E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	2.36E-02	8.68E-02	1.65E-01	4.24E+01	6.04E-02
	Woody Vegetation	mg/kg-d	7.08E-03	7.78E-02	4.95E-02	1.27E+01	1.81E-02
	Fruits and Flowers	mg/kg-d	1.65E-02	1.81E-01	1.16E-01	2.97E+01	4.23E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	2.70E-01	1.83E+00	8.95E-01	9.11E+01	6.99E-01
TRV		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.42	0.20	0.51	0.01
Concentration		mg/kg ww	1.75E-02	1.19E+00	5.80E-01	2.96E+00	4.09E+00

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.66E-04	3.39E-03	1.18E-04	1.10E-02	2.46E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.35E-02	2.19E-01	1.90E-01	1.01E+00	8.40E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	1.21E-02	3.46E-02	1.65E-01	6.90E+00	6.29E-02
	Woody Vegetation	mg/kg-d	3.62E-03	3.10E-02	4.95E-02	2.07E+00	1.89E-02
	Fruits and Flowers	mg/kg-d	8.45E-03	7.22E-02	1.16E-01	4.83E+00	4.41E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.78E-02	3.61E-01	5.21E-01	1.48E+01	9.66E-01
		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.08	0.12	0.08	0.01
Concentration		mg/kg ww	2.46E-03	2.34E-01	3.37E-01	4.82E-01	5.65E+00

Ptarmigan - Future - West of Baker Creek - Page 1/2

Receptor
GiantPtarmigan
Timeframe
Future
Terrestrial Pathways Source
West of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 6

Willow Ptarmigan

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.65
Water ingestion rate	Water	m^3/d	4.32E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.43E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.99E+00
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	0.50
Woody Vegetation	WoodyVeg	-	0.15
Fruits and Flowers	FruitsFlowers	-	0.35
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC6	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	WBC	BG
TerrInsects	-	-
Foliage	WBC	BG
WoodyVeg	WBC	BG
FruitsFlowers	WBC	BG
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

NOTE: Uses current water concentrations

Ptarmigan - Future - West of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Future	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_WBC_Future	mg/kg dw	1.65E+02	9.07E+02	5.60E+01	8.07E+02	1.00E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_WBC_Future	mg/kg ww	3.09E-01	1.47E+00	1.50E+00	3.07E+02	5.52E-01
Woody Vegetation	WoodyVeg_WBC_Future	mg/kg ww	3.09E-01	4.40E+00	1.50E+00	3.07E+02	5.52E-01
Fruits and Flowers	FruitsFlowers_WBC_Future	mg/kg ww	3.09E-01	4.40E+00	1.50E+00	3.07E+02	5.52E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_BG_Future	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	WoodyVeg_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Fruits and Flowers	FruitsFlowers_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.90E-02	2.61E-02	6.24E-04	2.88E-03	3.17E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.01E+00	5.57E+00	3.44E-01	4.96E+00	6.14E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	3.40E-02	1.62E-01	1.65E-01	3.38E+01	6.08E-02
	Woody Vegetation	mg/kg-d	1.02E-02	1.45E-01	4.95E-02	1.01E+01	1.82E-02
	Fruits and Flowers	mg/kg-d	2.38E-02	3.39E-01	1.16E-01	2.36E+01	4.26E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.10E+00	6.24E+00	6.75E-01	7.25E+01	7.36E-01
TRV		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	1.42	0.15	0.40	0.01
Concentration		mg/kg ww	7.15E-02	4.06E+00	4.37E-01	2.36E+00	4.31E+00

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.66E-04	3.39E-03	1.18E-04	1.10E-02	2.46E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.35E-02	2.19E-01	1.90E-01	1.01E+00	8.40E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	1.21E-02	3.46E-02	1.65E-01	6.90E+00	6.29E-02
	Woody Vegetation	mg/kg-d	3.62E-03	3.10E-02	4.95E-02	2.07E+00	1.89E-02
	Fruits and Flowers	mg/kg-d	8.45E-03	7.22E-02	1.16E-01	4.83E+00	4.41E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.78E-02	3.61E-01	5.21E-01	1.48E+01	9.66E-01
		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.08	0.12	0.08	0.01
Concentration		mg/kg ww	2.46E-03	2.34E-01	3.37E-01	4.82E-01	5.65E+00

Ptarmigan - Future - East of Baker Creek - Page 1/2

Receptor
GiantPtarmigan
Timeframe
Future
Terrestrial Pathways Source
East of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 6

Willow Ptarmigan

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.65
Water ingestion rate	Water	m^3/d	4.32E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.43E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.99E+00
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	0.50
Woody Vegetation	WoodyVeg	-	0.15
Fruits and Flowers	FruitsFlowers	-	0.35
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BC6	BG-BC711	NOTE: Uses current water concentrations
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	EBC	BG	
TerrInsects	-	-	
Foliage	EBC	BG	
WoodyVeg	EBC	BG	
FruitsFlowers	EBC	BG	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	-	-	

Ptarmigan - Future - East of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Future	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_EBC_Future	mg/kg dw	1.01E+02	5.84E+02	1.26E+02	9.95E+02	2.53E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_EBC_Future	mg/kg ww	2.75E-01	1.20E+00	1.50E+00	3.78E+02	6.12E-01
Woody Vegetation	WoodyVeg_EBC_Future	mg/kg ww	2.75E-01	1.37E+01	1.50E+00	3.78E+02	6.12E-01
Fruits and Flowers	FruitsFlowers_EBC_Future	mg/kg ww	2.75E-01	3.03E+01	1.50E+00	3.78E+02	6.12E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_BG_Future	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	WoodyVeg_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Fruits and Flowers	FruitsFlowers_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.90E-02	2.61E-02	6.24E-04	2.88E-03	3.17E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	6.20E-01	3.58E+00	7.73E-01	6.11E+00	1.55E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	3.02E-02	1.32E-01	1.65E-01	4.16E+01	6.74E-02
	Woody Vegetation	mg/kg-d	9.07E-03	4.52E-01	4.95E-02	1.25E+01	2.02E-02
	Fruits and Flowers	mg/kg-d	2.12E-02	2.34E+00	1.16E-01	2.91E+01	4.71E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	7.00E-01	6.53E+00	1.10E+00	8.94E+01	1.69E+00
TRV		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	1.48	0.25	0.50	0.03
Concentration		mg/kg ww	4.55E-02	4.25E+00	7.15E-01	2.90E+00	9.88E+00

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.66E-04	3.39E-03	1.18E-04	1.10E-02	2.46E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.35E-02	2.19E-01	1.90E-01	1.01E+00	8.40E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	1.21E-02	3.46E-02	1.65E-01	6.90E+00	6.29E-02
	Woody Vegetation	mg/kg-d	3.62E-03	3.10E-02	4.95E-02	2.07E+00	1.89E-02
	Fruits and Flowers	mg/kg-d	8.45E-03	7.22E-02	1.16E-01	4.83E+00	4.41E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.78E-02	3.61E-01	5.21E-01	1.48E+01	9.66E-01
		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.08	0.12	0.08	0.01
Concentration		mg/kg ww	2.46E-03	2.34E-01	3.37E-01	4.82E-01	5.65E+00

Ptarmigan - Future - South of Baker Creek - Page 1/2

Receptor
GiantPtarmigan
Timeframe
Future
Terrestrial Pathways Source
South of Baker Creek
Aquatic Pathways Source
BC Reach 1-3
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 1-3

Willow Ptarmigan

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.65
Water ingestion rate	Water	m^3/d	4.32E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.43E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.99E+00
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	0.50
Woody Vegetation	WoodyVeg	-	0.15
Fruits and Flowers	FruitsFlowers	-	0.35
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BC13	BG-BC711	NOTE: Uses current water concentrations
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	SBC	BG	
TerrInsects	-	-	
Foliage	SBC	BG	
WoodyVeg	SBC	BG	
FruitsFlowers	SBC	BG	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	-	-	

Ptarmigan - Future - South of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC13_Future	mg/L	2.17E-01	3.18E-01	1.00E-02	3.16E-01	1.50E-01
Sediment	-	-	-	-	-	-	-
Soil	Soil_SBC_Future	mg/kg dw	1.12E+02	1.01E+03	1.04E+02	1.50E+03	1.33E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_SBC_Future	mg/kg ww	2.82E-01	1.55E+00	1.50E+00	5.70E+02	5.70E-01
Woody Vegetation	WoodyVeg_SBC_Future	mg/kg ww	2.82E-01	4.63E+00	1.50E+00	5.70E+02	5.70E-01
Fruits and Flowers	FruitsFlowers_SBC_Future	mg/kg ww	2.82E-01	4.63E+00	1.50E+00	5.70E+02	5.70E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	Foliage_BG_Future	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	WoodyVeg_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Fruits and Flowers	FruitsFlowers_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.44E-02	2.11E-02	6.64E-04	2.10E-02	9.97E-03
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	6.89E-01	6.23E+00	6.39E-01	9.22E+00	8.17E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	3.10E-02	1.71E-01	1.65E-01	6.28E+01	6.28E-02
	Woody Vegetation	mg/kg-d	9.30E-03	1.53E-01	4.95E-02	1.88E+01	1.88E-02
	Fruits and Flowers	mg/kg-d	2.17E-02	3.57E-01	1.16E-01	4.40E+01	4.39E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	7.66E-01	6.93E+00	9.70E-01	1.35E+02	9.52E-01
TRV		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	1.58	0.22	0.75	0.01
Concentration		mg/kg ww	4.98E-02	4.51E+00	6.28E-01	4.38E+00	5.57E+00

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.66E-04	3.39E-03	1.18E-04	1.10E-02	2.46E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.35E-02	2.19E-01	1.90E-01	1.01E+00	8.40E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	mg/kg-d	1.21E-02	3.46E-02	1.65E-01	6.90E+00	6.29E-02
	Woody Vegetation	mg/kg-d	3.62E-03	3.10E-02	4.95E-02	2.07E+00	1.89E-02
	Fruits and Flowers	mg/kg-d	8.45E-03	7.22E-02	1.16E-01	4.83E+00	4.41E-02
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	3.78E-02	3.61E-01	5.21E-01	1.48E+01	9.66E-01
		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.08	0.12	0.08	0.01
Concentration		mg/kg ww	2.46E-03	2.34E-01	3.37E-01	4.82E-01	5.65E+00

Swallow - Future - Trapper Lake North - Page 1/2

Receptor
GiantSwallow
Timeframe
Future
Terrestrial Pathways Source
Trapper Lake North
Aquatic Pathways Source
Trapper Lake
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
TerrInsects

Suggested Aquatic linking:
Trapper Lake

Barn Swallow

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0187
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.23E+01
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.50E-01
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	TL	BG-BC711	NOTE: Uses current water concentrations
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	TLN	BG	
TerrInsects	-	-	
Foliage	-	-	
WoodyVeg	-	-	
FruitsFlowers	-	-	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	TLN	BG	

Swallow - Future - Trapper Lake North - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_TL_Future	mg/L	2.11E-02	1.66E-01	9.92E-04	2.84E-02	6.07E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_TLN_Future	mg/kg dw	3.60E+01	2.40E+02	9.20E+01	1.01E+03	9.40E+01
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_TLN_Future	mg/kg ww	2.14E-01	2.35E+00	1.50E+00	3.85E+02	5.49E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	4.63E-03	3.64E-02	2.17E-04	6.23E-03	1.33E-03
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	8.66E-01	5.78E+00	2.21E+00	2.44E+01	2.26E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.40E-01	1.54E+00	9.83E-01	2.52E+02	3.59E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.01E+00	7.36E+00	3.20E+00	2.77E+02	2.62E+00
TRV		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	1.67	0.71	1.55	0.04
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.48E-04	1.12E-02	3.90E-04	3.62E-02	8.11E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	5.29E-02	8.60E-01	7.46E-01	3.97E+00	3.29E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	7.18E-02	6.14E-01	9.83E-01	4.11E+01	3.75E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.25E-01	1.48E+00	1.73E+00	4.51E+01	3.66E+00
		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.34	0.38	0.25	0.06
Concentration		mg/kg ww					

Swallow - Future - West of Baker Creek - Page 1/2

Receptor
GiantSwallow
Timeframe
Future
Terrestrial Pathways Source
West of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
TerrInsects

Suggested Aquatic linking:
BC Reach 6

Barn Swallow

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0187
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.23E+01
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.50E-01
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BC6	BG-BC711	NOTE: Uses current water concentrations
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	WBC	BG	
TerrInsects	-	-	
Foliage	-	-	
WoodyVeg	-	-	
FruitsFlowers	-	-	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	WBC	BG	

Swallow - Future - West of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Future	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_WBC_Future	mg/kg dw	1.65E+02	9.07E+02	5.60E+01	8.07E+02	1.00E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_WBC_Future	mg/kg ww	3.09E-01	4.40E+00	1.50E+00	3.07E+02	5.52E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	6.27E-02	8.62E-02	2.06E-03	9.49E-03	1.05E-03
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	3.97E+00	2.18E+01	1.35E+00	1.94E+01	2.41E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	2.02E-01	2.88E+00	9.83E-01	2.01E+02	3.62E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	4.24E+00	2.48E+01	2.33E+00	2.20E+02	2.77E+00
TRV		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	5.63	0.52	1.23	0.04
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.48E-04	1.12E-02	3.90E-04	3.62E-02	8.11E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	5.29E-02	8.60E-01	7.46E-01	3.97E+00	3.29E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	7.18E-02	6.14E-01	9.83E-01	4.11E+01	3.75E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.25E-01	1.48E+00	1.73E+00	4.51E+01	3.66E+00
		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.34	0.38	0.25	0.06
Concentration		mg/kg ww					

Swallow - Future - East of Baker Creek - Page 1/2

Receptor
GiantSwallow
Timeframe
Future
Terrestrial Pathways Source
East of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
TerrInsects

Suggested Aquatic linking:
BC Reach 6

Barn Swallow

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0187
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.23E+01
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.50E-01
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC6	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	EBC	BG
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	EBC	BG

NOTE: Uses current water concentrations

Swallow - Future - East of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Future	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_EBC_Future	mg/kg dw	1.01E+02	5.84E+02	1.26E+02	9.95E+02	2.53E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_EBC_Future	mg/kg ww	2.75E-01	3.57E+00	1.50E+00	3.78E+02	6.12E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	6.27E-02	8.62E-02	2.06E-03	9.49E-03	1.05E-03
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	2.43E+00	1.40E+01	3.03E+00	2.39E+01	6.09E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.80E-01	2.34E+00	9.83E-01	2.48E+02	4.01E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	2.67E+00	1.65E+01	4.01E+00	2.72E+02	6.49E+00
TRV		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	3.74	0.89	1.52	0.10
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.48E-04	1.12E-02	3.90E-04	3.62E-02	8.11E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	5.29E-02	8.60E-01	7.46E-01	3.97E+00	3.29E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	7.18E-02	6.14E-01	9.83E-01	4.11E+01	3.75E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.25E-01	1.48E+00	1.73E+00	4.51E+01	3.66E+00
		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.34	0.38	0.25	0.06
Concentration		mg/kg ww					

Swallow - Future - South of Baker Creek - Page 1/2

Receptor
GiantSwallow
Timeframe
Future
Terrestrial Pathways Source
South of Baker Creek
Aquatic Pathways Source
BC Reach 1-3
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
TerrInsects

Suggested Aquatic linking:
BC Reach 1-3

Barn Swallow

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.0187
Water ingestion rate	Water	m^3/d	4.10E-06
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.23E+01
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	4.50E-01
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	1.00
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BC13	BG-BC711	NOTE: Uses current water concentrations
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	SBC	BG	
TerrInsects	-	-	
Foliage	-	-	
WoodyVeg	-	-	
FruitsFlowers	-	-	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	SBC	BG	

Swallow - Future - South of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC13_Future	mg/L	2.17E-01	3.18E-01	1.00E-02	3.16E-01	1.50E-01
Sediment	-	-	-	-	-	-	-
Soil	Soil_SBC_Future	mg/kg dw	1.12E+02	1.01E+03	1.04E+02	1.50E+03	1.33E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_SBC_Future	mg/kg ww	2.82E-01	4.63E+00	1.50E+00	5.70E+02	5.70E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	TerrInsects_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	4.75E-02	6.96E-02	2.19E-03	6.93E-02	3.29E-02
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	2.70E+00	2.44E+01	2.50E+00	3.61E+01	3.20E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	1.84E-01	3.04E+00	9.83E-01	3.74E+02	3.73E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	2.93E+00	2.75E+01	3.49E+00	4.10E+02	3.61E+00
TRV		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	6.25	0.77	2.29	0.05
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.48E-04	1.12E-02	3.90E-04	3.62E-02	8.11E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	5.29E-02	8.60E-01	7.46E-01	3.97E+00	3.29E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	mg/kg-d	7.18E-02	6.14E-01	9.83E-01	4.11E+01	3.75E-01
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.25E-01	1.48E+00	1.73E+00	4.51E+01	3.66E+00
		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.34	0.38	0.25	0.06
Concentration		mg/kg ww					

Shrew - Future - Trapper Lake North - Page 1/2

Receptor
GiantShrew
Timeframe
Future
Terrestrial Pathways Source
Trapper Lake North
Aquatic Pathways Source
Trapper Lake
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
Trapper Lake

Masked Shrew

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.004
Water ingestion rate	Water	m^3/d	8.34E-07
Food ingestion rate – wet weight basis	Food	g (ww)/d	5.02E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.61E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	0.95
Foliage	Foliage	-	0.05
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	TL	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	TLN	BG
TerrInsects	TLN	BG
Foliage	TLN	BG
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

NOTE: Uses current water concentrations

Shrew - Future - Trapper Lake North - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_TL_Future	mg/L	2.11E-02	1.66E-01	9.92E-04	2.84E-02	6.07E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_TLN_Future	mg/kg dw	3.60E+01	2.40E+02	9.20E+01	1.01E+03	9.40E+01
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_TLN_Future	mg/kg ww	2.14E-01	2.35E+00	1.50E+00	3.85E+02	5.49E-01
Foliage	Foliage_TLN_Future	mg/kg ww	2.14E-01	7.89E-01	1.50E+00	3.85E+02	5.49E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Foliage	Foliage_BG_Future	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	4.40E-03	3.46E-02	2.07E-04	5.92E-03	1.27E-03
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	3.25E-01	2.17E+00	8.31E-01	9.16E+00	8.49E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	2.56E-01	2.81E+00	1.79E+00	4.59E+02	6.54E-01
	Foliage	mg/kg-d	1.35E-02	4.95E-02	9.41E-02	2.42E+01	3.44E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	5.99E-01	5.06E+00	2.71E+00	4.93E+02	1.54E+00
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	10.15	4.87	0.48	9.57	0.02
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.21E-04	1.06E-02	3.71E-04	3.44E-02	7.72E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.99E-02	3.23E-01	2.80E-01	1.49E+00	1.24E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	1.31E-01	1.12E+00	1.79E+00	7.47E+01	6.82E-01
	Foliage	mg/kg-d	6.88E-03	1.97E-02	9.41E-02	3.93E+00	3.59E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.58E-01	1.47E+00	2.16E+00	8.02E+01	1.95E+00
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	2.68	1.41	0.39	1.56	0.03
Concentration		mg/kg ww					

Shrew - Future - West of Baker Creek - Page 1/2

Receptor
GiantShrew
Timeframe
Future
Terrestrial Pathways Source
West of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 6

Masked Shrew

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.004
Water ingestion rate	Water	m^3/d	8.34E-07
Food ingestion rate – wet weight basis	Food	g (ww)/d	5.02E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.61E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	0.95
Foliage	Foliage	-	0.05
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC6	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	WBC	BG
TerrInsects	WBC	BG
Foliage	WBC	BG
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

NOTE: Uses current water concentrations

Shrew - Future - West of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Future	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_WBC_Future	mg/kg dw	1.65E+02	9.07E+02	5.60E+01	8.07E+02	1.00E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_WBC_Future	mg/kg ww	3.09E-01	4.40E+00	1.50E+00	3.07E+02	5.52E-01
Foliage	Foliage_WBC_Future	mg/kg ww	3.09E-01	1.47E+00	1.50E+00	3.07E+02	5.52E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Foliage	Foliage_BG_Future	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.96E-02	8.20E-02	1.96E-03	9.03E-03	9.95E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.49E+00	8.19E+00	5.06E-01	7.29E+00	9.04E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	3.68E-01	5.24E+00	1.79E+00	3.66E+02	6.59E-01
	Foliage	mg/kg-d	1.94E-02	9.24E-02	9.41E-02	1.92E+01	3.47E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.94E+00	1.36E+01	2.39E+00	3.92E+02	1.60E+00
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	32.85	13.09	0.43	7.61	0.02
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.21E-04	1.06E-02	3.71E-04	3.44E-02	7.72E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.99E-02	3.23E-01	2.80E-01	1.49E+00	1.24E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	1.31E-01	1.12E+00	1.79E+00	7.47E+01	6.82E-01
	Foliage	mg/kg-d	6.88E-03	1.97E-02	9.41E-02	3.93E+00	3.59E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.58E-01	1.47E+00	2.16E+00	8.02E+01	1.95E+00
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	2.68	1.41	0.39	1.56	0.03
Concentration		mg/kg ww					

Shrew - Future - East of Baker Creek - Page 1/2

Receptor
GiantShrew
Timeframe
Future
Terrestrial Pathways Source
East of Baker Creek
Aquatic Pathways Source
BC Reach 6
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 6

Masked Shrew

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.004
Water ingestion rate	Water	m^3/d	8.34E-07
Food ingestion rate – wet weight basis	Food	g (ww)/d	5.02E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.61E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	0.95
Foliage	Foliage	-	0.05
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC6	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	EBC	BG
TerrInsects	EBC	BG
Foliage	EBC	BG
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	-	-
Shrew	-	-
Mouse	-	-
Moose	-	-
Caribou	-	-
EmergInsect	-	-

NOTE: Uses current water concentrations

Shrew - Future - East of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC6_Future	mg/L	2.86E-01	3.93E-01	9.39E-03	4.33E-02	4.77E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_EBC_Future	mg/kg dw	1.01E+02	5.84E+02	1.26E+02	9.95E+02	2.53E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_EBC_Future	mg/kg ww	2.75E-01	3.57E+00	1.50E+00	3.78E+02	6.12E-01
Foliage	Foliage_EBC_Future	mg/kg ww	2.75E-01	1.20E+00	1.50E+00	3.78E+02	6.12E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Foliage	Foliage_BG_Future	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
	Water	mg/kg-d	5.96E-02	8.20E-02	1.96E-03	9.03E-03	9.95E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	9.13E-01	5.27E+00	1.14E+00	8.99E+00	2.29E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
Intake	Terrestrial Insects	mg/kg-d	3.27E-01	4.26E+00	1.79E+00	4.51E+02	7.29E-01
	Foliage	mg/kg-d	1.72E-02	7.51E-02	9.41E-02	2.37E+01	3.84E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.32E+00	9.69E+00	3.02E+00	4.83E+02	3.05E+00
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	22.32	9.32	0.54	9.39	0.04
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
	Water	mg/kg-d	5.21E-04	1.06E-02	3.71E-04	3.44E-02	7.72E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.99E-02	3.23E-01	2.80E-01	1.49E+00	1.24E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
Intake	Terrestrial Insects	mg/kg-d	1.31E-01	1.12E+00	1.79E+00	7.47E+01	6.82E-01
	Foliage	mg/kg-d	6.88E-03	1.97E-02	9.41E-02	3.93E+00	3.59E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.58E-01	1.47E+00	2.16E+00	8.02E+01	1.95E+00
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	2.68	1.41	0.39	1.56	0.03
Concentration		mg/kg ww					

Shrew - Future - South of Baker Creek - Page 1/2

Receptor
GiantShrew
Timeframe
Future
Terrestrial Pathways Source
South of Baker Creek
Aquatic Pathways Source
BC Reach 1-3
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Reach 1-3

Masked Shrew

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.004
Water ingestion rate	Water	m^3/d	8.34E-07
Food ingestion rate – wet weight basis	Food	g (ww)/d	5.02E+00
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	3.61E-02
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	0.95
Foliage	Foliage	-	0.05
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	-
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference	
Water	BC13	BG-BC711	NOTE: Uses current water concentrations
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	SBC	BG	
TerrInsects	SBC	BG	
Foliage	SBC	BG	
WoodyVeg	-	-	
FruitsFlowers	-	-	
Hare	-	-	
Grouse	-	-	
Shrew	-	-	
Mouse	-	-	
Moose	-	-	
Caribou	-	-	
EmergInsect	-	-	

Shrew - Future - South of Baker Creek - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC13_Future	mg/L	2.17E-01	3.18E-01	1.00E-02	3.16E-01	1.50E-01
Sediment	-	-	-	-	-	-	-
Soil	Soil_SBC_Future	mg/kg dw	1.12E+02	1.01E+03	1.04E+02	1.50E+03	1.33E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_SBC_Future	mg/kg ww	2.82E-01	4.63E+00	1.50E+00	5.70E+02	5.70E-01
Foliage	Foliage_SBC_Future	mg/kg ww	2.82E-01	1.55E+00	1.50E+00	5.70E+02	5.70E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Foliage	Foliage_BG_Future	mg/kg ww	1.10E-01	3.14E-01	1.50E+00	6.27E+01	5.72E-01
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	-	-	-	-	-	-	-
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	4.52E-02	6.62E-02	2.09E-03	6.59E-02	3.13E-02
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.01E+00	9.17E+00	9.40E-01	1.36E+01	1.20E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	3.36E-01	5.53E+00	1.79E+00	6.80E+02	6.80E-01
	Foliage	mg/kg-d	1.77E-02	9.74E-02	9.41E-02	3.58E+01	3.58E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.41E+00	1.49E+01	2.82E+00	7.29E+02	1.95E+00
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	23.94	14.28	0.50	14.16	0.03
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	5.21E-04	1.06E-02	3.71E-04	3.44E-02	7.72E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.99E-02	3.23E-01	2.80E-01	1.49E+00	1.24E+00
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	1.31E-01	1.12E+00	1.79E+00	7.47E+01	6.82E-01
	Foliage	mg/kg-d	6.88E-03	1.97E-02	9.41E-02	3.93E+00	3.59E-02
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	-	-	-	-	-	-
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	1.58E-01	1.47E+00	2.16E+00	8.02E+01	1.95E+00
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	2.68	1.41	0.39	1.56	0.03
Concentration		mg/kg ww					

Fox - Future - Site Average - Page 1/2

Receptor
GiantFox
Timeframe
Future
Terrestrial Pathways Source
Site Average
Aquatic Pathways Source
BC Lower Reaches (0-6)
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source
TerrInsects

Suggested Aquatic linking:
BC Lower Reaches (0-6)

Red Fox

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	3.8
Water ingestion rate	Water	m^3/d	3.26E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	3.40E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	2.85E+00
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	0.25
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	0.15
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	0.20
Shrew	Shrew	-	-
Mouse	Mouse	-	0.20
Moose	Moose	-	-
Hare	Hare	-	0.20
		Total	1.00

Location:	Exposure	Reference	
Water	BC06	BG-BC711	NOTE: Uses current water concentrations
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	GiantAvg	BG	
TerrInsects	GiantAvg	BG	
Foliage	-	-	
WoodyVeg	-	-	
FruitsFlowers	GiantAvg	BG	
Hare	GiantAvg	BG	
Grouse	GiantAvg	BG	
Shrew	-	-	
Mouse	GiantAvg	BG	
Moose	-	-	
Caribou	-	-	
EmergInsect	-	-	

Fox - Future - Site Average - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC06_Future	mg/L	2.21E-01	2.76E-01	8.17E-03	1.50E-01	4.48E-02
Sediment	-	-	-	-	-	-	-
Soil	Soil_GiantAvg_Future	mg/kg dw	1.12E+02	6.50E+02	1.31E+02	9.22E+02	1.22E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_GiantAvg_Future	mg/kg ww	2.82E-01	3.76E+00	1.50E+00	3.50E+02	5.65E-01
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	FruitsFlowers_GiantAvg_Future	mg/kg ww	2.82E-01	3.76E+00	1.50E+00	3.50E+02	5.65E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	Grouse_GiantAvg_Future	mg/kg ww	7.00E-02	1.38E+00	6.39E-01	3.07E+00	5.86E+00
Shrew	-	-	-	-	-	-	-
Mouse	Mouse_GiantAvg_Future	mg/kg ww	8.37E-02	1.18E+00	6.83E-01	5.48E+00	3.20E+01
Moose	-	-	-	-	-	-	-
Hare	Hare_GiantAvg_Future	mg/kg ww	4.55E-02	1.96E+00	9.60E-01	1.12E+01	6.20E+00

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	TerrInsects_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	FruitsFlowers_BG_Future	mg/kg ww	1.10E-01	9.37E-01	1.50E+00	6.27E+01	5.72E-01
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	Grouse_BG_Future	mg/kg ww	2.46E-03	1.17E-01	3.37E-01	4.82E-01	5.65E+00
Shrew	-	-	-	-	-	-	-
Mouse	Mouse_BG_Future	mg/kg ww	5.43E-02	6.76E-01	6.02E-01	9.81E-01	3.22E+01
Moose	-	-	-	-	-	-	-
Hare	Hare_BG_Future	mg/kg ww	2.00E-03	1.98E-01	5.68E-01	1.77E+00	5.97E+00

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.90E-02	2.37E-02	7.02E-04	1.29E-02	3.85E-03
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	8.39E-02	4.87E-01	9.82E-02	6.91E-01	9.14E-02
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	6.30E-03	8.41E-02	3.36E-02	7.84E+00	1.26E-02
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	mg/kg-d	3.78E-03	5.05E-02	2.01E-02	4.70E+00	7.58E-03
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	mg/kg-d	1.25E-03	2.46E-02	1.14E-02	5.50E-02	1.05E-01
	Shrew	-	-	-	-	-	-
	Mouse	mg/kg-d	1.50E-03	2.10E-02	1.22E-02	9.81E-02	5.72E-01
	Moose	-	-	-	-	-	-
	Hare	mg/kg-d	8.14E-04	3.51E-02	1.72E-02	2.01E-01	1.11E-01
Total Intake		mg/kg-d	1.17E-01	7.26E-01	1.93E-01	1.36E+01	9.03E-01
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	1.98	0.70	0.03	0.26	0.01
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	2.15E-04	4.38E-03	1.53E-04	1.42E-02	3.18E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	1.65E-03	2.68E-02	2.32E-02	1.24E-01	1.02E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	mg/kg-d	2.45E-03	2.10E-02	3.36E-02	1.40E+00	1.28E-02
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	mg/kg-d	1.47E-03	1.26E-02	2.01E-02	8.42E-01	7.67E-03
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	mg/kg-d	4.40E-05	2.10E-03	6.03E-03	8.62E-03	1.01E-01
	Shrew	-	-	-	-	-	-
	Mouse	mg/kg-d	9.72E-04	1.21E-02	1.08E-02	1.76E-02	5.77E-01
	Moose	-	-	-	-	-	-
	Hare	mg/kg-d	3.58E-05	3.55E-03	1.02E-02	3.16E-02	1.07E-01
Total Intake		mg/kg-d	6.84E-03	8.24E-02	1.04E-01	2.44E+00	9.08E-01
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.12	0.08	0.02	0.05	0.01
Concentration		mg/kg ww					

Falcon - Future - Site Average - Page 1/2

Receptor
GiantFalcon
Timeframe
Future
Terrestrial Pathways Source
Site Average
Aquatic Pathways Source
BC Lower Reaches (0-6)
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Lower Reaches (0-6)

Peregrine Falcon

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	0.815
Water ingestion rate	Water	m^3/d	5.10E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.63E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	9.80E-01
Fraction of time on site	Frac	-	0.5
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	0.90
Shrew	Shrew	-	-
Mouse	Mouse	-	0.10
Moose	Moose	-	-
Hare	Hare	-	-
		Total	1.00

Location:	Exposure	Reference
Water	BC06	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	GiantAvg	BG
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	-	-
Grouse	GiantAvg	BG
Shrew	-	-
Mouse	GiantAvg	BG
Moose	-	-
Caribou	-	-
EmergInsect	-	-

NOTE: Uses current water concentrations

Falcon - Future - Site Average - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC06_Future	mg/L	2.21E-01	2.76E-01	8.17E-03	1.50E-01	4.48E-02
Sediment	-	-	-	-	-	-	-
Soil	Soil_GiantAvg_Future	mg/kg dw	1.12E+02	6.50E+02	1.31E+02	9.22E+02	1.22E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	Grouse_GiantAvg_Future	mg/kg ww	7.00E-02	1.38E+00	6.39E-01	3.07E+00	5.86E+00
Shrew	-	-	-	-	-	-	-
Mouse	Mouse_GiantAvg_Future	mg/kg ww	8.37E-02	1.18E+00	6.83E-01	5.48E+00	3.20E+01
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	Grouse_BG_Future	mg/kg ww	2.46E-03	1.17E-01	3.37E-01	4.82E-01	5.65E+00
Shrew	-	-	-	-	-	-	-
Mouse	Mouse_BG_Future	mg/kg ww	5.43E-02	6.76E-01	6.02E-01	9.81E-01	3.22E+01
Moose	-	-	-	-	-	-	-
Hare	-	-	-	-	-	-	-

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	6.99E-03	1.02E-02	3.11E-04	9.85E-03	1.52E-03
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	6.87E-02	4.12E-01	9.74E-02	6.54E-01	1.56E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	mg/kg-d	6.53E-03	1.34E-01	8.79E-02	3.20E-01	1.04E+00
	Shrew	-	-	-	-	-	-
	Mouse	mg/kg-d	1.38E-03	1.85E-02	1.29E-02	6.46E-02	6.42E-01
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	8.36E-02	5.75E-01	1.98E-01	1.05E+00	1.83E+00
TRV		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.13	0.04	0.01	0.03
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.56E-04	3.19E-03	1.11E-04	1.03E-02	2.32E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	2.65E-03	4.30E-02	3.73E-02	1.98E-01	1.64E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	mg/kg-d	4.42E-04	2.11E-02	6.07E-02	8.68E-02	1.02E+00
	Shrew	-	-	-	-	-	-
	Mouse	mg/kg-d	1.09E-03	1.35E-02	1.20E-02	1.96E-02	6.44E-01
	Moose	-	-	-	-	-	-
	Hare	-	-	-	-	-	-
Total Intake		mg/kg-d	4.33E-03	8.08E-02	1.10E-01	3.15E-01	1.83E+00
		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.02	0.02	0.00	0.03
Concentration		mg/kg ww					

Owl - Future - Site Average - Page 1/2

Receptor
GiantOwl
Timeframe
Future
Terrestrial Pathways Source
Site Average
Aquatic Pathways Source
BC Lower Reaches (0-6)
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Lower Reaches (0-6)

Great Horned Owl

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	1.5
Water ingestion rate	Water	m^3/d	7.70E-05
Food ingestion rate – wet weight basis	Food	g (ww)/d	2.50E+02
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	5.00E+00
Fraction of time on site	Frac	-	1.0
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	-
Grouse/Ptarmigan	Grouse	-	0.30
Shrew	Shrew	-	0.20
Mouse	Mouse	-	0.20
Moose	Moose	-	-
Hare	Hare	-	0.30
		Total	1.00

Location:	Exposure	Reference	
Water	BC06	BG-BC711	NOTE: Uses current water concentrations
Sediment	-	-	
Benthic	-	-	
AquaticVeg	-	-	
Fish	-	-	
Duck	-	-	
Soil	GiantAvg	BG	
TerrInsects	-	-	
Foliage	-	-	
WoodyVeg	-	-	
FruitsFlowers	-	-	
Hare	GiantAvg	BG	
Grouse	GiantAvg	BG	
Shrew	GiantAvg	BG	
Mouse	GiantAvg	BG	
Moose	-	-	
Caribou	-	-	
EmergInsect	-	-	

Owl - Future - Site Average - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC06_Future	mg/L	2.21E-01	2.76E-01	8.17E-03	1.50E-01	4.48E-02
Sediment	-	-	-	-	-	-	-
Soil	Soil_GiantAvg_Future	mg/kg dw	1.12E+02	6.50E+02	1.31E+02	9.22E+02	1.22E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	Grouse_GiantAvg_Future	mg/kg ww	7.00E-02	1.38E+00	6.39E-01	3.07E+00	5.86E+00
Shrew	Shrew_GiantAvg_Future	mg/kg ww	8.37E-02	1.18E+00	6.83E-01	5.48E+00	3.20E+01
Mouse	Mouse_GiantAvg_Future	mg/kg ww	8.37E-02	1.18E+00	6.83E-01	5.48E+00	3.20E+01
Moose	-	-	-	-	-	-	-
Hare	Hare_GiantAvg_Future	mg/kg ww	4.55E-02	1.96E+00	9.60E-01	1.12E+01	6.20E+00

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	-	-	-	-	-	-	-
Grouse/Ptarmigan	Grouse_BG_Future	mg/kg ww	2.46E-03	1.17E-01	3.37E-01	4.82E-01	5.65E+00
Shrew	Shrew_BG_Future	mg/kg ww	5.43E-02	6.76E-01	6.02E-01	9.81E-01	3.22E+01
Mouse	Mouse_BG_Future	mg/kg ww	5.43E-02	6.76E-01	6.02E-01	9.81E-01	3.22E+01
Moose	-	-	-	-	-	-	-
Hare	Hare_BG_Future	mg/kg ww	2.00E-03	1.98E-01	5.68E-01	1.77E+00	5.97E+00

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.13E-02	1.42E-02	4.20E-04	7.69E-03	2.30E-03
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	3.73E-01	2.17E+00	4.37E-01	3.07E+00	4.07E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	mg/kg-d	3.50E-03	6.88E-02	3.20E-02	1.54E-01	2.93E-01
	Shrew	mg/kg-d	2.79E-03	3.92E-02	2.28E-02	1.83E-01	1.07E+00
	Mouse	mg/kg-d	2.79E-03	3.92E-02	2.28E-02	1.83E-01	1.07E+00
	Moose	-	-	-	-	-	-
	Hare	mg/kg-d	2.28E-03	9.79E-02	4.80E-02	5.62E-01	3.10E-01
Total Intake		mg/kg-d	3.96E-01	2.43E+00	5.63E-01	4.16E+00	3.14E+00
TRV		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.55	0.13	0.02	0.05
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.28E-04	2.62E-03	9.14E-05	8.47E-03	1.90E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	7.33E-03	1.19E-01	1.03E-01	5.50E-01	4.56E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	-	-	-	-	-	-
	Grouse/Ptarmigan	mg/kg-d	1.23E-04	5.86E-03	1.69E-02	2.41E-02	2.83E-01
	Shrew	mg/kg-d	1.81E-03	2.25E-02	2.01E-02	3.27E-02	1.07E+00
	Mouse	mg/kg-d	1.81E-03	2.25E-02	2.01E-02	3.27E-02	1.07E+00
	Moose	-	-	-	-	-	-
	Hare	mg/kg-d	1.00E-04	9.91E-03	2.84E-02	8.83E-02	2.99E-01
Total Intake		mg/kg-d	1.13E-02	1.83E-01	1.89E-01	7.36E-01	3.18E+00
		mg/kg-d	-	4.40E+00	4.50E+00	1.79E+02	6.61E+01
SI Value		-	-	0.04	0.04	0.00	0.05
Concentration		mg/kg ww					

Lynx - Future - Site Average - Page 1/2

Receptor
GiantLynx
Timeframe
Future
Terrestrial Pathways Source
Site Average
Aquatic Pathways Source
BC Lower Reaches (0-6)
Water Reference Location
Background - BC Reach 7-11
Sediment Reference Location

Benthic Reference Location

Aquatic Vegetation Reference Location

Aquatic/Terrestrial Insect Source

Suggested Aquatic linking:
BC Lower Reaches (0-6)

Canada Lynx

Parameter		Units	Value
Characteristics:			
Body weight	BW	kg	11
Water ingestion rate	Water	m^3/d	8.55E-04
Food ingestion rate – wet weight basis	Food	g (ww)/d	1.64E+03
Sediment ingestion rate	Sediment	g (dw)/d	-
Soil ingestion rate	Soil	g (dw)/d	1.38E+01
Fraction of time on site	Frac	-	0.5
Diet composition:			
Benthic Invertebrates	Benthic	-	-
Aquatic Vegetation	AquaticVeg	-	-
Fish	Fish	-	-
Aquatic/Terrestrial Insects	EmergInsect	-	-
Terrestrial Insects	TerrInsects	-	-
Foliage	Foliage	-	-
Woody Vegetation	WoodyVeg	-	-
Fruits and Flowers	FruitsFlowers	-	-
Duck	Duck	-	-
Caribou	Caribou	-	0.08
Grouse/Ptarmigan	Grouse	-	0.09
Shrew	Shrew	-	-
Mouse	Mouse	-	-
Moose	Moose	-	0.08
Hare	Hare	-	0.75
		Total	1.00

Location:	Exposure	Reference
Water	BC06	BG-BC711
Sediment	-	-
Benthic	-	-
AquaticVeg	-	-
Fish	-	-
Duck	-	-
Soil	GiantAvg	BG
TerrInsects	-	-
Foliage	-	-
WoodyVeg	-	-
FruitsFlowers	-	-
Hare	GiantAvg	BG
Grouse	GiantAvg	BG
Shrew	-	-
Mouse	-	-
Moose	GiantAvg	BG
Caribou	GiantAvg	BG
EmergInsect	-	-

NOTE: Uses current water concentrations

Lynx - Future - Site Average - Page 2/2

Exposure EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BC06_Future	mg/L	2.21E-01	2.76E-01	8.17E-03	1.50E-01	4.48E-02
Sediment	-	-	-	-	-	-	-
Soil	Soil_GiantAvg_Future	mg/kg dw	1.12E+02	6.50E+02	1.31E+02	9.22E+02	1.22E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	Caribou_GiantAvg_Future	mg/kg ww	1.00E-03	8.15E-03	3.27E+00	4.35E-01	2.33E+01
Grouse/Ptarmigan	Grouse_GiantAvg_Future	mg/kg ww	7.00E-02	1.38E+00	6.39E-01	3.07E+00	5.86E+00
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	Moose_GiantAvg_Future	mg/kg ww	1.40E-03	1.98E-01	1.24E+00	2.28E-01	1.00E-02
Hare	Hare_GiantAvg_Future	mg/kg ww	4.55E-02	1.96E+00	9.60E-01	1.12E+01	6.20E+00

Background Location EPCs	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Water	Water_BG-BC711_Future	mg/L	2.50E-03	5.10E-02	1.78E-03	1.65E-01	3.70E-03
Sediment	-	-	-	-	-	-	-
Soil	Soil_BG_Future	mg/kg dw	2.20E+00	3.57E+01	3.10E+01	1.65E+02	1.37E+02
Benthic Invertebrates	-	-	-	-	-	-	-
Aquatic/Terrestrial Insects	-	-	-	-	-	-	-
Aquatic Vegetation	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Duck	-	-	-	-	-	-	-
Terrestrial Insects	-	-	-	-	-	-	-
Foliage	-	-	-	-	-	-	-
Woody Vegetation	-	-	-	-	-	-	-
Fruits and Flowers	-	-	-	-	-	-	-
Caribou	Caribou_BG_Future	mg/kg ww	1.00E-03	8.15E-03	3.27E+00	4.35E-01	2.33E+01
Grouse/Ptarmigan	Grouse_BG_Future	mg/kg ww	2.46E-03	1.17E-01	3.37E-01	4.82E-01	5.65E+00
Shrew	-	-	-	-	-	-	-
Mouse	-	-	-	-	-	-	-
Moose	Moose_BG_Future	mg/kg ww	1.60E-03	6.10E-03	9.05E-01	2.23E-01	1.00E-02
Hare	Hare_BG_Future	mg/kg ww	2.00E-03	1.98E-01	5.68E-01	1.77E+00	5.97E+00

Exposure	Code	Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	8.68E-03	1.27E-02	3.87E-04	1.22E-02	1.88E-03
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	7.14E-02	4.29E-01	1.01E-01	6.80E-01	1.62E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	mg/kg-d	1.19E-05	9.71E-05	3.90E-02	5.18E-03	2.78E-01
	Grouse/Ptarmigan	mg/kg-d	4.86E-04	1.00E-02	6.54E-03	2.38E-02	7.71E-02
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	mg/kg-d	1.79E-05	1.22E-03	1.27E-02	2.69E-03	1.19E-04
	Hare	mg/kg-d	2.65E-03	1.20E-01	8.53E-02	7.26E-01	6.79E-01
Total Intake		mg/kg-d	8.33E-02	5.73E-01	2.45E-01	1.45E+00	1.20E+00
TRV		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	1.41	0.55	0.04	0.03	0.02
Concentration		mg/kg ww					

Background		Units	Antimony	Arsenic	Copper	Manganese	Zinc
Intake	Water	mg/kg-d	1.94E-04	3.96E-03	1.38E-04	1.28E-02	2.88E-04
	Sediment	-	-	-	-	-	-
	Soil	mg/kg-d	2.75E-03	4.47E-02	3.88E-02	2.06E-01	1.71E-01
	Benthic Invertebrates	-	-	-	-	-	-
	Aquatic/Terrestrial Insects	-	-	-	-	-	-
	Aquatic Vegetation	-	-	-	-	-	-
	Fish	-	-	-	-	-	-
	Duck	-	-	-	-	-	-
	Terrestrial Insects	-	-	-	-	-	-
	Foliage	-	-	-	-	-	-
	Woody Vegetation	-	-	-	-	-	-
	Fruits and Flowers	-	-	-	-	-	-
	Caribou	mg/kg-d	1.19E-05	9.71E-05	3.90E-02	5.18E-03	2.78E-01
	Grouse/Ptarmigan	mg/kg-d	3.29E-05	1.57E-03	4.52E-03	6.46E-03	7.57E-02
	Shrew	-	-	-	-	-	-
	Mouse	-	-	-	-	-	-
	Moose	mg/kg-d	1.91E-05	7.27E-05	1.08E-02	2.66E-03	1.19E-04
	Hare	mg/kg-d	2.23E-04	2.21E-02	6.34E-02	1.97E-01	6.67E-01
Total Intake		mg/kg-d	3.23E-03	7.25E-02	1.57E-01	4.31E-01	1.19E+00
		mg/kg-d	5.90E-02	1.04E+00	5.60E+00	5.15E+01	7.54E+01
SI Value		-	0.05	0.07	0.03	0.01	0.02
Concentration		mg/kg ww					

APPENDIX N

ECOLOGICAL SENSITIVITY ANALYSIS

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APPENDIX N: ECOLOGICAL SENSITIVITY ANALYSIS

Uncertainty is inherent in risk assessment. For this reason, a sensitivity analysis was undertaken to examine the potential effects of some key areas of uncertainty in the ecological risk assessment (ERA) for the Giant Mine site. These are the factors that were studied:

A. Water/sediment model predictions
B. Use of bioavailability and arsenobetaine assumptions
C. Basis for derivation of toxicity reference values (TRVs)
D. Soil remediation assumptions
E. Basis for terrestrial insect concentrations

N.1 Water/Sediment Model Predictions (Case A)

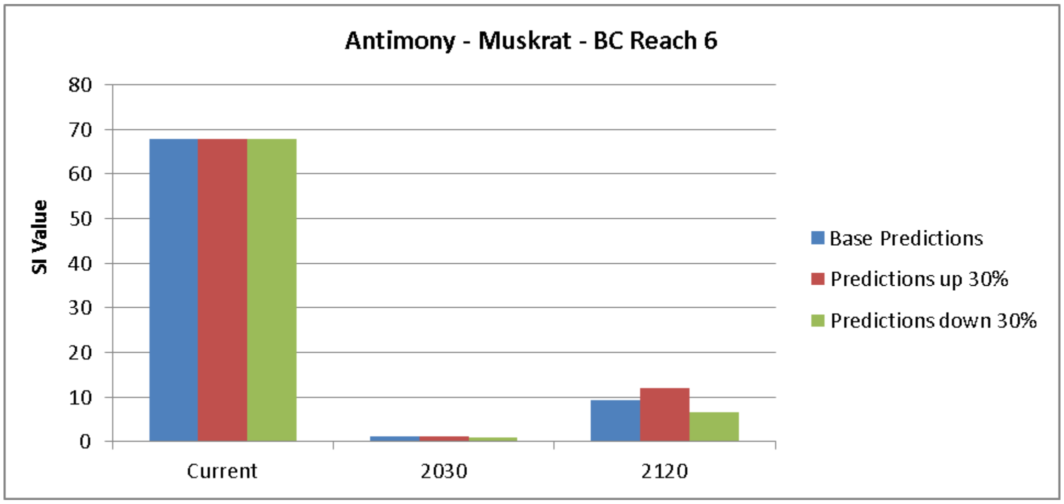
For this sensitivity case, future water and sediment concentrations were varied from the modelled values by ± 30% in Baker Creek and ± 10% in Back Bay. This case examines the potential implication of uncertainty in the modelling including differences to loading estimates, variations in precipitation or flow, biogeochemical influences on sediment, uncertainty with partitioning to sediment, and any improvement in runoff from the Giant Mine over time.

Future climate change may include warmer temperatures, leading to greater precipitation, greater evaporation, changes to the balance between snowfall and rainfall, and changes to the timing of freeze-up and spring freshet. The nature of the Baker Creek watershed means that increased precipitation may be offset to some extent by increased evaporation. Peak flows may also be affected by changes to the seasonal distributions of rainfall, snowfall and snow melt. The range of available climate models is broad, and projections would vary greatly depending on the choice of model and climate change scenario. Furthermore, the models generally project much lower changes in the early time period (e.g., 2040 to 2070) than later periods (e.g., 2070 to 2100). The uncertainty associated with climate model projections, as well as the small changes generally projected in future decades compared to those in the longer term, mean that an historically-based flow regime characterization should be sufficient through mid-century (Golder 2017).

This sensitivity case also addresses potential changes in the future due to climate change. In general, the long-term meteorological data set for Yellowknife shows a trend toward milder temperatures and more precipitation (INAC/GNWT 2010) which can change the balance between snowfall and rainfall and increase evaporation. However, it is difficult to make definitive conclusions on the changes expected over the timeframe of the assessment. In the Giant Mine Developer's Assessment Report (DAR; INAC/GNWT 2010) it was reported that the Canadian Climate Change Scenarios Network (CCCSN) assessment indicated that precipitation may increase by up to 15% over the next 50 years. Therefore a 30% change in the flow of Baker Creek over the 100 year period was selected for the sensitivity case. It is noted thought that a recent assessment by Golder (2017) found that with the uncertainty associated with climate model projections, as well as the small changes generally projected in future decades compared to those in the longer term, mean that an historically-based flow regime characterization should be sufficient through mid-century. As Great Slave Lake is such a large waterbody it is expected that the change would not be as pronounced in this waterbody. There are numerous and varied implications of increased precipitation. An increase in flow would provide additional water for dilution but also has the potential to increase the load from surface runoff. Higher temperatures may increase plankton growth and therefore additional removal of contaminants into sediment but high flow, particularly sporadic flow associated with more extreme precipitation events, can scour and mobilize depositional sediment. Increased water temperatures may also have an impact on chemical reaction kinetics. The future impact of climate change on the aquatic environment is uncertain; therefore, the potential change in water and sediment quality was examined from a potential increase and decrease in the estimated concentrations.

As this change is most relevant to the aquatic environment example, SI values are shown below for muskrat in the Lower Reaches of Baker Creek (Figure N.1) and mink in Back Bay (Figure N.2). As can be seen, increases or decreases in the future predicted water and sediment quality are not expected to affect the estimated screening index (SI) values dramatically or change the overall conclusions of the ERA.

Figure N.1 Sensitivity case A – muskrat – Baker Creek Reach 6



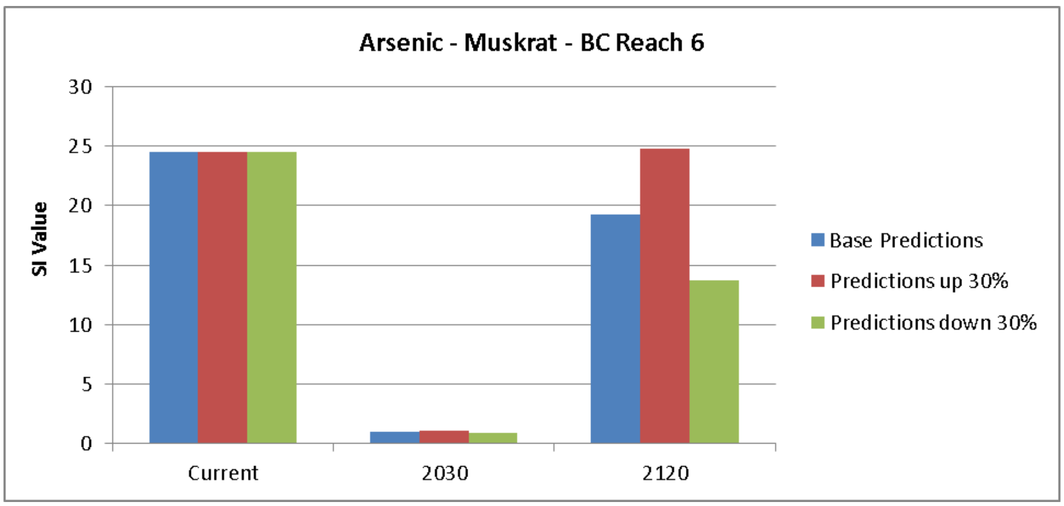
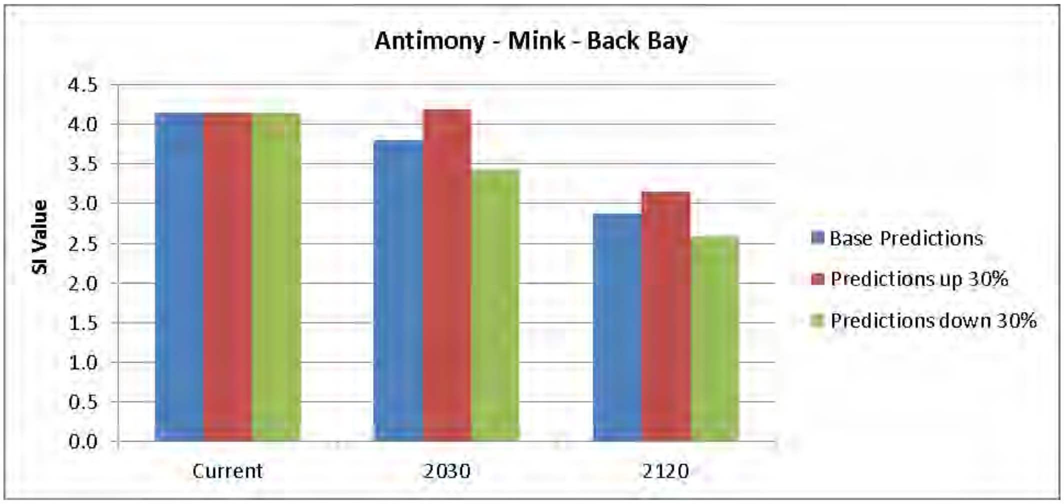
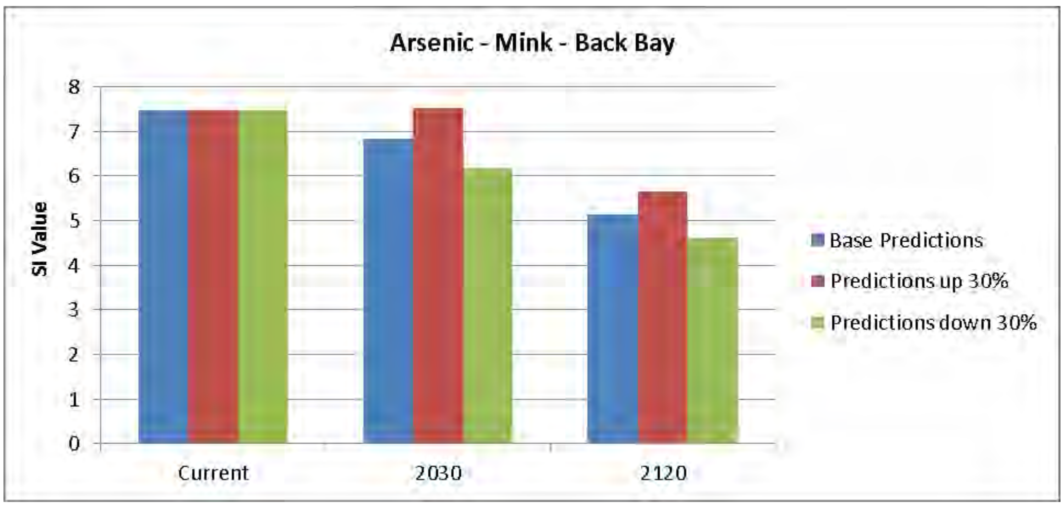


Figure N.2 Sensitivity case A – mink – Back Bay





N.2 Bioavailability and Arsenobetaine Assumptions (Case B)

N.2.1 B1 – Arsenic Bioavailability and Arsenobetaine Assumptions

This sensitivity analysis looked at the uncertainty regarding the understanding of arsenic bioavailability and arsenobetaine content of fish. For this analysis, the arsenic bioavailability was assumed to be 100% with no non-toxic (arsenobetaine) component; this is the most conservative assumption that could be made regarding these factors.

Since bioavailability and arsenobetaine assumptions were only made for arsenic in the ERA, only arsenic is presented below. Examples are provided for muskrat in Baker Creek Reach 6 (Figure N.3), mink in Back Bay (Figure N.4), swallow in Lower Baker Creek (Figure N.5), fox on the entire site (Figure N.6), and lynx on the entire site (Figure N.7). As can be seen, while this assumption has a small effect on results for the smaller receptors, this influence is increased for the larger animals (i.e., fox and lynx) as the effect of the assumption is compounded moving up the food chain. Ignoring available bioavailability information has the potential to change the overall result for the larger receptors, however, the assumption of 100% bioavailability and 100% toxic is overly conservative and not realistic.

Figure N.3 Sensitivity case B1 – muskrat – Baker Creek Reach 6

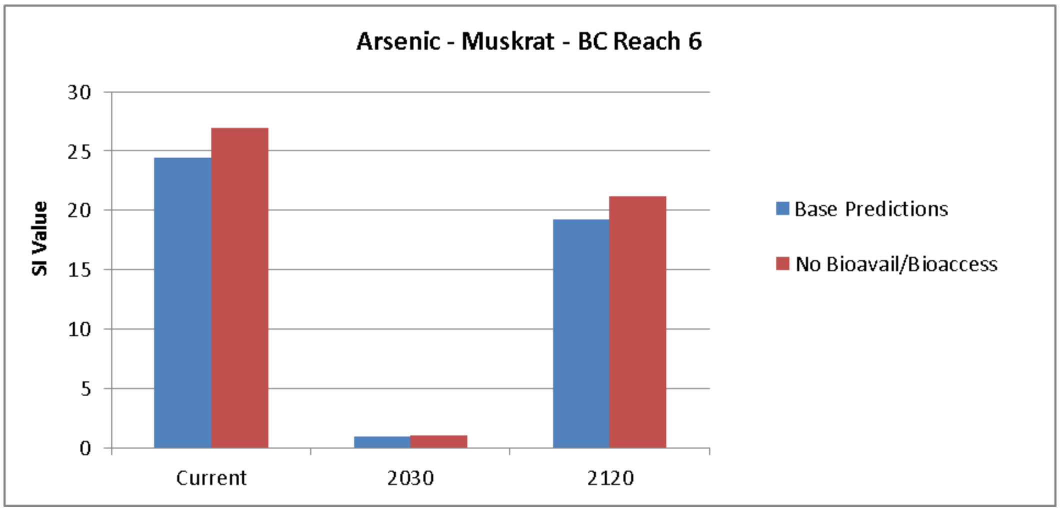


Figure N.4 Sensitivity case B1 – mink – Back Bay

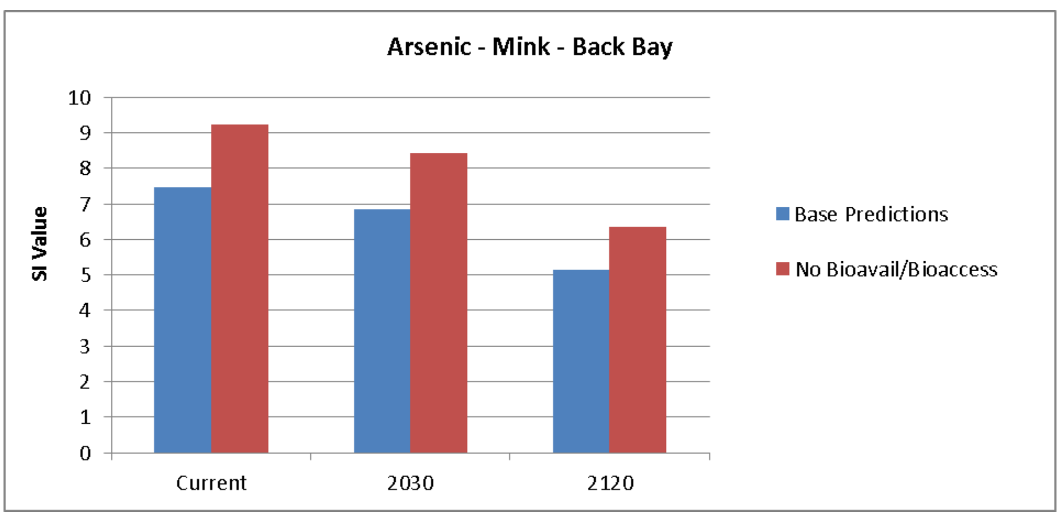


Figure N.5 Sensitivity case B1 – swallow – lower Baker Creek

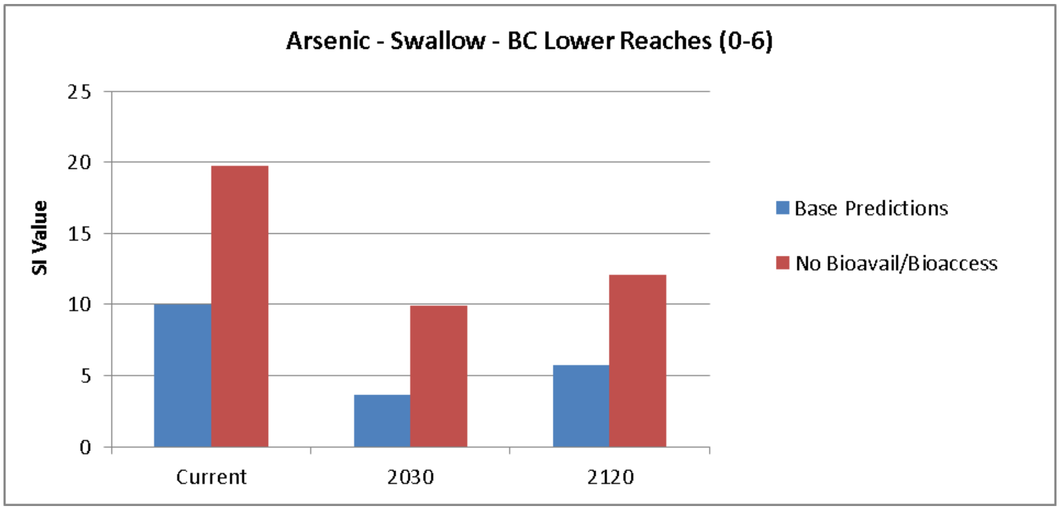


Figure N.6 Sensitivity case B1 – fox – Entire Site

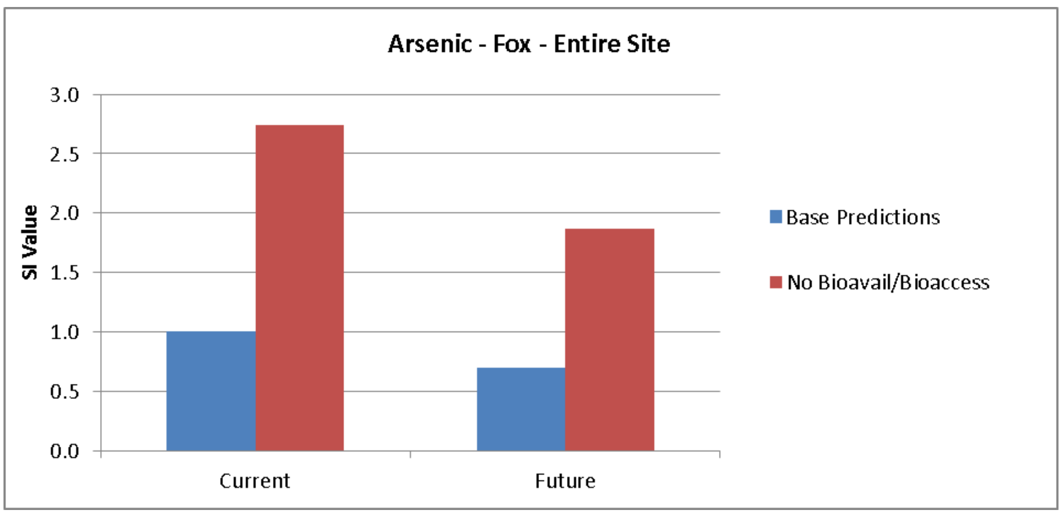
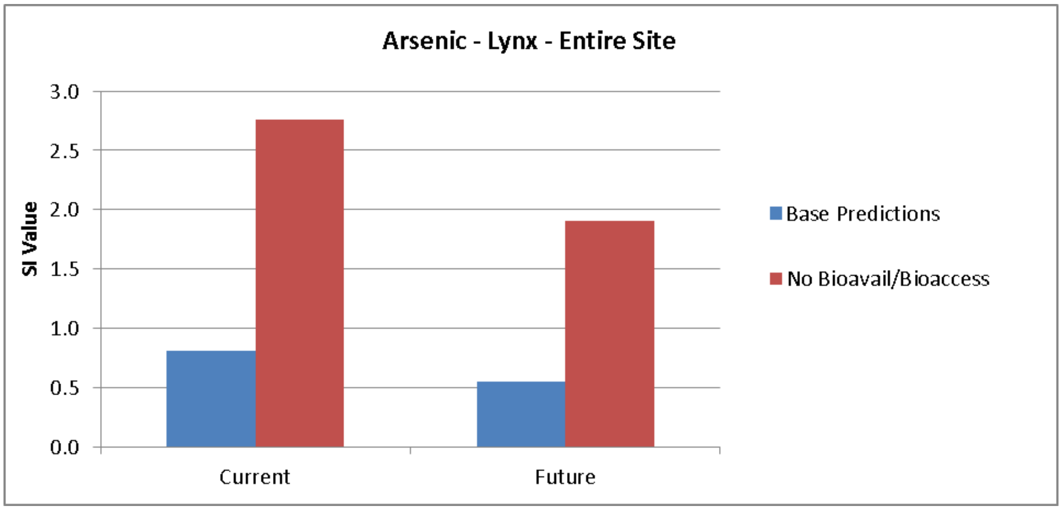


Figure N.7 Sensitivity case B1 – lynx – Entire Site



N.2.2 B2 - Antimony Soil Bioavailability

Bioavailability data were only available for arsenic, for this reason bioavailability assumptions within the ERA were only made for arsenic and the bioavailability of all other COPC were assumed to be 100%. This sensitivity case looks at the implications of applying bioavailability assumptions to antimony in soil. A study completed by Li et al. (2014), which looked at the antimony and arsenic bioaccessibility in highly polluted soils associated with a mine, found that the bioaccessibility values for antimony were in most cases less than 30%. Therefore, for this sensitivity case, the antimony soil bioaccessibility was assumed to be 30%. Examples are shown below for shrew in West of Baker Creek (Figure N.8), bat in East of Baker Creek (Figure N.9), and a lynx on the entire site (Figure N.10). As can be seen, taking into account the bioavailability/bioaccessibility of COPC other than arsenic has the potential to substantially reduce predicted SI values for evaluated receptors. However, as illustrated in the examples provided, SI values for most receptors (both current and future) remain above the benchmark of 1.

Figure N.8 Sensitivity case B2 – shrew – West of Baker Creek

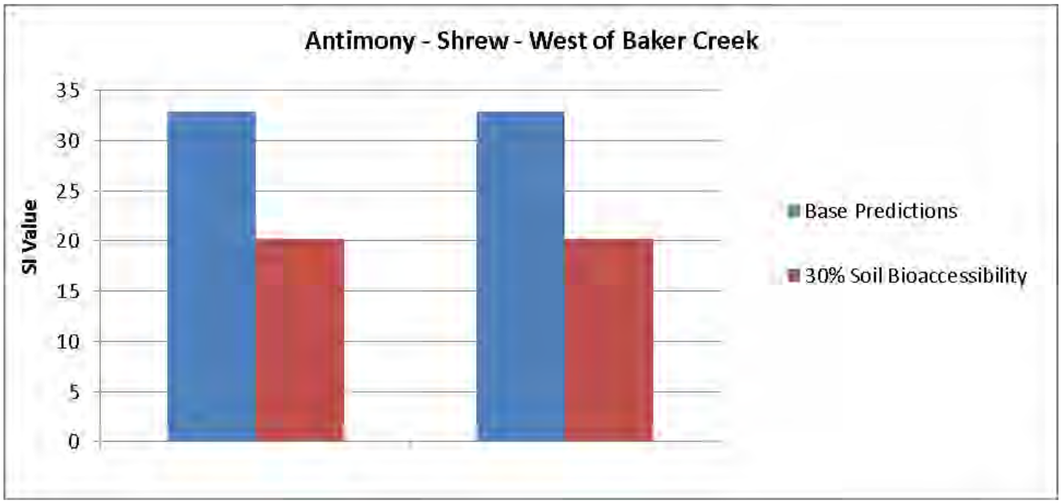


Figure N.9 Sensitivity case B2 – bat – East of Baker Creek

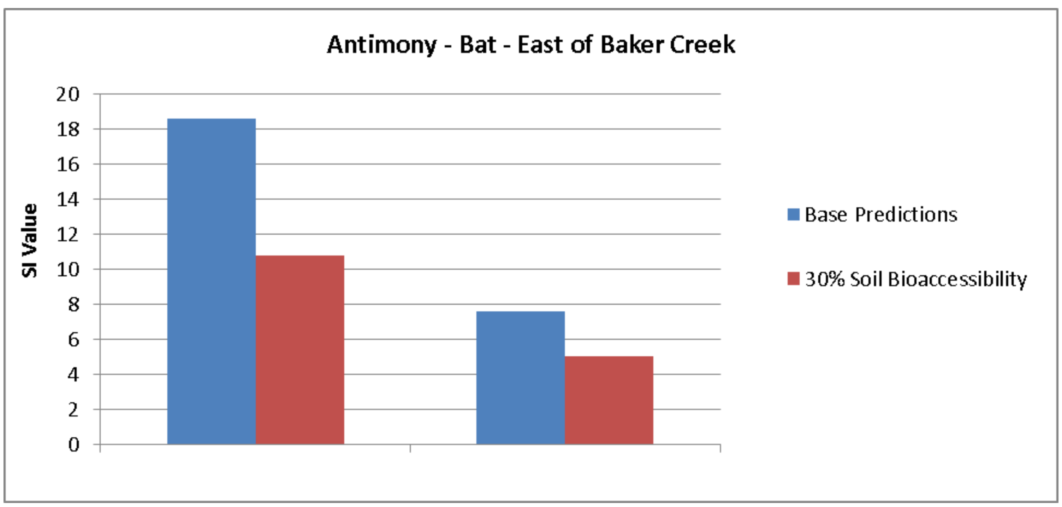
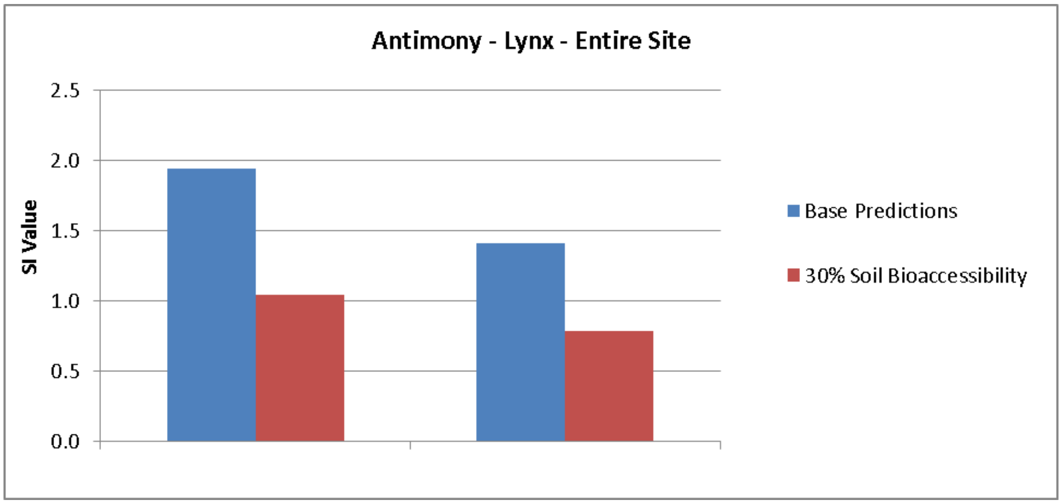


Figure N.10 Sensitivity case B2 – lynx – Entire Site



N.3 Toxicity Reference Values (Case C)

This sensitivity case examined the use of lowest observable adverse effect levels (LOAELs) as toxicity reference values (TRVs) instead of the no observed adverse effect levels (NOAELs) adopted for the ERA. The use of LOAELs is less conservative than using NOAELs and is an accepted approach in many jurisdictions.

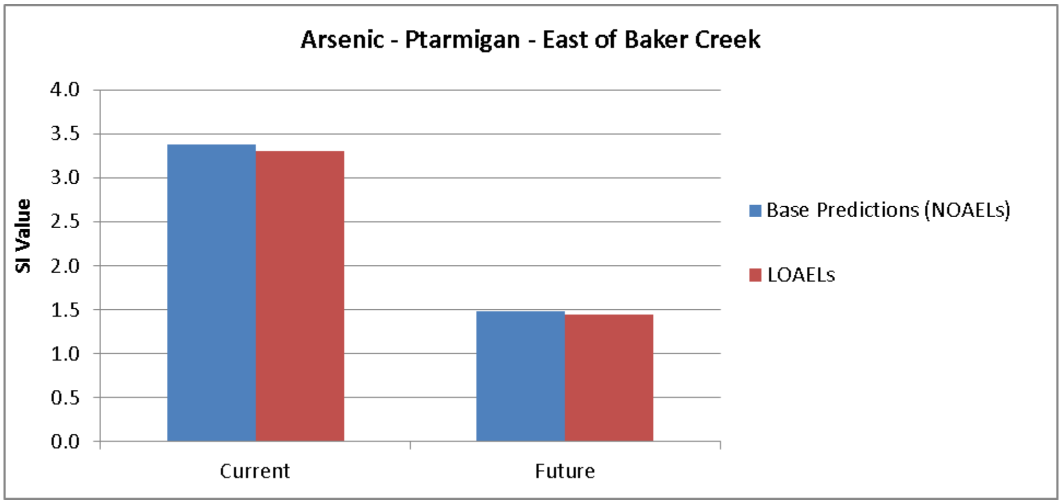
The NOAEL-based TRVs (used in the ERA) and LOAEL-based TRVs (used in this sensitivity analysis) are presented below in Table N.1. The shading in the table indicates that there were no SI values predicted to be above the benchmark of 1 for any receptors using the NOAEL benchmarks and so these combinations of receptors and COPC are not discussed further. Examples for this sensitivity case include swallow in East of Baker Creek (Figure N.11), shrew in West of Baker Creek (Figure N.12), and fox on the entire site (Figure N.13). As can be seen, the use of LOAELs over NOAELs can change results substantially in those cases where the two TRVs are very different. While this changes the outcome for a number of receptors, there are some future SI values that are expected to remain above 1; this includes some locations for antimony (shrew), arsenic (ptarmigan, swallow, shrew), and manganese (mouse, bat, swallow, shrew) so is unlikely to change the overall conclusions of the ERA.

Table N.1 Summary of NOAEL and LOAEL based TRVs

COPC	Mammals				Birds			
	NOAEL TRV (mg/kg-d)	Source	LOAEL TRV (mg/kg-d)	Comment	NOAEL TRV (mg/kg-d)	Source	LOAEL TRV (mg/kg-d)	Comment
Antimony	0.059	Eco-SSL (U.S. EPA 2005a)	1.14	Geometric mean of three LOAELs [a]	-	-	-	-
Arsenic	1.04	Eco-SSL (U.S. EPA 2005b)	5.7	Geometric mean of the LOAELs for growth, reproduction and survival [a]	4.4	CEAEQ (2012)	4.5	Geometric mean of the LOAELs for growth, reproduction and survival [a]
Copper	5.6	Eco-SSL (U.S. EPA 2007a)	38	Geometric mean of the NOAELs for growth, reproduction and survival [a]	4.5	CEAEQ (2012)	37	Geometric mean of the LOAELs for growth, reproduction and survival [a]
Manganese	51.5	Eco-SSL (U.S. EPA 2007b)	146	Geometric mean for the LOAELs for growth and reproduction [a]	179	Eco-SSL (U.S. EPA 2007b)	348	Lowest bounded LOAEL for growth [a]
Zinc	75.4	Eco-SSL (U.S. EPA 2007c)	290	Geometric mean of the LOAELs for growth, reproduction and survival [a]	66.1	Eco-SSL (U.S. EPA 2007c)	190	Geometric mean of the LOAELs for growth, reproduction and survival [a]

Note: [a] for further details see Appendix L

Figure N.11 Sensitivity case C – ptarmigan – East of Baker Creek



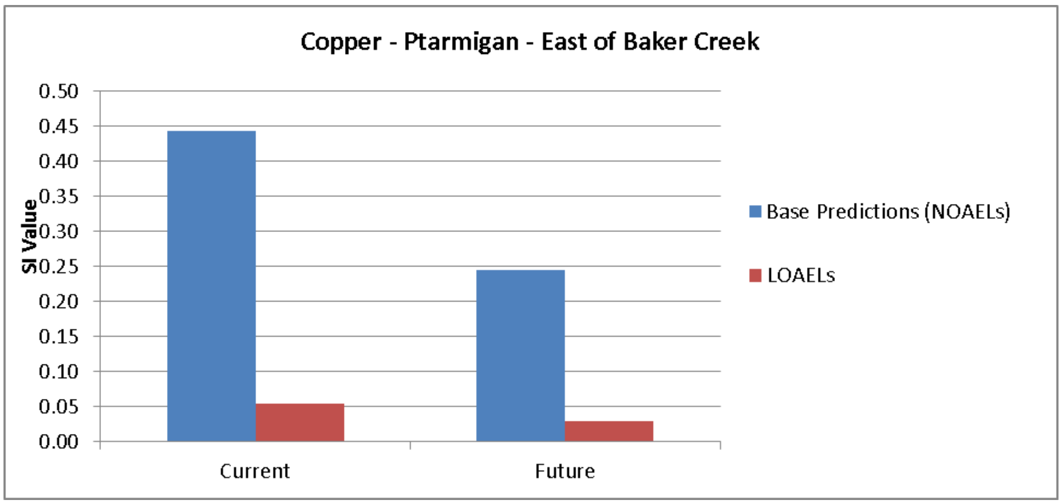
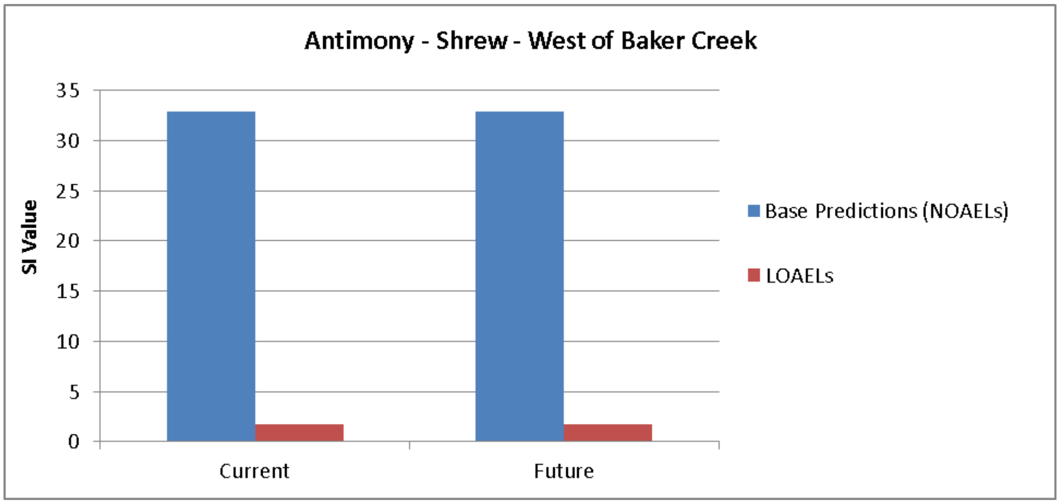
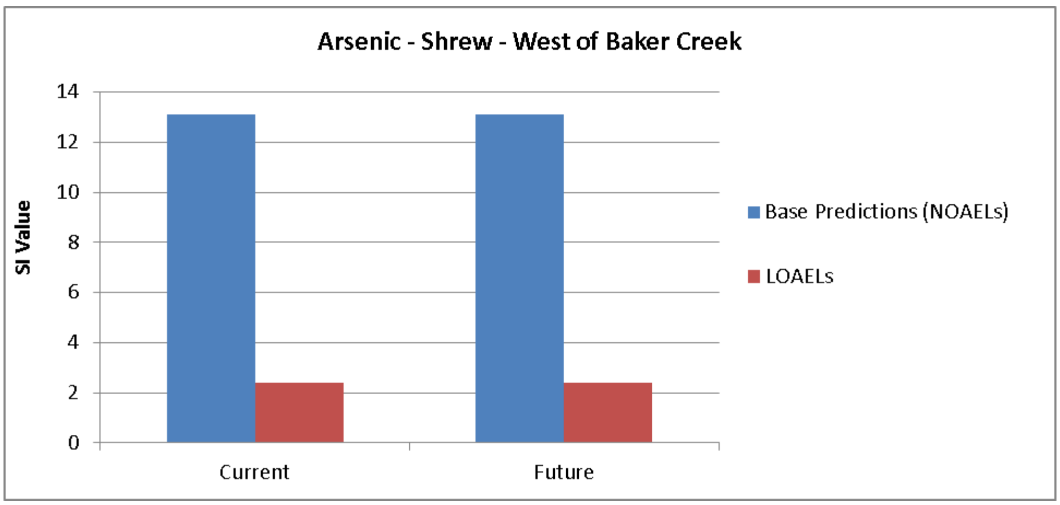


Figure N.12 Sensitivity case C – shrew – West of Baker Creek





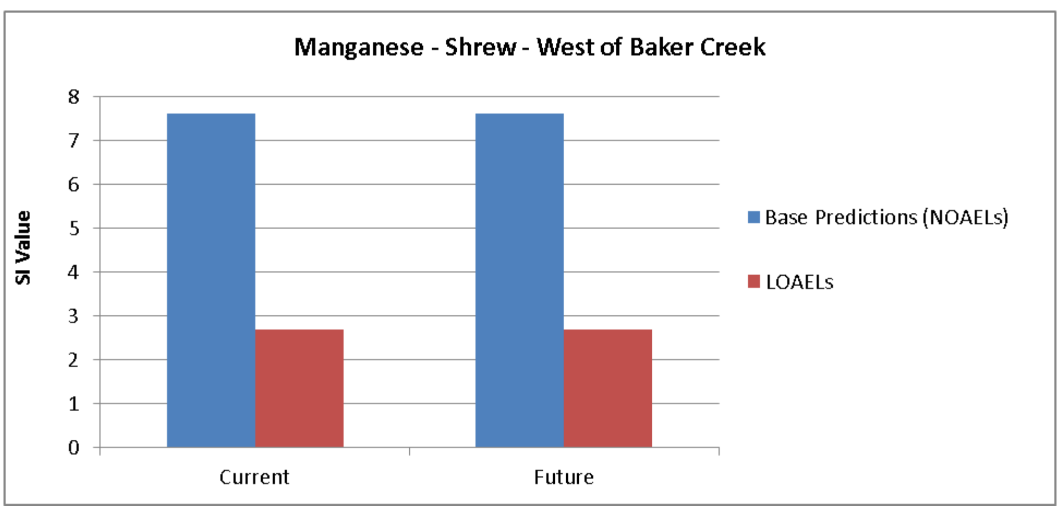
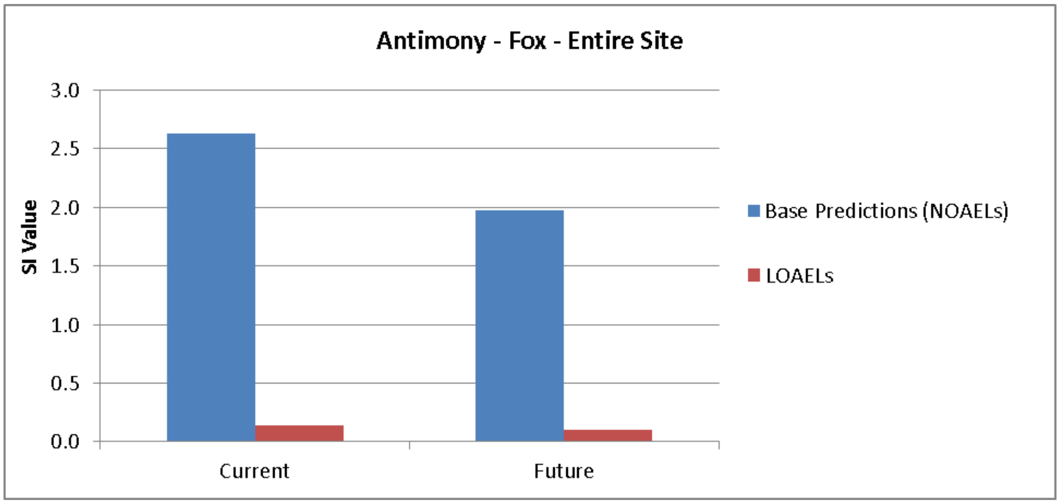


Figure N.13 Sensitivity case C – fox – Entire Site

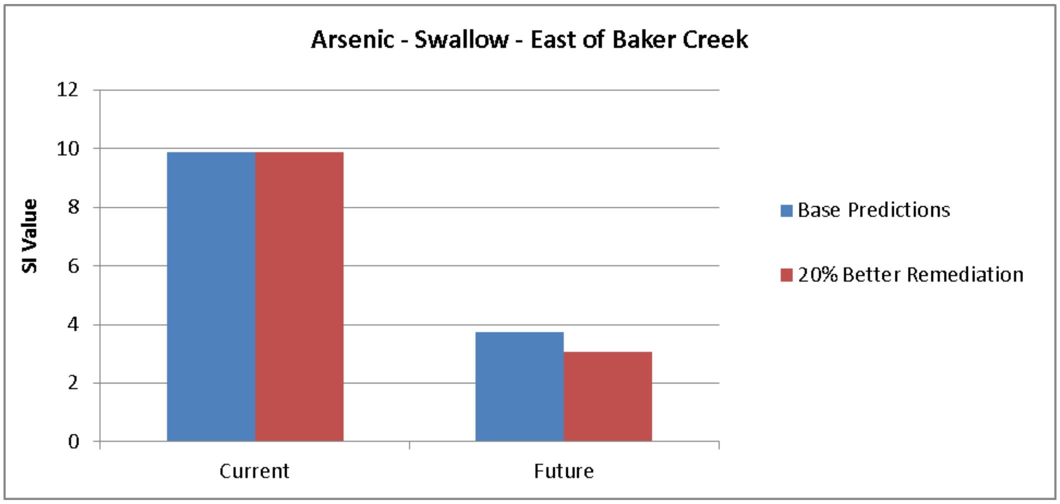


N.4 Soil Remediation (Case D)

Sensitivity case D looked at the sensitivity of results to assumed post-remediation soil concentrations at the Giant Mine. This analysis was done to capture uncertainty regarding the final remediation of the site and to see if there would be substantive changes to the ERA results if plans change and more of the site is addressed. This study investigated the potential effect if the soil remediation was able to achieve 20% lower soil concentrations than currently predicted.

Example results are shown below for swallow in East of Baker Creek (Figure N.14), Shrew in East of Baker Creek (Figure N.15), and fox on the entire site (Figure N.16). As can be seen, 20% improvement in future soil levels is predicted to make only a slight difference to calculated SI values and so the uncertainty in soil remediation planning and execution is unlikely to change the overall outcomes of the ERA.

Figure N.14 Sensitivity case D – swallow – East of Baker Creek



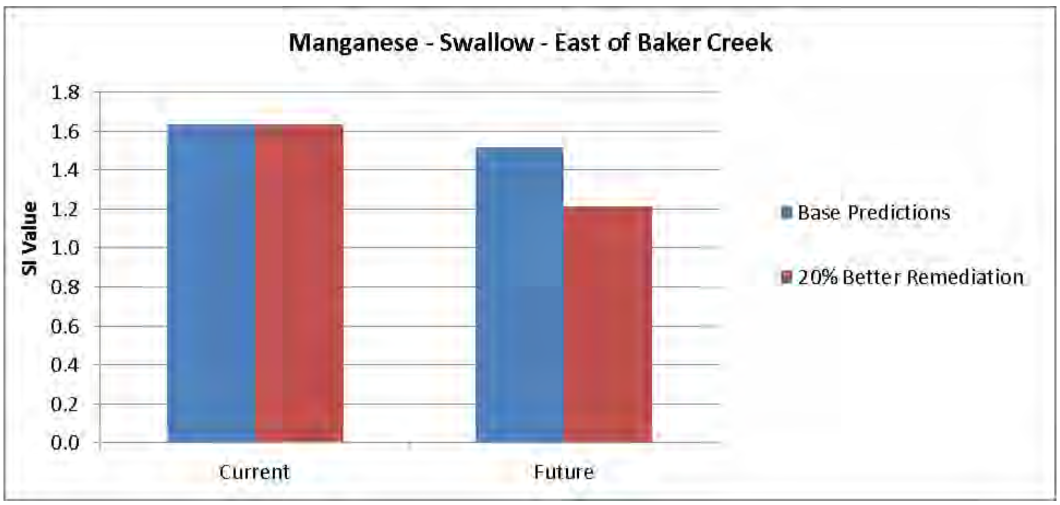
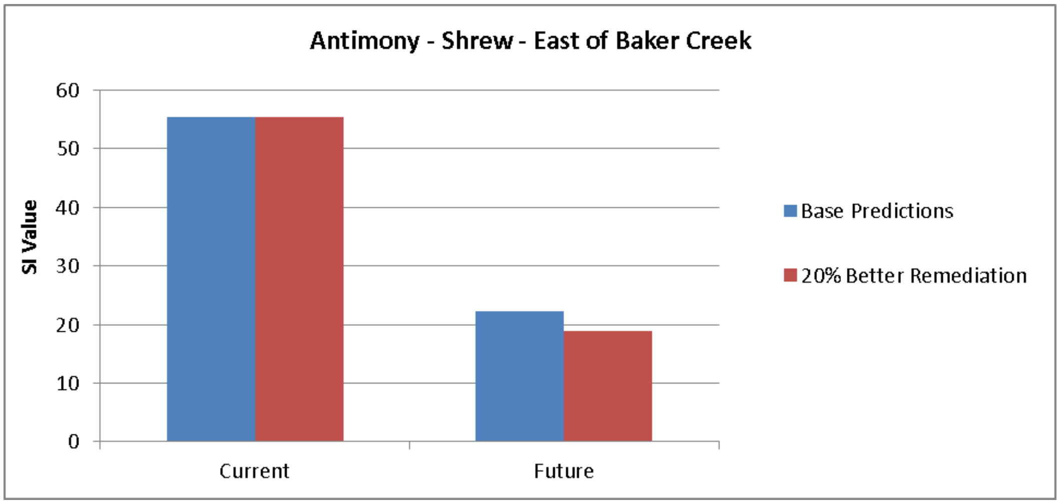
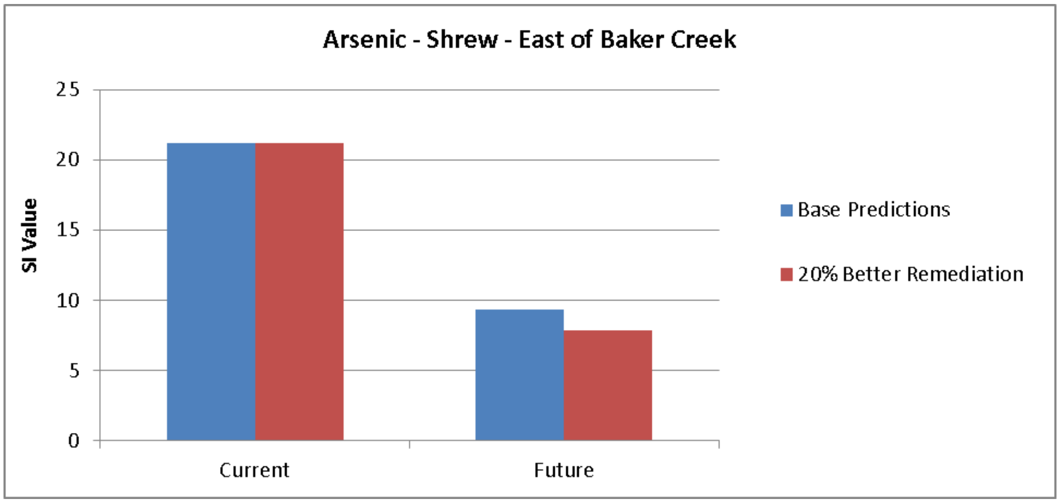


Figure N.15 Sensitivity case D – shrew – East of Baker Creek





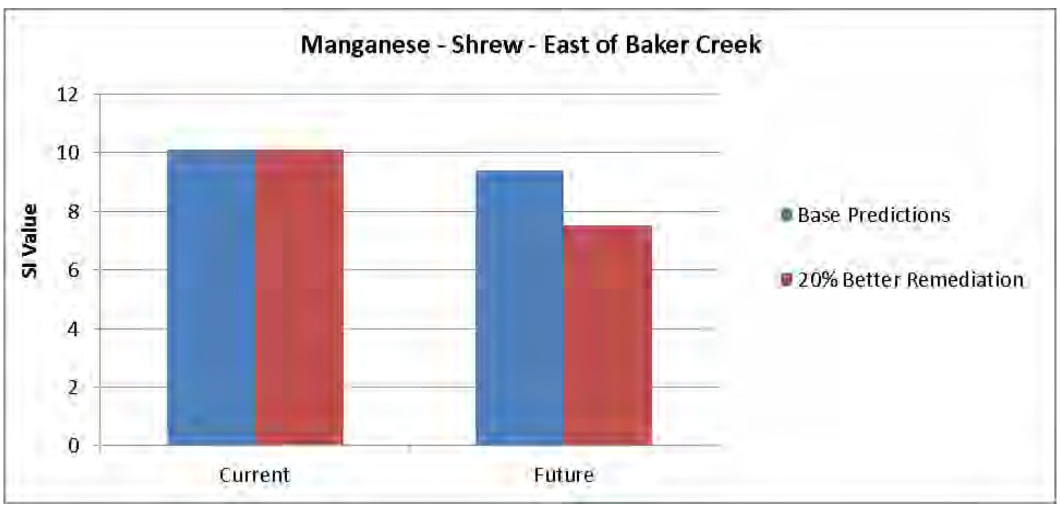
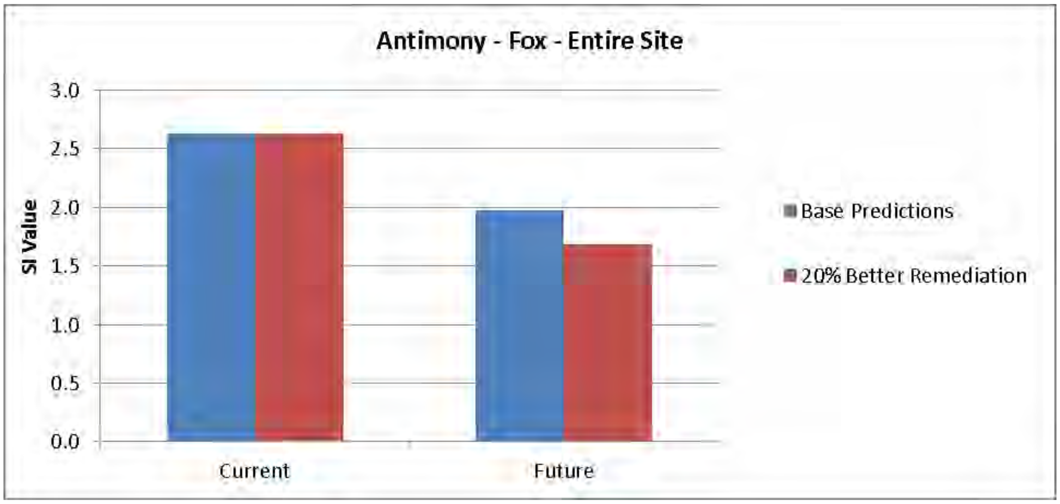
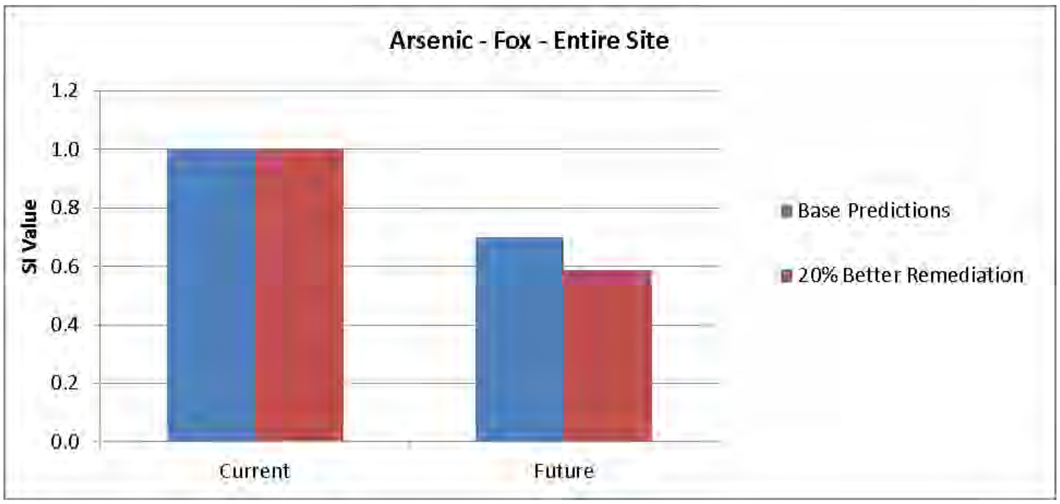


Figure N.16 Sensitivity case D – fox – Entire Site





N.5 Terrestrial Insects (Case E)

Mammals and birds that consume insects were identified as a potential concern in the ERA. The concentration of COPC within terrestrial insects is a large uncertainty in this ERA as there are no data available for insects. Within the ERA, the terrestrial insects are set equal to concentrations within foliage.

Some studies suggest that insects may have higher concentrations than vegetation (e.g., Hernout et al. (2013) suggest copper and zinc levels in insects may be comparable to soil). The levels of essential elements such as copper and zinc may not be a direct reflection of the soil concentration however, due to active regulation of these elements by insects.

For arsenic it is possible that insects are less than vegetation. In this sensitivity case, a slightly less conservative approach was adopted and it is assumed that the insect concentrations are equal to the bioavailable fraction of arsenic in the foliage and not the entire concentration, as was assumed in the ERA calculations.

Examples are shown below for bat in East of Baker Creek (Figure N.17), shrew in South of Baker Creek (Figure N.18), and fox on the entire site (Figure N.19). As can be seen, there is a moderate difference between SI values for the two cases for the smaller mammals who consume terrestrial insects as a large portion of their diet; a much smaller difference is not seen for larger animals that consume a wider range of mammals and birds as their diet. Similar to other sensitivity cases, while this additional assumption does improve SI values for some receptors, SI values for most receptors remain above the benchmark of 1.

Figure N.17 Sensitivity case E – bat – East of Baker Creek

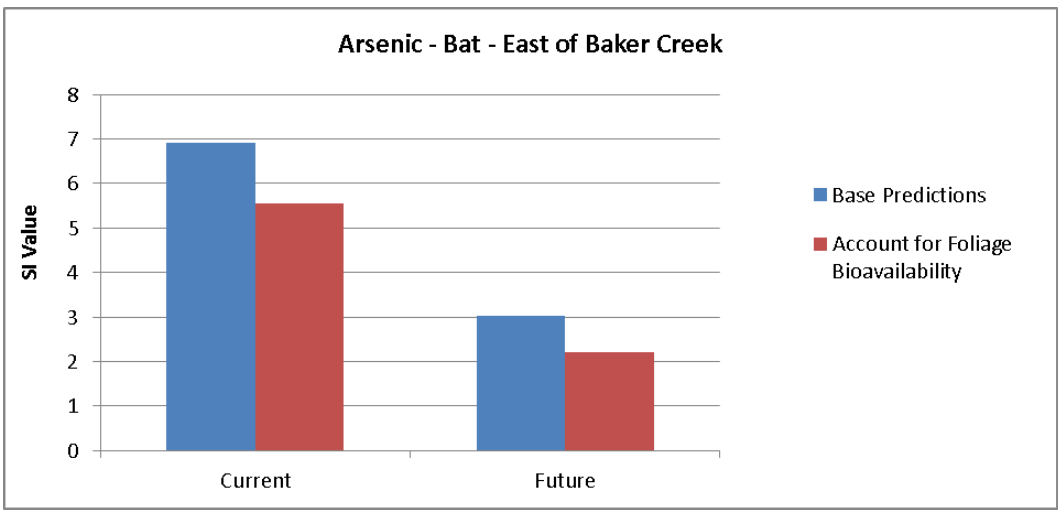


Figure N.18 Sensitivity case E – shrew – South Baker Creek

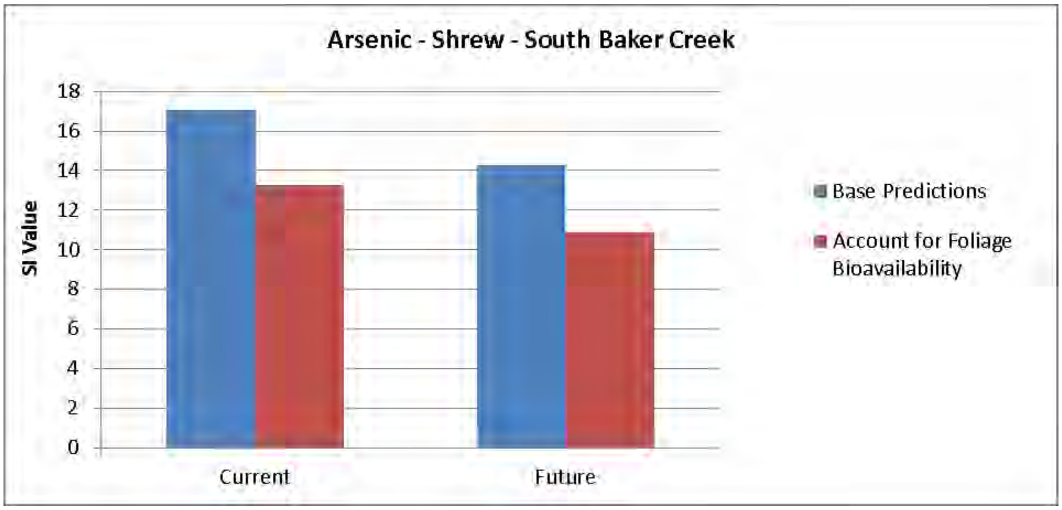
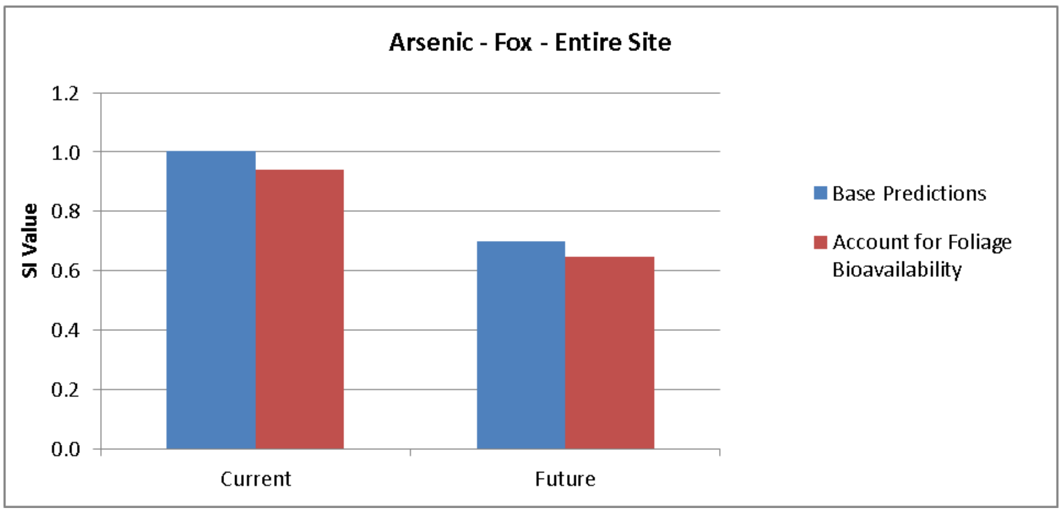


Figure N.19 Sensitivity case E – fox – Entire Site



N.6 Summary

A number of factors were investigated to evaluate the potential for uncertainty to change the overall outcomes of the ERA.

It was seen that the conclusions of the ERA are fairly insensitive to uncertainty in surface water/sediment modelling (case A) and to assumptions regarding the soil remediation (case D).

The results for larger receptors were seen to be sensitive to arsenic accessibility/toxicity assumptions (case B-1), however, the test assumptions of 100% bioavailability and 100% toxicity are overly conservative and, as shown by the available data, not realistic.

Both reducing the antimony soil bioavailability to a number which is likely more realistic (case B-2) and changing the basis for terrestrial insect concentrations (case E) resulted in reduced SI values for some receptors; however, additional site data on bioavailability in COPC other than arsenic and insect concentrations would be needed prior to implementing more realistic assumptions such as these within the ERA.

The use of less conservative TRVs (case C) could potentially have a substantial impact on the calculated SI values. Despite this, however, there are still many receptors with SI values above 1, indicating a potential for adverse effects. In addition, this approach is not appropriate for use with species at risk, such as the little brown bat and barn swallow.

In conclusion, while uncertainty in some factors may change predicted SI values for evaluated receptors, in every sensitivity case SI values for some receptors remained well above the benchmark of 1. For this reason uncertainty related to the examined factors is not expected to change the overall findings of the ERA.

N.7 Literature Cited

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LIST OF ATTACHMENTS

ATTACHMENT N.1

FULL ERA SENSITIVITY ANALYSIS RESULTS

APPENDIX N – ATTACHMENT 1: FULL ERA SENSITIVITY ANALYSIS RESULTS

This attachment provides a full set of results for the ERA sensitivity analysis.

Table 1a. Sensitivity results for case A (water/sediment higher than predicted)

2030

Receptor	Location	SI Values	
		Antimony	Arsenic
Muskrat	BC Reach 0	**1.9**	0.7
Muskrat	BC Reach 1-3	**3.0**	**1.0**
Muskrat	BC Reach 4-5	**1.5**	0.9
Muskrat	BC Reach 6	**1.3**	**1.1**
Muskrat	Back Bay	**7.0**	**13.6**
Mink	BC Lower Reaches (0-6)	0.6	0.4
Mink	Back Bay	**4.2**	**7.5**
Mallard	BC Lower Reaches (0-6)	-	0.3
Mallard	Back Bay	-	**6.5**
Grebe	BC Lower Reaches (0-6)	-	0.5
Grebe	Back Bay	-	**11.6**
Merganser	BC Lower Reaches (0-6)	-	0.1
Merganser	Back Bay	-	0.8
Bat	BC Lower Reaches (0-6)	**6.0**	**2.1**
Bat	Back Bay	**2.8**	**5.3**
Swallow	BC Lower Reaches (0-6)	-	**3.7**
Swallow	Back Bay	-	**2.4**
Osprey	Back Bay/ Baker Creek	-	0.1

2120

Receptor	Location	SI Values	
		Antimony	Arsenic
Muskrat	BC Reach 0	**23.9**	**9.0**
Muskrat	BC Reach 1-3	**42.3**	**22.0**
Muskrat	BC Reach 4-5	**15.9**	**18.2**
Muskrat	BC Reach 6	**12.0**	**24.7**
Muskrat	Back Bay	**5.3**	**10.3**
Mink	BC Lower Reaches (0-6)	**14.1**	**10.6**
Mink	Back Bay	**3.2**	**5.7**
Mallard	BC Lower Reaches (0-6)	-	**8.7**
Mallard	Back Bay	-	**4.9**
Grebe	BC Lower Reaches (0-6)	-	**15.7**
Grebe	Back Bay	-	**8.7**
Merganser	BC Lower Reaches (0-6)	-	**1.1**
Merganser	Back Bay	-	0.6
Bat	BC Lower Reaches (0-6)	**12.4**	**8.8**
Bat	Back Bay	**2.3**	**4.0**
Swallow	BC Lower Reaches (0-6)	-	**6.4**
Swallow	Back Bay	-	**1.9**
Osprey	Back Bay/ Baker Creek	-	0.1

Table 1b. Sensitivity results for case A (water/sediment lower than predicted)

2030

Receptor	Location	SI Values	
		Antimony	Arsenic
Muskrat	BC Reach 0	**1.7**	0.5
Muskrat	BC Reach 1-3	**2.8**	0.8
Muskrat	BC Reach 4-5	**1.2**	0.7
Muskrat	BC Reach 6	**1.0**	0.9
Muskrat	Back Bay	**5.7**	**11.2**
Mink	BC Lower Reaches (0-6)	0.4	0.3
Mink	Back Bay	**3.4**	**6.2**
Mallard	BC Lower Reaches (0-6)	-	0.2
Mallard	Back Bay	-	**5.3**
Grebe	BC Lower Reaches (0-6)	-	0.3
Grebe	Back Bay	-	**9.5**
Merganser	BC Lower Reaches (0-6)	-	0.1
Merganser	Back Bay	-	0.6
Bat	BC Lower Reaches (0-6)	**5.9**	**2.0**
Bat	Back Bay	**2.4**	**4.4**
Swallow	BC Lower Reaches (0-6)	-	**3.6**
Swallow	Back Bay	-	**2.0**
Osprey	Back Bay/ Baker Creek	-	0.1

2120

Receptor	Location	SI Values	
		Antimony	Arsenic
Muskrat	BC Reach 0	13	5.0
Muskrat	BC Reach 1-3	23	1
Muskrat	BC Reach 4-5	8.7	10
Muskrat	BC Reach 6	6.5	14
Muskrat	Back Bay	4.3	8.5
Mink	BC Lower Reaches (0-6)	7.7	5.7
Mink	Back Bay	2.6	4.6
Mallard	BC Lower Reaches (0-6)	-	4.7
Mallard	Back Bay	-	4.0
Grebe	BC Lower Reaches (0-6)	-	8.5
Grebe	Back Bay	-	7.1
Merganser	BC Lower Reaches (0-6)	-	0.6
Merganser	Back Bay	-	0.5
Bat	BC Lower Reaches (0-6)	9.4	5.6
Bat	Back Bay	2.0	3.3
Swallow	BC Lower Reaches (0-6)	-	5.1
Swallow	Back Bay	-	1.6
Osprey	Back Bay/ Baker Creek	-	0.1

Table 2a. Sensitivity results for case B1

Current

Receptor	Location	SI Values	
		Antimony	Arsenic
Muskrat	BC Reach 0	57	25
Muskrat	BC Reach 1-3	34	33
Muskrat	BC Reach 4-5	83	43
Muskrat	BC Reach 6	68	27
Muskrat	Back Bay	6.9	15
Mink	BC Lower Reaches (0-6)	37	20
Mink	Back Bay	4.1	9.2
Mallard	BC Lower Reaches (0-6)	-	14
Mallard	Back Bay	-	6.7
Grebe	BC Lower Reaches (0-6)	-	26
Grebe	Back Bay	-	12
Merganser	BC Lower Reaches (0-6)	-	2.3
Merganser	Back Bay	-	1.1
Bat	BC Lower Reaches (0-6)	25.8	19
Bat	Back Bay	5.8	8.0
Swallow	BC Lower Reaches (0-6)	-	20
Swallow	Back Bay	-	7.6
Osprey	Back Bay/ Baker Creek	-	0.6

2030

Receptor	Location	SI Values	
		Antimony	Arsenic
Muskrat	BC Reach 0	1.8	0.6
Muskrat	BC Reach 1-3	2.9	1.0
Muskrat	BC Reach 4-5	1.4	0.9
Muskrat	BC Reach 6	1.1	1.0
Muskrat	Back Bay	6.4	14
Mink	BC Lower Reaches (0-6)	0.5	0.6
Mink	Back Bay	3.8	8.4
Mallard	BC Lower Reaches (0-6)	-	0.2
Mallard	Back Bay	-	6.1
Grebe	BC Lower Reaches (0-6)	-	0.4
Grebe	Back Bay	-	11
Merganser	BC Lower Reaches (0-6)	-	0.2
Merganser	Back Bay	-	1.0
Bat	BC Lower Reaches (0-6)	6.0	5.4
Bat	Back Bay	2.6	5.2
Swallow	BC Lower Reaches (0-6)	-	9.9
Swallow	Back Bay	-	2.8
Osprey	Back Bay/ Baker Creek	-	0.2

2120

Receptor	Location	SI Values	
		Antimony	Arsenic
Muskrat	BC Reach 0	18	7.7
Muskrat	BC Reach 1-3	33	19
Muskrat	BC Reach 4-5	12	16
Muskrat	BC Reach 6	9.3	21
Muskrat	Back Bay	4.8	11
Mink	BC Lower Reaches (0-6)	11	9.6
Mink	Back Bay	2.9	6.3
Mallard	BC Lower Reaches (0-6)	-	6.9
Mallard	Back Bay	-	4.6
Grebe	BC Lower Reaches (0-6)	-	13
Grebe	Back Bay	-	8.4
Merganser	BC Lower Reaches (0-6)	-	1.1
Merganser	Back Bay	-	0.7
Bat	BC Lower Reaches (0-6)	11	11
Bat	Back Bay	2.1	4.0
Swallow	BC Lower Reaches (0-6)	-	12
Swallow	Back Bay	-	2.3
Osprey	Back Bay/ Baker Creek	-	0.3

CURRENT

Receptor	Location	SI Values				
		Antimony	Arsenic	Copper	Manganese	Zinc
Mouse	Trapper Lake North	2.2	1.8	0.10	2.1	$4.3x10^{-3}$
Mouse	West of Baker Creek	7.5	5.7	0.09	1.6	$4.4x10^{-3}$
Mouse	East of Baker Creek	12	13	0.16	2.2	$8.8x10^{-3}$
Mouse	South of Baker Creek	5.8	7.6	0.11	2.4	$5.7x10^{-3}$
Hare	Trapper Lake North	3.2	3.0	0.12	1.7	$6.5x10^{-3}$
Hare	West of Baker Creek	13	11	0.10	1.3	$6.8x10^{-3}$
Hare	East of Baker Creek	22	22	0.25	1.7	0.02
Hare	South of Baker Creek	9.5	15	0.13	1.9	$8.8x10^{-3}$
Bat	Trapper Lake North	3.2	2.8	0.15	2.9	$6.5x10^{-3}$
Bat	West of Baker Creek	11	8.9	0.13	2.3	$6.7x10^{-3}$
Bat	East of Baker Creek	19	15	0.25	3.0	0.01
Bat	South of Baker Creek	8.5	12	0.16	3.3	$8.4x10^{-3}$
Ptarmigan	Trapper Lake North	-	1.1	0.20	0.51	0.01
Ptarmigan	West of Baker Creek	-	3.7	0.15	0.40	0.01
Ptarmigan	East of Baker Creek	-	7.6	0.44	0.54	0.03
Ptarmigan	South of Baker Creek	-	5.2	0.22	0.58	0.01
Swallow	Trapper Lake North	-	4.0	0.71	1.5	0.04
Swallow	West of Baker Creek	-	14	0.52	1.2	0.04
Swallow	East of Baker Creek	-	26	1.7	1.6	0.10
Swallow	South of Baker Creek	-	20	0.77	1.8	0.05
Shrew	Trapper Lake North	10	8.7	0.48	9.6	0.02
Shrew	West of Baker Creek	33	27	0.43	7.6	0.02
Shrew	East of Baker Creek	55	47	0.77	10	0.04
Shrew	South of Baker Creek	25	37	0.50	11	0.03
Fox	Entire Site	2.6	2.7	0.04	0.28	0.01
Falcon	Entire Site	-	0.67	0.05	$5.2x10^{-3}$	0.03
Owl	Entire Site	-	2.5	0.13	0.02	0.05
Lynx	Entire Site	1.9	2.8	0.05	0.02	0.02

POST-REMEDIATION (NOTE: Uses current water)

Receptor	Location	SI Values				
		Antimony	Arsenic	Copper	Manganese	Zinc
Mouse	Trapper Lake North	2.2	1.8	0.10	2.1	$4.3x10^{-3}$
Mouse	West of Baker Creek	7.5	5.7	0.09	1.6	$4.4x10^{-3}$
Mouse	East of Baker Creek	5.3	6.0	0.11	2.0	$8.4x10^{-3}$
Mouse	South of Baker Creek	5.5	6.3	0.11	3.1	$5.7x10^{-3}$
Hare	Trapper Lake North	3.2	3.0	0.12	1.7	$6.5x10^{-3}$
Hare	West of Baker Creek	13	11	0.10	1.3	$6.8x10^{-3}$
Hare	East of Baker Creek	8.3	8.7	0.15	1.6	0.02
Hare	South of Baker Creek	8.9	12	0.13	2.4	$8.8x10^{-3}$
Bat	Trapper Lake North	3.2	2.8	0.15	2.9	$6.5x10^{-3}$
Bat	West of Baker Creek	11	8.9	0.13	2.3	$6.7x10^{-3}$
Bat	East of Baker Creek	7.6	6.0	0.17	2.8	0.01
Bat	South of Baker Creek	8.0	9.8	0.16	4.2	$8.4x10^{-3}$
Ptarmigan	Trapper Lake North	-	1.1	0.20	0.51	0.01
Ptarmigan	West of Baker Creek	-	3.7	0.15	0.40	0.01
Ptarmigan	East of Baker Creek	-	3.0	0.25	0.50	0.03
Ptarmigan	South of Baker Creek	-	4.2	0.22	0.75	0.01
Swallow	Trapper Lake North	-	4.0	0.71	1.5	0.04
Swallow	West of Baker Creek	-	14	0.52	1.2	0.04
Swallow	East of Baker Creek	-	9.4	0.89	1.5	0.10
Swallow	South of Baker Creek	-	16	0.77	2.3	0.05
Shrew	Trapper Lake North	10	8.7	0.48	9.6	0.02
Shrew	West of Baker Creek	33	27	0.43	7.6	0.02
Shrew	East of Baker Creek	22	18	0.54	9.4	0.04
Shrew	South of Baker Creek	24	30	0.50	14	0.03
Fox	Entire Site	2.0	1.9	0.03	0.26	0.01
Falcon	Entire Site	-	0.47	0.05	$5.1x10^{-3}$	0.03
Owl	Entire Site	-	1.7	0.13	0.02	0.05
Lynx	Entire Site	1.4	1.9	0.05	0.02	0.02

Table 2b. Sensitivity results for case B2

CURRENT

Receptor	Location	SI Values				
		Antimony	Arsenic	Copper	Manganese	Zinc
Mouse	Trapper Lake North	1.6	0.99	0.10	2.1	$4.3x10^{-3}$
Mouse	West of Baker Creek	4.9	2.7	0.09	1.6	$4.4x10^{-3}$
Mouse	East of Baker Creek	7.3	7.7	0.16	2.2	$8.8x10^{-3}$
Mouse	South of Baker Creek	3.9	3.5	0.11	2.4	$5.7x10^{-3}$
Hare	Trapper Lake North	2.0	1.3	0.12	1.7	$6.5x10^{-3}$
Hare	West of Baker Creek	7.1	4.2	0.10	1.3	$6.8x10^{-3}$
Hare	East of Baker Creek	12	10	0.25	1.7	0.02
Hare	South of Baker Creek	5.4	5.7	0.13	1.9	$8.8x10^{-3}$
Bat	Trapper Lake North	2.3	1.6	0.15	2.9	$6.5x10^{-3}$
Bat	West of Baker Creek	6.9	4.3	0.13	2.3	$6.7x10^{-3}$
Bat	East of Baker Creek	11	6.9	0.25	3.0	0.01
Bat	South of Baker Creek	5.4	5.6	0.16	3.3	$8.4x10^{-3}$
Ptarmigan	Trapper Lake North	-	0.42	0.20	0.51	0.01
Ptarmigan	West of Baker Creek	-	1.4	0.15	0.40	0.01
Ptarmigan	East of Baker Creek	-	3.4	0.44	0.54	0.03
Ptarmigan	South of Baker Creek	-	1.9	0.22	0.58	0.01
Swallow	Trapper Lake North	-	1.7	0.71	1.5	0.04
Swallow	West of Baker Creek	-	5.6	0.52	1.2	0.04
Swallow	East of Baker Creek	-	9.9	1.7	1.6	0.10
Swallow	South of Baker Creek	-	7.7	0.77	1.8	0.05
Shrew	Trapper Lake North	7.4	4.9	0.48	9.6	0.02
Shrew	West of Baker Creek	20	13	0.43	7.6	0.02
Shrew	East of Baker Creek	32	21	0.77	10	0.04
Shrew	South of Baker Creek	16	17	0.50	11	0.03
Fox	Entire Site	1.6	1.0	0.04	0.28	0.01
Falcon	Entire Site	-	0.19	0.05	$6.0x10^{-3}$	0.03
Owl	Entire Site	-	0.83	0.13	0.02	0.05
Lynx	Entire Site	1.0	0.81	0.05	0.03	0.02

POST-REMEDIATION (NOTE: Uses current water)

Receptor	Location	SI Values				
		Antimony	Arsenic	Copper	Manganese	Zinc
Mouse	Trapper Lake North	1.6	0.99	0.10	2.1	$4.3x10^{-3}$
Mouse	West of Baker Creek	4.9	2.7	0.09	1.6	$4.4x10^{-3}$
Mouse	East of Baker Creek	3.8	4.0	0.11	2.0	$8.4x10^{-3}$
Mouse	South of Baker Creek	3.7	2.9	0.11	3.1	$5.7x10^{-3}$
Hare	Trapper Lake North	2.0	1.3	0.12	1.7	$6.5x10^{-3}$
Hare	West of Baker Creek	7.1	4.2	0.10	1.3	$6.8x10^{-3}$
Hare	East of Baker Creek	4.9	4.6	0.15	1.6	0.02
Hare	South of Baker Creek	5.2	4.7	0.13	2.4	$8.8x10^{-3}$
Bat	Trapper Lake North	2.3	1.6	0.15	2.9	$6.5x10^{-3}$
Bat	West of Baker Creek	6.9	4.3	0.13	2.3	$6.7x10^{-3}$
Bat	East of Baker Creek	5.0	3.0	0.17	2.8	0.01
Bat	South of Baker Creek	5.2	4.6	0.16	4.2	$8.4x10^{-3}$
Ptarmigan	Trapper Lake North	-	0.42	0.20	0.51	0.01
Ptarmigan	West of Baker Creek	-	1.4	0.15	0.40	0.01
Ptarmigan	East of Baker Creek	-	1.5	0.25	0.50	0.03
Ptarmigan	South of Baker Creek	-	1.6	0.22	0.75	0.01
Swallow	Trapper Lake North	-	1.7	0.71	1.5	0.04
Swallow	West of Baker Creek	-	5.6	0.52	1.2	0.04
Swallow	East of Baker Creek	-	3.7	0.89	1.5	0.10
Swallow	South of Baker Creek	-	6.3	0.77	2.3	0.05
Shrew	Trapper Lake North	7.4	4.9	0.48	9.6	0.02
Shrew	West of Baker Creek	20	13	0.43	7.6	0.02
Shrew	East of Baker Creek	15	9.3	0.54	9.4	0.04
Shrew	South of Baker Creek	15	14	0.50	14	0.03
Fox	Entire Site	1.2	0.70	0.03	0.26	0.01
Falcon	Entire Site	-	0.13	0.04	$5.9x10^{-3}$	0.03
Owl	Entire Site	-	0.55	0.13	0.02	0.05
Lynx	Entire Site	0.78	0.55	0.04	0.03	0.02

Table 3. Sensitivity results for case C

CURRENT

Receptor	Location	SI Values	
		Antimony	Arsenic
Muskrat	BC Reach 0	3.0	4.1
Muskrat	BC Reach 1-3	1.7	5.5
Muskrat	BC Reach 4-5	4.3	7.2
Muskrat	BC Reach 6	3.5	4.5
Muskrat	Back Bay	0.36	2.5
Mink	BC Lower Reaches (0-6)	1.9	3.1
Mink	Back Bay	0.21	1.4
Mallard	BC Lower Reaches (0-6)	-	14
Mallard	Back Bay	-	6.3
Grebe	BC Lower Reaches (0-6)	-	24
Grebe	Back Bay	-	11
Merganser	BC Lower Reaches (0-6)	-	1.7
Merganser	Back Bay	-	0.76
Bat	BC Lower Reaches (0-6)	1.3	2.6
Bat	Back Bay	0.30	1.1
Swallow	BC Lower Reaches (0-6)	-	9.8
Swallow	Back Bay	-	3.7
Osprey	Back Bay/ Baker Creek	-	0.19

2030

Receptor	Location	SI Values	
		Antimony	Arsenic
Muskrat	BC Reach 0	0.09	0.11
Muskrat	BC Reach 1-3	0.15	0.17
Muskrat	BC Reach 4-5	0.07	0.15
Muskrat	BC Reach 6	0.06	0.18
Muskrat	Back Bay	0.33	2.3
Mink	BC Lower Reaches (0-6)	0.03	0.07
Mink	Back Bay	0.20	1.2
Mallard	BC Lower Reaches (0-6)	-	0.22
Mallard	Back Bay	-	5.8
Grebe	BC Lower Reaches (0-6)	-	0.37
Grebe	Back Bay	-	10
Merganser	BC Lower Reaches (0-6)	-	0.10
Merganser	Back Bay	-	0.70
Bat	BC Lower Reaches (0-6)	0.31	0.38
Bat	Back Bay	0.13	0.89
Swallow	BC Lower Reaches (0-6)	-	3.6
Swallow	Back Bay	-	2.2
Osprey	Back Bay/ Baker Creek	-	0.06

2120

Receptor	Location	SI Values	
		Antimony	Arsenic
Muskrat	BC Reach 0	0.95	1.3
Muskrat	BC Reach 1-3	1.7	3.1
Muskrat	BC Reach 4-5	0.64	2.6
Muskrat	BC Reach 6	0.48	3.5
Muskrat	Back Bay	0.25	1.7
Mink	BC Lower Reaches (0-6)	0.56	1.5
Mink	Back Bay	0.15	0.94
Mallard	BC Lower Reaches (0-6)	-	6.6
Mallard	Back Bay	-	4.3
Grebe	BC Lower Reaches (0-6)	-	12
Grebe	Back Bay	-	7.8
Merganser	BC Lower Reaches (0-6)	-	0.84
Merganser	Back Bay	-	0.53
Bat	BC Lower Reaches (0-6)	0.56	1.3
Bat	Back Bay	0.11	0.67
Swallow	BC Lower Reaches (0-6)	-	5.6
Swallow	Back Bay	-	1.7
Osprey	Back Bay/ Baker Creek	-	0.10

CURRENT

Receptor	Location	SI Values				
		Antimony	Arsenic	Copper	Manganese	Zinc
Mouse	Trapper Lake North	0.11	0.18	0.02	0.73	$1.1x10^{-3}$
Mouse	West of Baker Creek	0.39	0.49	0.01	0.58	$1.2x10^{-3}$
Mouse	East of Baker Creek	0.63	1.4	0.02	0.77	$2.3x10^{-3}$
Mouse	South of Baker Creek	0.30	0.63	0.02	0.84	$1.5x10^{-3}$
Hare	Trapper Lake North	0.17	0.24	0.02	0.58	$1.7x10^{-3}$
Hare	West of Baker Creek	0.66	0.77	0.01	0.46	$1.8x10^{-3}$
Hare	East of Baker Creek	1.2	1.9	0.04	0.62	$4.1x10^{-3}$
Hare	South of Baker Creek	0.49	1.0	0.02	0.67	$2.3x10^{-3}$
Bat	Trapper Lake North	0.17	0.29	0.02	1.0	$1.7x10^{-3}$
Bat	West of Baker Creek	0.57	0.78	0.02	0.80	$1.8x10^{-3}$
Bat	East of Baker Creek	0.96	1.3	0.04	1.1	$3.6x10^{-3}$
Bat	South of Baker Creek	0.44	1.0	0.02	1.2	$2.2x10^{-3}$
Ptarmigan	Trapper Lake North	-	0.41	0.02	0.26	$3.7x10^{-3}$
Ptarmigan	West of Baker Creek	-	1.4	0.02	0.21	$3.9x10^{-3}$
Ptarmigan	East of Baker Creek	-	3.3	0.05	0.28	$9.3x10^{-3}$
Ptarmigan	South of Baker Creek	-	1.9	0.03	0.30	$5.0x10^{-3}$
Swallow	Trapper Lake North	-	1.6	0.09	0.80	0.01
Swallow	West of Baker Creek	-	5.5	0.06	0.63	0.01
Swallow	East of Baker Creek	-	9.7	0.20	0.84	0.04
Swallow	South of Baker Creek	-	7.5	0.09	0.91	0.02
Shrew	Trapper Lake North	0.53	0.89	0.07	3.4	$5.3x10^{-3}$
Shrew	West of Baker Creek	1.7	2.4	0.06	2.7	$5.5x10^{-3}$
Shrew	East of Baker Creek	2.9	3.9	0.11	3.6	0.01
Shrew	South of Baker Creek	1.3	3.1	0.07	3.9	$6.7x10^{-3}$
Fox	Entire Site	0.14	0.18	$5.2x10^{-3}$	0.10	$3.2x10^{-3}$
Falcon	Entire Site	-	0.19	$5.6x10^{-3}$	$3.1x10^{-3}$	0.01
Owl	Entire Site	-	0.81	0.02	0.01	0.02
Lynx	Entire Site	0.10	0.15	$6.6x10^{-3}$	$1.0x10^{-2}$	$4.2x10^{-3}$

POST-REMEDIATION (NOTE: Uses current water)

Receptor	Location	SI Values				
		Antimony	Arsenic	Copper	Manganese	Zinc
Mouse	Trapper Lake North	0.11	0.18	0.02	0.73	$1.1x10^{-3}$
Mouse	West of Baker Creek	0.39	0.49	0.01	0.58	$1.2x10^{-3}$
Mouse	East of Baker Creek	0.28	0.73	0.02	0.72	$2.2x10^{-3}$
Mouse	South of Baker Creek	0.28	0.53	0.02	1.1	$1.5x10^{-3}$
Hare	Trapper Lake North	0.17	0.24	0.02	0.58	$1.7x10^{-3}$
Hare	West of Baker Creek	0.66	0.77	0.01	0.46	$1.8x10^{-3}$
Hare	East of Baker Creek	0.43	0.84	0.02	0.57	$3.9x10^{-3}$
Hare	South of Baker Creek	0.46	0.85	0.02	0.86	$2.3x10^{-3}$
Bat	Trapper Lake North	0.17	0.29	0.02	1.0	$1.7x10^{-3}$
Bat	West of Baker Creek	0.57	0.78	0.02	0.80	$1.8x10^{-3}$
Bat	East of Baker Creek	0.39	0.55	0.02	0.99	$3.4x10^{-3}$
Bat	South of Baker Creek	0.42	0.85	0.02	1.5	$2.2x10^{-3}$
Ptarmigan	Trapper Lake North	-	0.41	0.02	0.26	$3.7x10^{-3}$
Ptarmigan	West of Baker Creek	-	1.4	0.02	0.21	$3.9x10^{-3}$
Ptarmigan	East of Baker Creek	-	1.5	0.03	0.26	$8.9x10^{-3}$
Ptarmigan	South of Baker Creek	-	1.5	0.03	0.39	$5.0x10^{-3}$
Swallow	Trapper Lake North	-	1.6	0.09	0.80	0.01
Swallow	West of Baker Creek	-	5.5	0.06	0.63	0.01
Swallow	East of Baker Creek	-	3.7	0.11	0.78	0.03
Swallow	South of Baker Creek	-	6.1	0.09	1.2	0.02
Shrew	Trapper Lake North	0.53	0.89	0.07	3.4	$5.3x10^{-3}$
Shrew	West of Baker Creek	1.7	2.4	0.06	2.7	$5.5x10^{-3}$
Shrew	East of Baker Creek	1.2	1.7	0.08	3.3	0.01
Shrew	South of Baker Creek	1.2	2.6	0.07	5.0	$6.7x10^{-3}$
Fox	Entire Site	0.10	0.13	$5.1x10^{-3}$	0.09	$3.1x10^{-3}$
Falcon	Entire Site	-	0.13	$5.4x10^{-3}$	$3.0x10^{-3}$	$9.7x10^{-3}$
Owl	Entire Site	-	0.54	0.02	0.01	0.02
Lynx	Entire Site	0.07	0.10	$6.5x10^{-3}$	$9.9x10^{-3}$	$4.1x10^{-3}$

Table 4. Sensitivity results for case D

POST-REMEDIATION (NOTE: Uses current water)

Receptor	Location	SI Values				
		Antimony	Arsenic	Copper	Manganese	Zinc
Mouse	Trapper Lake North	1.9	0.85	0.10	1.7	$3.8x10^{-3}$
Mouse	West of Baker Creek	6.4	2.3	0.09	1.3	$3.9x10^{-3}$
Mouse	East of Baker Creek	4.6	3.5	0.11	1.6	$7.1x10^{-3}$
Mouse	South of Baker Creek	4.7	2.4	0.10	2.5	$5.0x10^{-3}$
Hare	Trapper Lake North	2.7	1.1	0.11	1.3	$5.5x10^{-3}$
Hare	West of Baker Creek	10	3.5	0.09	1.1	$5.7x10^{-3}$
Hare	East of Baker Creek	6.9	3.9	0.13	1.3	0.01
Hare	South of Baker Creek	7.4	3.8	0.12	2.0	$7.4x10^{-3}$
Bat	Trapper Lake North	2.8	1.3	0.14	2.3	$5.7x10^{-3}$
Bat	West of Baker Creek	9.3	3.6	0.12	1.8	$5.9x10^{-3}$
Bat	East of Baker Creek	6.5	2.6	0.15	2.2	0.01
Bat	South of Baker Creek	6.8	3.9	0.15	3.4	$7.3x10^{-3}$
Ptarmigan	Trapper Lake North	-	0.34	0.17	0.41	$8.8x10^{-3}$
Ptarmigan	West of Baker Creek	-	1.2	0.13	0.32	$9.2x10^{-3}$
Ptarmigan	East of Baker Creek	-	1.3	0.21	0.40	0.02
Ptarmigan	South of Baker Creek	-	1.3	0.19	0.60	0.01
Swallow	Trapper Lake North	-	1.4	0.61	1.2	0.03
Swallow	West of Baker Creek	-	4.6	0.46	0.98	0.03
Swallow	East of Baker Creek	-	3.1	0.76	1.2	0.08
Swallow	South of Baker Creek	-	5.1	0.66	1.8	0.04
Shrew	Trapper Lake North	8.8	4.2	0.45	7.7	0.02
Shrew	West of Baker Creek	27	11	0.41	6.1	0.02
Shrew	East of Baker Creek	19	7.9	0.50	7.5	0.03
Shrew	South of Baker Creek	20	12	0.47	11	0.02
Fox	Entire Site	1.7	0.58	0.03	0.21	0.01
Falcon	Entire Site	-	0.11	0.04	$4.9x10^{-3}$	0.03
Owl	Entire Site	-	0.45	0.10	0.02	0.04
Lynx	Entire Site	1.2	0.46	0.04	0.02	0.01

Table 6. Sensitivity results for case E

CURRENT

Receptor	Location	SI Values				
		Antimony	Arsenic	Copper	Manganese	Zinc
Mouse	Trapper Lake North	2.2	0.79	0.10	2.1	$4.3x10^{-3}$
Mouse	West of Baker Creek	7.5	2.3	0.09	1.6	$4.4x10^{-3}$
Mouse	East of Baker Creek	12	7.2	0.16	2.2	$8.8x10^{-3}$
Mouse	South of Baker Creek	5.8	3.0	0.11	2.4	$5.7x10^{-3}$
Hare	Trapper Lake North	3.2	1.3	0.12	1.7	$6.5x10^{-3}$
Hare	West of Baker Creek	13	4.2	0.10	1.3	$6.8x10^{-3}$
Hare	East of Baker Creek	22	10	0.25	1.7	0.02
Hare	South of Baker Creek	9.5	5.7	0.13	1.9	$8.8x10^{-3}$
Bat	Trapper Lake North	3.2	1.0	0.15	2.9	$6.5x10^{-3}$
Bat	West of Baker Creek	11	3.2	0.13	2.3	$6.7x10^{-3}$
Bat	East of Baker Creek	19	5.6	0.25	3.0	0.01
Bat	South of Baker Creek	8.5	4.4	0.16	3.3	$8.4x10^{-3}$
Ptarmigan	Trapper Lake North	-	0.42	0.20	0.51	0.01
Ptarmigan	West of Baker Creek	-	1.4	0.15	0.40	0.01
Ptarmigan	East of Baker Creek	-	3.4	0.44	0.54	0.03
Ptarmigan	South of Baker Creek	-	1.9	0.22	0.58	0.01
Swallow	Trapper Lake North	-	1.4	0.71	1.5	0.04
Swallow	West of Baker Creek	-	5.2	0.52	1.2	0.04
Swallow	East of Baker Creek	-	9.3	1.7	1.6	0.10
Swallow	South of Baker Creek	-	7.2	0.77	1.8	0.05
Shrew	Trapper Lake North	10	3.1	0.48	9.6	0.02
Shrew	West of Baker Creek	33	9.9	0.43	7.6	0.02
Shrew	East of Baker Creek	55	17	0.77	10	0.04
Shrew	South of Baker Creek	25	13	0.50	11	0.03
Fox	Entire Site	2.6	0.94	0.04	0.28	0.01
Falcon	Entire Site	-	0.19	0.05	$6.0x10^{-3}$	0.03
Owl	Entire Site	-	0.83	0.13	0.02	0.05
Lynx	Entire Site	1.9	0.81	0.05	0.03	0.02

POST-REMEDIATION (NOTE: Uses current water)

Receptor	Location	SI Values				
		Antimony	Arsenic	Copper	Manganese	Zinc
Mouse	Trapper Lake North	2.2	0.79	0.10	2.1	$4.3x10^{-3}$
Mouse	West of Baker Creek	7.5	2.3	0.09	1.6	$4.4x10^{-3}$
Mouse	East of Baker Creek	5.3	3.7	0.11	2.0	$8.4x10^{-3}$
Mouse	South of Baker Creek	5.5	2.5	0.11	3.1	$5.7x10^{-3}$
Hare	Trapper Lake North	3.2	1.3	0.12	1.7	$6.5x10^{-3}$
Hare	West of Baker Creek	13	4.2	0.10	1.3	$6.8x10^{-3}$
Hare	East of Baker Creek	8.3	4.6	0.15	1.6	0.02
Hare	South of Baker Creek	8.9	4.7	0.13	2.4	$8.8x10^{-3}$
Bat	Trapper Lake North	3.2	1.0	0.15	2.9	$6.5x10^{-3}$
Bat	West of Baker Creek	11	3.2	0.13	2.3	$6.7x10^{-3}$
Bat	East of Baker Creek	7.6	2.2	0.17	2.8	0.01
Bat	South of Baker Creek	8.0	3.6	0.16	4.2	$8.4x10^{-3}$
Ptarmigan	Trapper Lake North	-	0.42	0.20	0.51	0.01
Ptarmigan	West of Baker Creek	-	1.4	0.15	0.40	0.01
Ptarmigan	East of Baker Creek	-	1.5	0.25	0.50	0.03
Ptarmigan	South of Baker Creek	-	1.6	0.22	0.75	0.01
Swallow	Trapper Lake North	-	1.4	0.71	1.5	0.04
Swallow	West of Baker Creek	-	5.2	0.52	1.2	0.04
Swallow	East of Baker Creek	-	3.4	0.89	1.5	0.10
Swallow	South of Baker Creek	-	5.8	0.77	2.3	0.05
Shrew	Trapper Lake North	10	3.1	0.48	9.6	0.02
Shrew	West of Baker Creek	33	9.9	0.43	7.6	0.02
Shrew	East of Baker Creek	22	6.7	0.54	9.4	0.04
Shrew	South of Baker Creek	24	11	0.50	14	0.03
Fox	Entire Site	2.0	0.65	0.03	0.26	0.01
Falcon	Entire Site	-	0.13	0.04	$5.9x10^{-3}$	0.03
Owl	Entire Site	-	0.55	0.13	0.02	0.05
Lynx	Entire Site	1.4	0.55	0.04	0.03	0.02

APPENDIX O

DATABASE OF AVAILABLE MONITORING DATA

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APPENDIX O: DATABASE OF AVAILABLE MONITORING DATA

The complete database of information that was relied upon in the assessment is provided in two electronic files – one that summarizes the available monitoring data from the aquatic environment and one that summarizes the available monitoring data from the terrestrial environment.

The electronic files can be requested from:

Ms. Natalie Plato
Deputy Director
Indigenous and Northern Affairs Canada, Giant Mine Project
867-669-2439
Natalie.Plato@canada.ca

APPENDIX P

ADDITIONAL ANALYSES

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APPENDIX P: ADDITIONAL ANALYSES

This Appendix provides an evaluation of additional voluntary samples and soil samples that became available after the submission of the draft Giant Mine Human Health and Ecological Risk Assessment (HHERA) in October 2017.

Additional soil samples were obtained from the GNWT Open File program and were used to supplement the soil database to characterize locations such as Ingraham Trail and Dettah where only a few samples were available. Additional voluntary samples for rabbits, berries, medicinal plants (including rat root), mushrooms and a few other samples were also collected from a 2017 country foods study and submitted for analysis to supplement the database of country foods consumed by the members of the different communities.

This appendix provides a comparison of how these additional new samples affect the exposure point concentrations (EPC) that were used in the main document and provides analyses for mushrooms and medicinal plants. As well, additional scenarios that were requested as part of the stakeholder consultation on the draft HHRA are presented in this Appendix.

P.1 Soil Investigation

After the draft HHERA was completed, additional soil data became available from the GNWT Open File program (Jamieson et al. 2017). This additional dataset was examined to see if any data could be incorporated into the HHERA for areas which are less fully characterized (i.e., Dettah and Ingraham Trail). The soil sample locations are shown in Figure P.1 for Dettah and Figure P.2 for Ingraham Trail. The additional samples obtained through the GNWT Open File program are presented in blue and the locations of the samples used in the main document of the HHERA are presented in purple. Note that the information presented is only for antimony and arsenic as no manganese data was supplied with the GNWT Open File dataset.

P.1.1 Dettah

Additional soil samples were available from the GNWT Open File program (Jamieson et al. 2017) for antimony and arsenic to supplement the soil samples originally used in the Draft HHERA. A map presenting the new sample locations is included in Figure P.1 and a summary of the data including the original dataset is presented in Table P.1. The addition of the GNWT data to the original dataset results in an adequate sample size to calculate 95% UCLMs to represent soils within Dettah (i.e., a sample size of 10).

Figure P.1 GNWT Open File Dettah sample locations

Note: Blue squares represent additional samples from GNWT Open File while purple squares represent those used in the main HHERA.

Table P.1 Summary of concentrations of COPC in the soils in Dettah

COPC	N	N<MDL	Soil Concentration (mg/kg)						
			Min	Max	Average	Standard Deviation	95th Percentile	GeoMean	95% UCLM
Antimony	10	1	0.2	6.2	2	2	6	1	3.4
Arsenic	11	0	7.2	144	39	46	130	24	69

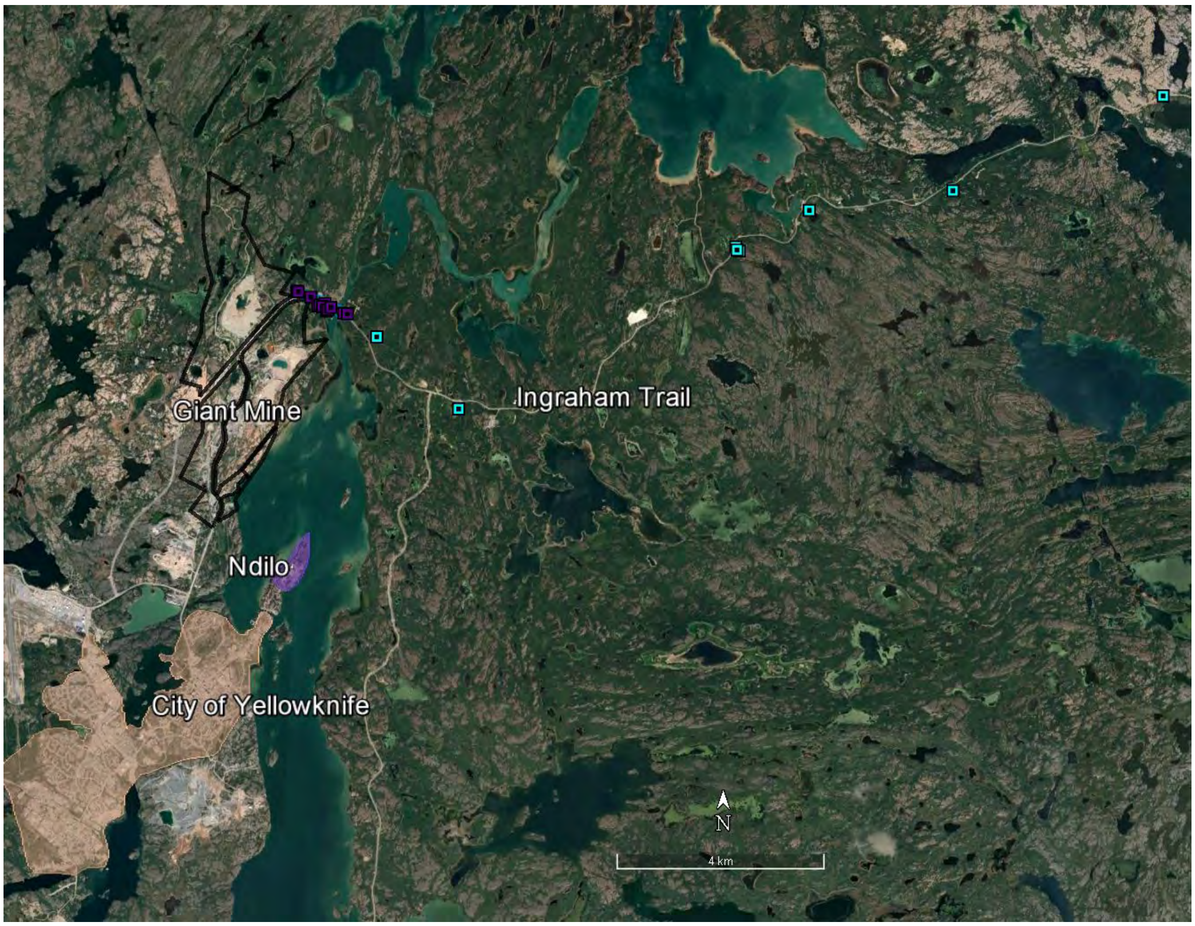
Note: Only antimony and arsenic are presented because only data for these COPC were available from the GNWT Open File program.

P.1.2 Ingraham Trail

Additional soil samples were available from the GNWT Open File program (Jamieson et al. 2017) to supplement the 12 soil samples originally used in the main document of the

HHERA. A map presenting the new sample locations is included in Figure P.2 and a summary of the data including the original data is presented in Table P.2. The addition of the GNWT data to the original datasets results in an adequate sample size to calculate 95% UCLMs to represent soils within Ingraham Trail (i.e., greater than a sample size of 10).

Figure P.2 GNWT Open File Ingraham Trail sample locations



Note: Blue squares represent additional samples from GNWT Open File while purple squares represent those used in the main HHERA.

Table P.2 Summary of concentrations of COPC in the soils in Ingraham Trail

COPC	N	N<MDL	Soil Concentration (mg/kg)						
			Min	Max	Average	Standard Deviation	95th Percentile	GeoMean	95% UCLM
Antimony	24	2	0.4	69	5.5	14	13	2	18
Arsenic	28	0	3.6	127	30	25	62	22	38

Note: Only antimony and arsenic are presented because only data for these COPC were available from the GNWT Open File program.

P.1.3 Summary

In order to determine the effect of the new data, a comparison was undertaken between the EPCs in Dettah and Ingraham Trail used in the main report and the updated EPCs discussed above which include the GNWT Open File data (see Table P.3).

Table P.3 Comparison of Dettah and Ingraham Trail soil EPCs with and without GNWT Open File data

COPC	Original EPC (mg/kg)	N	Derivation of Original EPC	Revised EPC (mg/kg)	N	Derivation of Revised EPC
Dettah						
Antimony	6.2	8	Maximum	3.4	10	BCA Bootstrap 95% UCLM
Arsenic	76	9	BCA Bootstrap 95% UCLM	69	11	BCA Bootstrap 95% UCLM
Ingraham Trail						
Antimony	38	12	95th percentile	18	24	Recommended 95% UCLM - ProUCL
Arsenic	96	12	95th percentile – chosen as higher than 95%UCLM	38	28	Recommended 95% UCLM - ProUCL

The revised EPCs for antimony and arsenic from Dettah and Ingraham Trail are represented by the 95% UCLM as there were an adequate number of samples to derive this statistic. As seen from Table P.3, the revised EPCs are lower than the original EPCs that were used in the HHRA. Given that the original EPCs were higher, the evaluation of soils from Dettah and Ingraham Trail presented in the main report of the HHRA are conservative and additional calculations are not warranted.

P.2 Voluntary Sampling Program

There were 74 additional samples collected in the spring and summer of 2017 and submitted for analysis in support of the HHRA. Additional samples included mushrooms, medicinal plants including rat root, additional hare and muskrat samples, and berries. Table P.4 provides a summary of the number of samples that were collected. In addition birch bark and fern leaves and crowberry samples were brewed into teas and both the ingredients and tea samples were sent for analysis. Maps of the locations of the additional samples are presented in Figure P.3 to Figure P.6. A list of the samples with the chemical analyses is provided in ATTACHMENT P.1. As seen from the figures, the majority of the additional samples were from within 10 km from the Giant Mine.

Table P.4 Summary of additional samples collected in spring and summer of 2017

Food Type	Species	Number of Samples
Small Mammals	Rabbit / muskrat	6 (rabbit) 2 (muskrat)
Plants and Berries	Raspberry / cloud berry / juniper berries / black currant / cranberry / crowberry / rose hips	15
Mushrooms	Various	38
Medicinal plants	Labrador tea / spruce gum / birch bark / rat root / tamarak bark / fern leaves	13
Total Number of Samples = 74		

Figure P.3 Additional voluntary samples from within 10 km of the Giant Mine

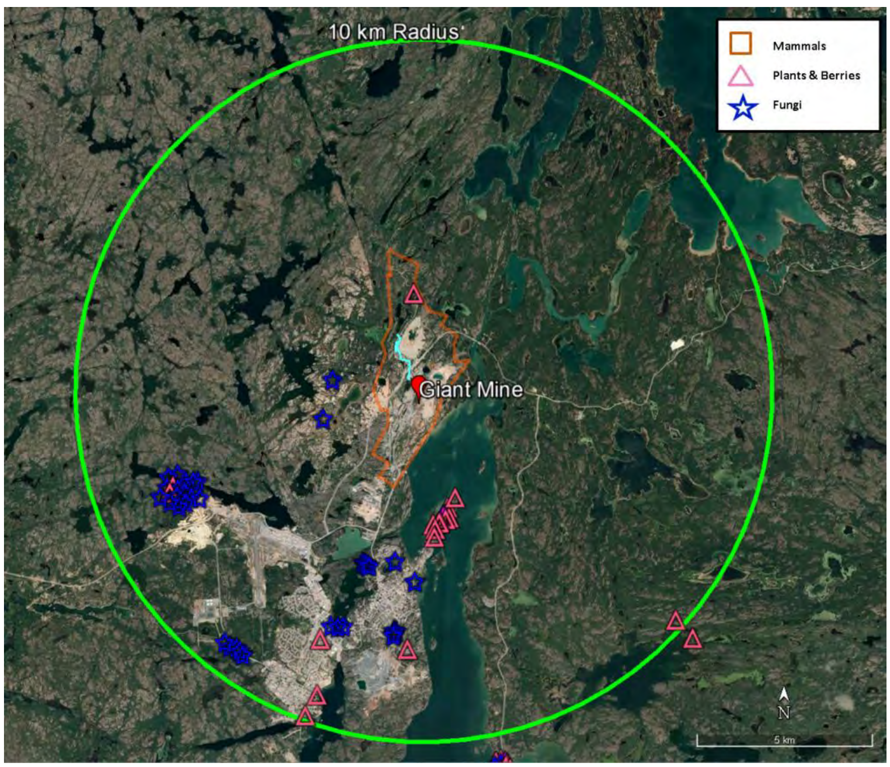


Figure P.4 Additional voluntary samples from within 25 km of the Giant Mine

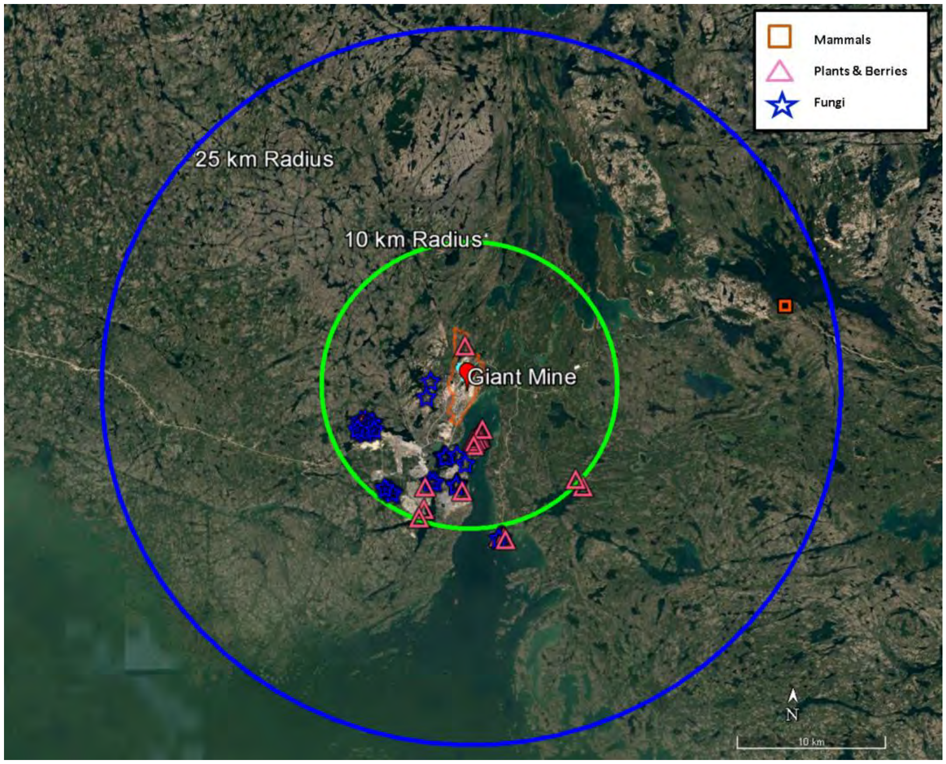


Figure P.5 Additional voluntary samples from within 50 km of the Giant Mine

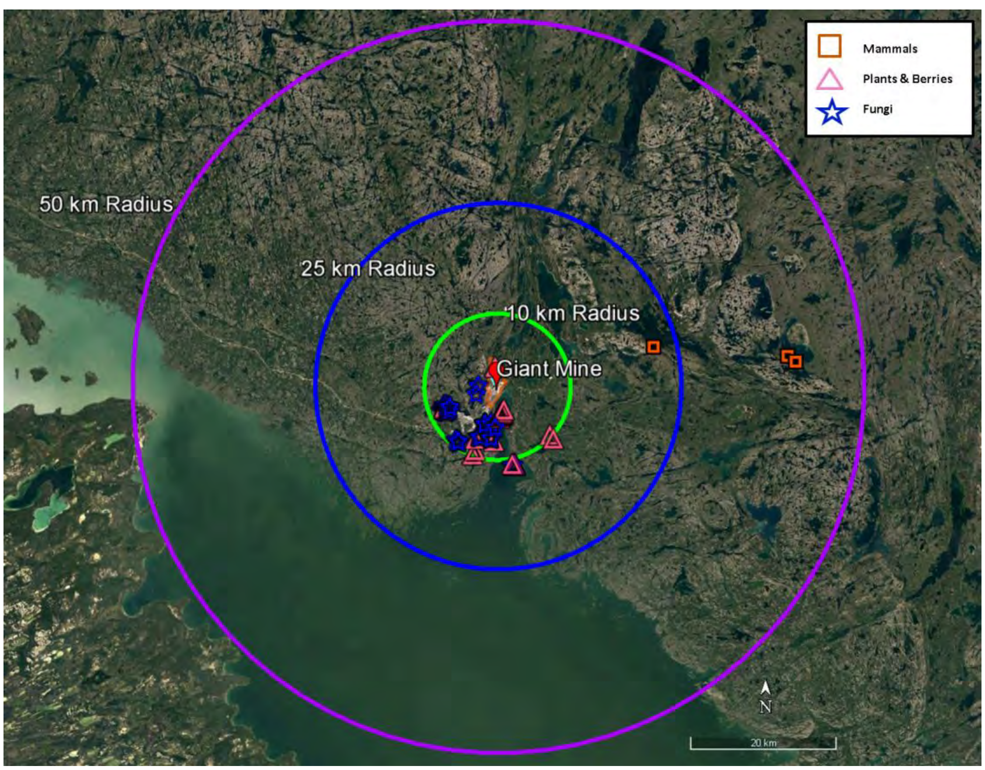


Figure P.6 Additional voluntary samples from beyond 100 km of the Giant Mine

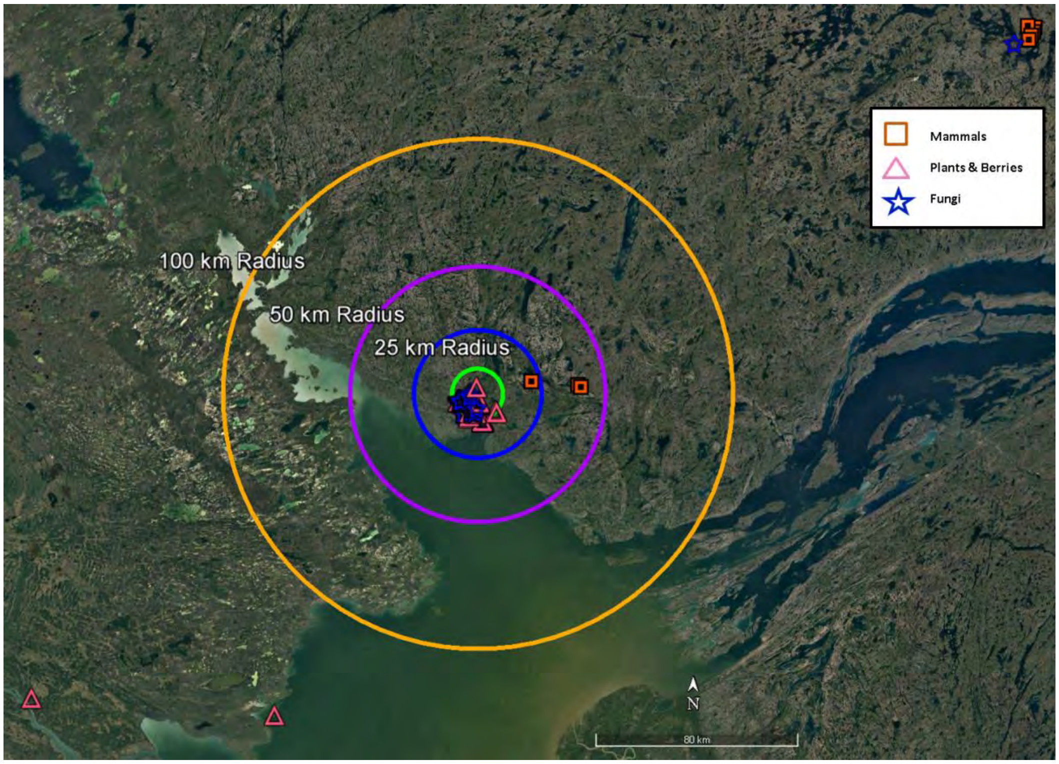


Table P.5 provides a comparison between the original arsenic EPCs used for the country food samples where additional data were available and newly derived EPCs considering the additional data. As seen from the table:

- Muskrat/beaver samples – two additional muskrat samples were provided that were obtained from background locations. The additional muskrat samples resulted in the background arsenic concentrations being reduced. However the maximum concentration and the EPC for the exposure location are both still lower than background. This finding is unchanged from the original assessment.

- Hare samples – one additional hare sample was provided from the exposure area and an additional five hare samples were from background locations. When the additional hare sample from the exposure area is considered the arsenic EPC decreases and thus the value used in the original assessment was conservative. The consideration of the five background hare samples results in a background concentration that is similar to what was used in the original assessment and thus the results are unchanged.

Table P.5 Comparison of country food EPCs from original assessment with EPCs including the additional 2017 data

Media	Location	Original Arsenic EPC (mg/kg ww)	Original dataset size	EPC with new Data (mg/kg ww)	New dataset size	EPC based on	Comment on potential action
Muskrat/ Beaver	Exposure	0.051	4	-	4	muskrat/beaver from T1 and T2	unchanged
	Exposure maximum	0.12		0.12		maximum	unchanged
	Background	1.09	1	0.38	3	muskrat/beaver from T3/T5	none, still higher than exposure EPC
Hare	Exposure	0.095	5	0.087	6	hare from T1 and T2	none, EPC went down so HHERA EPC is conservative
	Exposure maximum	0.17		0.17		maximum	unchanged
	Background	0.016	1 (based on lowest measured concentration)	0.008	5	average of T3 samples	none, some change in background, but values are low so it does not make a difference
Berries	Ndilo	0.11	6	0.09	13	average from Ndilo	none, values very similar
	Ndilo maximum	0.23		0.23		maximum	unchanged
	T1 (inc Ndilo)	0.11	14	0.10	28	average from T1	none, values very similar
	T1 (inc Ndilo) maximum	0.23		0.23		maximum	unchanged
	Beyond T1	0.04	6	0.03	8	average	none, values very similar
	Beyond T1 Maximum	0.08		0.08		maximum	unchanged
	Background	0.028	1	0.021	2	was single sample (Tibbitt lake), now average of that and T5 sample	none, values very similar

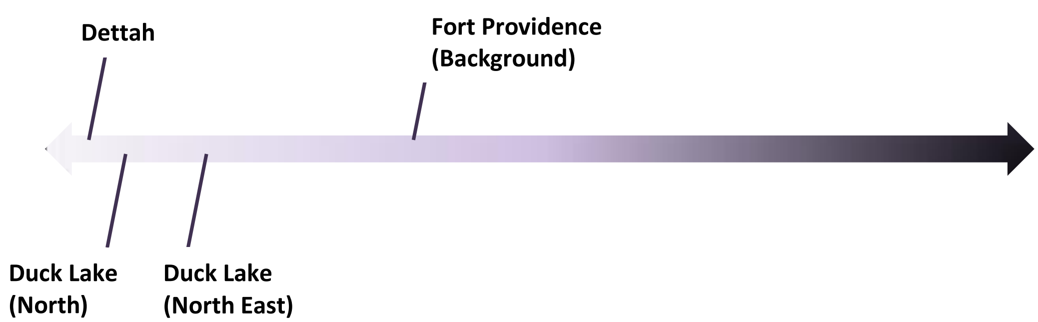
Media	Location	Arsenic Concentration Previous Avg (mg/kg ww)	Original dataset size	Average with new Data (mg/kg ww)	New dataset size	Concentration based on	Comment on potential action
Medicinal Plants	Labrador Tea - Ndilo	0.61	2	-	2	average from Ndilo	unchanged
	Labrador Tea - T1 (including Ndilo)	0.48	4	-	4	average from T1	unchanged
	Birch Syrup	0.02	1	-	1	average of all samples	unchanged
	Chives	0.82	1	-	1	single sample	unchanged
	Juniper Berries	0.18	2	0.19	3	average of samples	none, values very similar
	Spruce Gum	1.13	4	1.45	5	average of samples	none, values similar
	Rat Root	- [a]	0	0.44	3	average T1 and T2	none, below the Labrador Tea EPCs and below Rat Root background
	Rat Root Background	-	0	1.67	1	T5 sample	
	bark/twigs (birch, tamarack, cowberry, fern)	- [a]	0	0.88	5	average of samples	none, concentrations similar to labrador tea EPCs which were used
	Dandelion	-	0	5.81	1	single sample, including roots and soil	omit sample as it contains soil, which wouldn't be consumed

a assumed to be represented by Labrador Tea

- Berries – An additional seven berry samples were provided from Ndilo. The consideration of these additional samples does not change the maximum concentration nor the EPC used in the original assessment. Berry samples provided from all other locations also did not result in significant changes to the original EPCs and thus the findings of the assessment are unchanged with these additional data.

- Medicinal Plants – The additional medicinal plant data added to the dataset did not result in any significant changes to the EPCs considered in the assessment. The original assessment did not have data for rat root and these samples were collected in 2017. As seen from the table and Figure P.7, background arsenic concentrations in rat root were higher than the measured exposure locations and thus there is no incremental arsenic exposure from consuming rat root.

Figure P.7 Schematic representation of arsenic concentrations in rat root



In summary, the additional country food samples generally resulted in lower arsenic concentrations and thus the original assessment is a conservative estimate of arsenic exposure and risk. The results of the comparison of antimony data are similar and thus the conclusions of the assessment for arsenic and antimony are unchanged with the additional data.

P.3 Medicinal Tea Evaluation

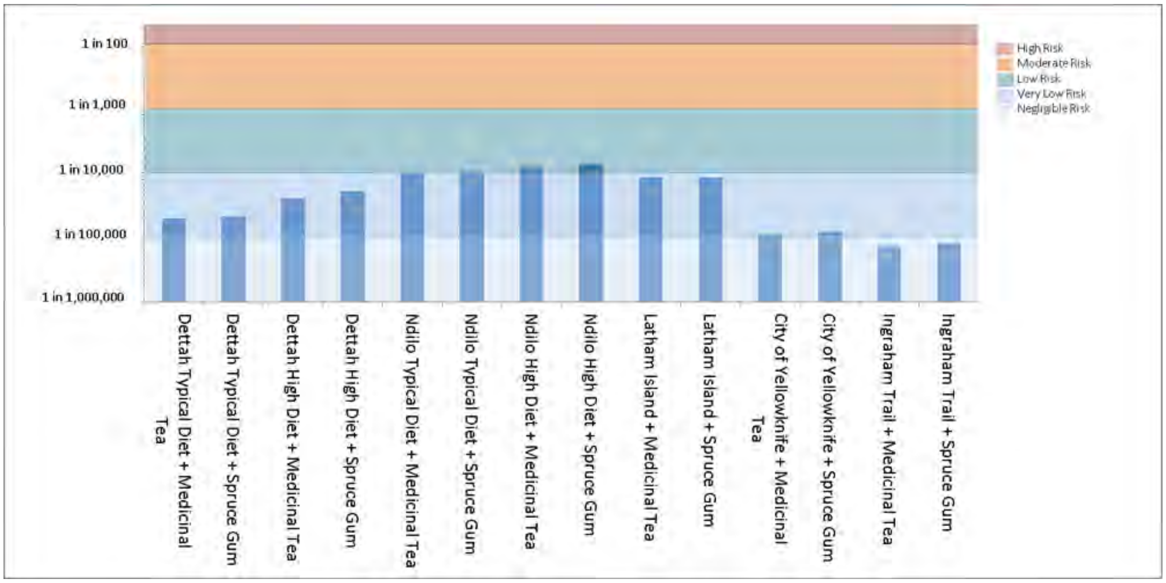
P.3.1 Medicinal Tea Evaluation Using Spruce Gum Concentrations

In the main report, the Labrador tea samples were used to evaluate the arsenic risks from drinking medicinal tea; however, medicinal plant samples collected from the spring and summer of 2017 indicated that spruce gum had the highest arsenic concentrations. Therefore an analysis was carried out using the arsenic in spruce gum (1.45 mg kg ww vs

0.61 mg/kg ww) to represent the exposure from drinking medicinal tea. The analysis involved the same assumptions as were used in the main report. Spruce gum was assumed to be 100% bioaccessible in the absence of available information.

Figure P.8 shows a comparison of the arsenic risks from using the arsenic concentrations in Labrador tea and spruce gum. As seen from the figure, there is very little difference between the two results and thus the conclusions presented in the main report are valid.

Figure P.8 Comparison of exposure from Labrador tea and spruce gum



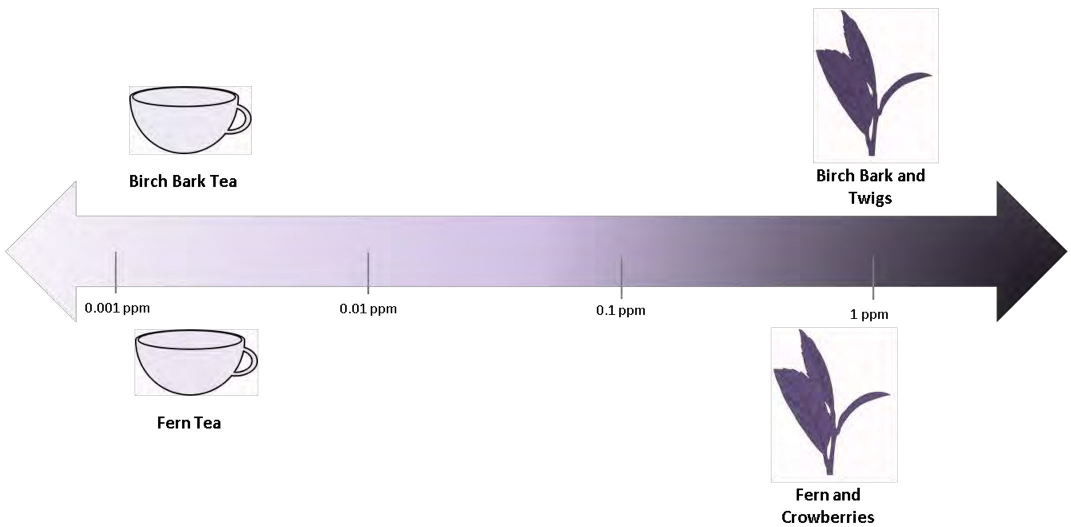
P.3.2 Medicinal Tea Evaluation Using Leaves and Tea Concentrations

Samples of tea materials collected from the spring and summer of 2017 were analyzed and also used to prepare typical medicinal teas for analysis. A birch bark tea was made by steeping 1 tablespoon (0.5 g) of bark and 1 tablespoon (0.5 g) of twigs in 1 cup of boiled water (250 mL). The bark arsenic concentration was 1.8 mg/kg ww and the concentration of arsenic in the twigs was 0.28 mg/kg ww; the resulting birch bark tea had an arsenic concentration of 1.03 µg/L (0.00103 mg/kg ww).

Similarly, a fern tea was made by steeping 1 tablespoon (0.5 g) of ferns and 1 tablespoon (1 g) of crowberries. The ferns had an arsenic concentration of 0.76 mg/kg ww and the crowberries had an arsenic concentration of 0.76 mg/kg; the fern tea had an arsenic concentration of 3.74 µg/L (0.00374 mg/kg ww).

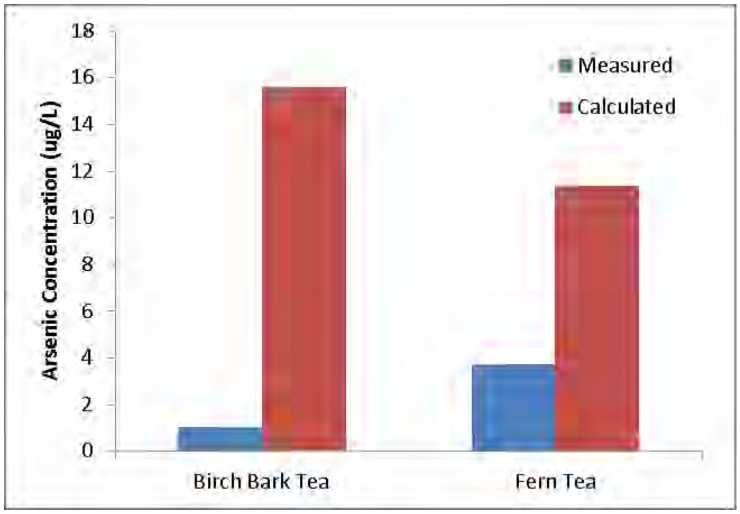
The results of the tea analysis illustrate that there are several orders of magnitude difference between measured concentrations in the tea leaf/bark materials and the tea that is produced. This is consistent with conclusions from McAuley et al. (2016), which analyzed samples of Labrador tea leaves and mint tea leaves, as well as teas made from the leaves, and found that concentrations of chemicals in the teas were orders of magnitude lower than in the vegetation. Figure P.9 provides a clear illustration of the comparison between the measured birch bark/twigs and fern/crowberries with the prepared teas.

Figure P.9 Comparison of measured arsenic concentrations in tea leaves/twigs with prepared tea drinks



The measured concentrations in birch bark and twigs and fern/crowberry tea materials were used to calculate tea drink concentrations using an approach consistent with the assessment calculations. As shown in Figure P.10, the calculated tea concentrations are considerably higher (by 3 to 15 times) than the measured tea concentrations, demonstrating that the calculation approach used in the assessment is conservative.

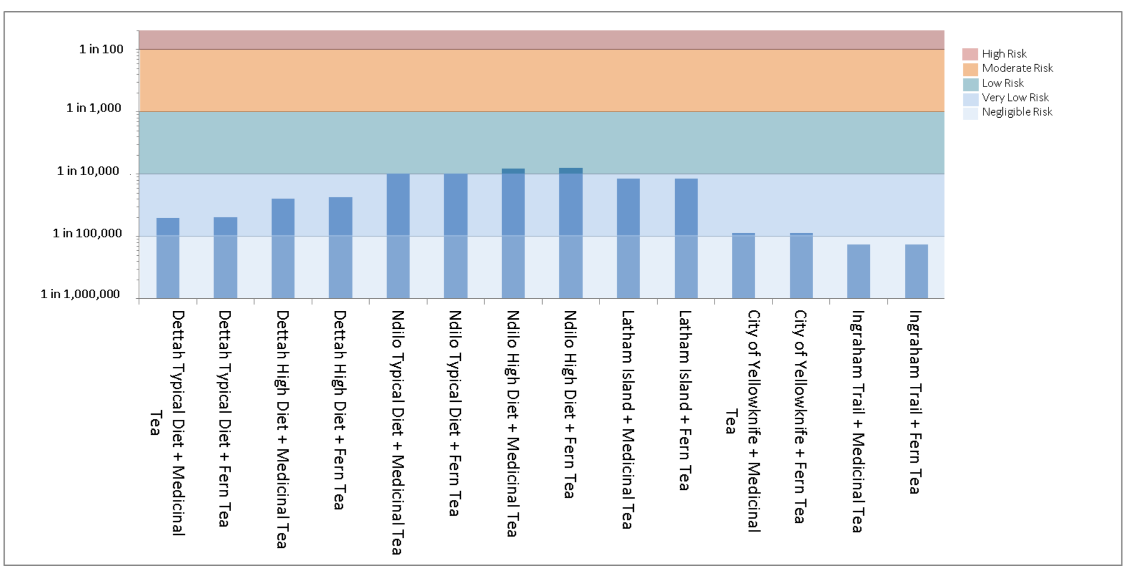
Figure P.10 Comparison of measured arsenic concentrations in prepared tea drinks with calculated tea concentrations



An analysis was carried out using the arsenic measured in prepared tea samples (maximum concentration of 3.7 µg/L from fern tea) to represent the exposure from drinking medicinal tea. The analysis involved the same assumptions as were used in the main report.

Figure P.11 shows a comparison of the arsenic risks using the measured concentration in fern tea with the results from the main report. As seen from the figure, there is very little difference between the results, thus the conclusions presented in the main report are valid.

Figure P.11 Comparison of exposure from Labrador tea and fern tea



P.4 Mushrooms

In the original HHRA, only one mushroom sample collected from Vee Lake was provided from the voluntary sampling program. Additional samples (38) were collected in the late summer of 2017 and analyzed. This section discusses the analytical results with a focus on arsenic, as that is the main COPC. Antimony concentrations that were used in the assessment are provided. As indicated in the main document, manganese exposure is dominated by supermarket food and thus an analysis is not carried out for manganese in mushrooms.

Mushroom sample locations from the voluntary sampling program are shown in Figure P.12 and Figure P.13. As seen from the figures most of the samples were collected from within 10 km of the Giant Mine. Figure P.13 shows that there were approximately 4 areas where mushroom samples were collected; area around Vee Lake, near the airport (golf course), Deh Cho Boulevard and Rat Lake area near the former Con Mine.

In addition to the data from the voluntary sample, Obst (2014) also provided information on mushrooms collected in the Yellowknife area in 2001 and 2012. These mushroom data were also considered in the mushroom evaluation as discussed below.

Figure P.12 Mushroom sample locations from voluntary sampling program

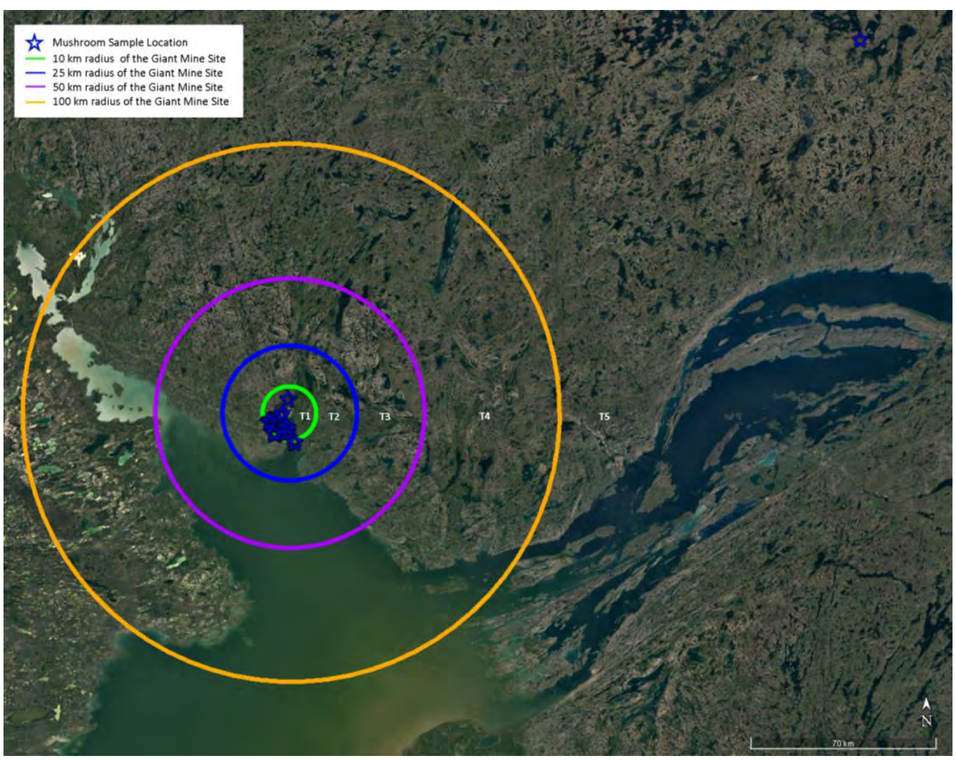
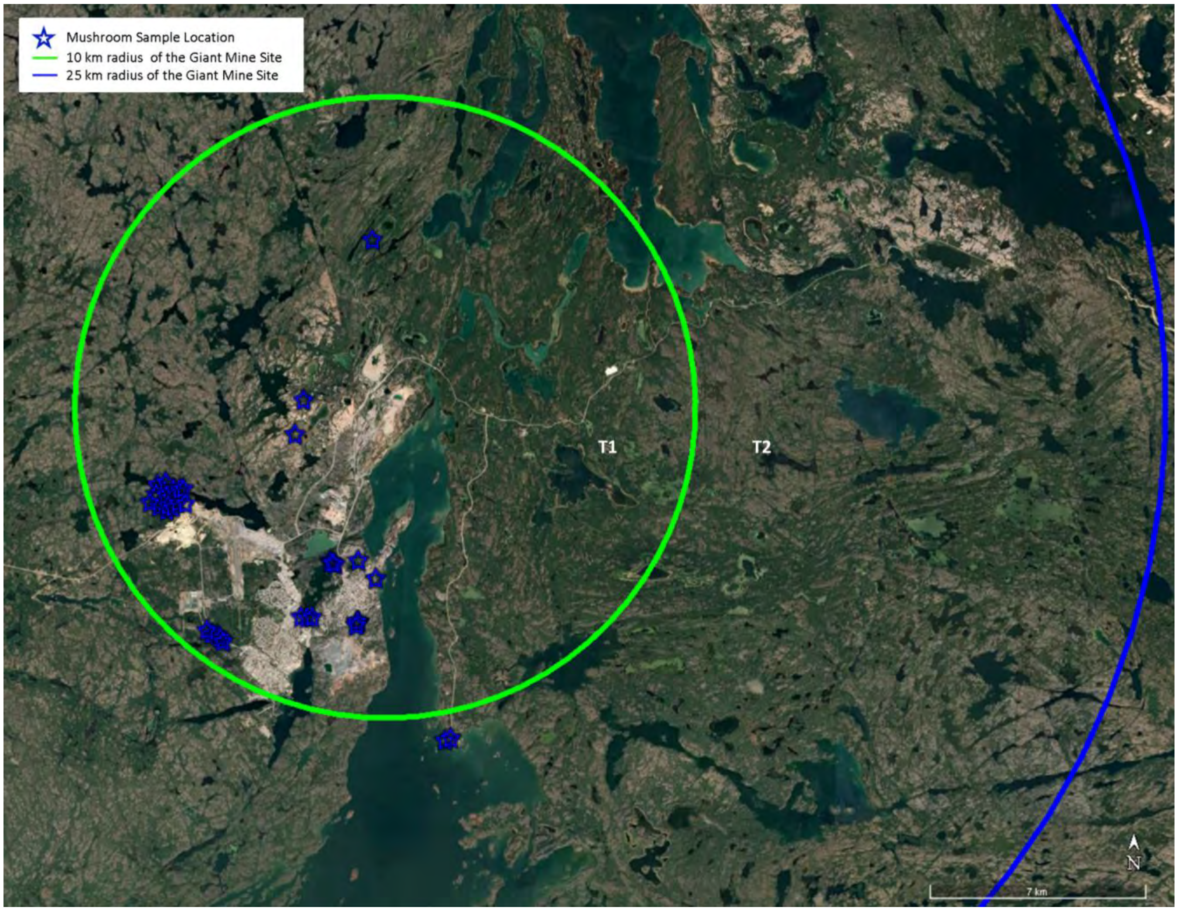


Figure P.13 Mushroom sample locations T1 and T2 from voluntary sampling program



P.4.1 Consideration of Mushroom Data Sets

To allow for a more useful comparison, the mushroom data from the two studies were broken down by family as indicated in Table P.6 and the average arsenic concentrations for each family were compared as shown in

Table P.7. While direct comparisons were not available for most family of mushrooms, both the voluntary mushroom sample data and Obst mushroom data were available for *Agaricaceae, Amanitaceae, Boletaceae*, *Morchellaceae*, and *Tricholomaceae*. It should be noted that often the mushroom samples for the two studies were collected from varying distances from the Giant Mine, which complicates the comparison. In general, the average concentrations between the two studies were similar with elevated concentrations observed for *Tricholomataceae.* Average arsenic concentrations in samples collected farther from the Giant Mine were generally lower than samples collected within T1 (e.g., in the case of *Boletaceae, Morchellaceae, and*

Tricholomaceae). Based on this comparison, the two datasets were combined into a single set of mushroom data (ATTACHMENT P.2) for further evaluation.

Table P.6 Division of mushroom samples

Family	Included Sample Classifications
Agaricaceae	Agaricus, Meadow Mushroom
Amanitaceae	Amanita, Fly Agaric
Bankeraceae	Sarcodon
Boletaceae	Bolete, Leccinum
Coprinaceae	Shaggy Mane, Tippler's Bane
Helvellaceae	False Morel
Hymenochaetaceae	Chaga
Lycoperdaceae	Puffball
Morchellaceae	Morchella, Morel
Russulaceae	Lactarius
Suillaceae	Suillus, Gomphidius, Fuscoboletus
Tricholomataceae	Tricholoma, Clitocybe, White Matsutake

Table P.7 Comparison of Obst and voluntary sampling mushroom data

Family	Study	N	Average Arsenic Concentration (mg/kg ww)	Comment
Agaricaceae	Summer 2017	4	4.5	All samples from T1
	Obst (2014)	10	7.1	All samples from T1
Amanitaceae	Summer 2017	2	0.55	All samples from T1
	Obst (2014)	5	0.72	Samples from T1 and T5
Bankeraceae	Summer 2017	2	1.7	Samples from T1 and T3
	Obst (2014)	0	-	
Boletaceae	Summer 2017	9	0.83	All samples from T1
	Obst (2014)	47	0.40	Samples from T1, T2, T3, T4 and T5
Coprinaceae	Summer 2017	0	-	
	Obst (2014)	9	12	All samples from T1
Helvellaceae	Summer 2017	0	-	
	Obst (2014)	5	0.03	Samples from T3 and T4
Hymenochaetaceae	Summer 2017	2	0.05	Samples from T1 and T2
	Obst (2014)	0	-	
Lycoperdaceae	Summer 2017	0	-	
	Obst (2014)	3	9.10	All samples from T1
Morchellaceae	Summer 2017	2	0.70	Samples from T1 and T5
	Obst (2014)	31	0.12	Samples from T3, T4 and T5
Russulaceae	Summer 2017	1	0.41	Sample from T1
	Obst (2014)	0	-	
Suillaceae	Summer 2017	15	0.73	All samples from T1
	Obst (2014)	0	-	
Tricholomataceae	Summer 2017	3	131	All samples from T1
	Obst (2014)	13	23	Samples from T1, T2, T3 and T4

P.4.2 Arsenic Concentrations in Mushrooms Used in Calculations

The combined voluntary sampling/Obst mushroom dataset was then further analyzed to generate concentrations for use in the human health calculations. Given the fact that *Tricholomataceae* is known to be an arsenic accumulator and therefore have the highest concentrations, arsenic in mushroom concentrations were derived using the combined dataset excluding *Tricholomataceae* samples and for *Tricholomataceae* samples only.

Mushroom arsenic concentrations are presented in Table P.8 for the non-*Tricholomataceae* samples and *Tricholomataceae* only samples from the combined dataset. As seen from the table, the arsenic concentrations in the *Tricholomataceae* samples are at least an order of magnitude higher than for other mushrooms collected at the same distance from the Giant Mine. Concentrations of arsenic in all the mushroom samples collected from T3 which are at a distance of 25 km from the Giant Mine are essentially the same as background concentrations at 50 km distance from site. Obst (2014) indicated that people should only eat mushrooms from a distance greater than 50km from the Giant Mine. The mushroom data indicate that mushrooms at a distance of 25km are at background concentrations.

Table P.8 Average arsenic concentrations in mushrooms at different distances from the Giant Mine

Location	Without *Trichcolomataceae*		*Trichcolomataceae* Only	
	N	Average Arsenic Concentration (mg/kg ww)	N	Average Arsenic Concentration (mg/kg ww)
Background (> 50 km of Giant Mine)	46	0.13	3	7.4
T1 (Within 10 km of Giant Mine)	74	3.6	6	106
T2 (10 to 25 km of Giant Mine)	4	0.19	1	11
T3 (25 to 50 km of Giant Mine)	24	0.14	6	4
T4 (50 to 100 km of Giant Mine)	11	0.04	-	-
T5 (> 100 km of Giant Mine)	35	0.17	-	-

The T1 location includes 4 areas: around Vee Lake, near the airport (YK golf course), Deh Cho Boulevard and around Rat Lake. The Health Department has an advisory to not eat mushrooms and berries from around Rat Lake and thus these samples were removed from the dataset. With the exclusion of the mushroom samples around Rat Lake the arsenic concentration is calculated as 0.76 mg/kg ww. This concentration was used in the calculations.

P.4.3 Mushroom Consumption Rates Used in Calculations

Obst (2014) provided information on the annual consumption of mushrooms based on 26 harvesters. These data were collected over a year between 1998 and 1999 and are summarized in Table P.9. As seen from the table, the majority of the harvesters ate less than 5 kg a year of mushrooms with 10 harvesters eating less than 3.5 kg.

Table P.9 Mushroom consumption by harvesters in Yellowknife area

Kilograms/year eaten	Number of People
15	2
11	1
9 to 9.5	3
7-8	3
4 to 5	7
<1 to 3.5 kg	10

Note: obtained from spreadsheet Mush.Final.01.xls

The average yearly consumption of mushrooms reported in Table P.9 is 5.5 kg. In addition, Obst (2014) provided information on 1350 residents in Yellowknife who consume mushrooms (see Table P.10). Based on this information the average yearly consumption of people who eat mushrooms in Yellowknife is 1.1 kg/yr.

Table P.10 Mushroom consumption by residents in Yellowknife area

Kilograms/year eaten	Number of People
10 to 15	10
5 to 10	25
2 to 5	40
1 to 2	100
0.5 to 1	175
0.07 to 0.5	1000

Note: obtained from spreadsheet Mush.Final.01.xls

The information provided also indicated that people harvested mushrooms 3.5 years out of every 5 years as generally every 1.5 years there are no mushrooms to harvest.

The information from the harvesters seemed to skew the information high and it was assumed based on all this information that people in Yellowknife who eat mushrooms would eat 1.5 kg over a 6 month period or about 7.5 grams ww per day.

For consideration of the intake of *Tricholomataceae*, it was assumed that 20% of the edible mushrooms would consist of *Tricholomataceae* since they are only harvested in late September and October. This results in an intake rate of 1.5 g *Trichlomatacae* (ww)/d.

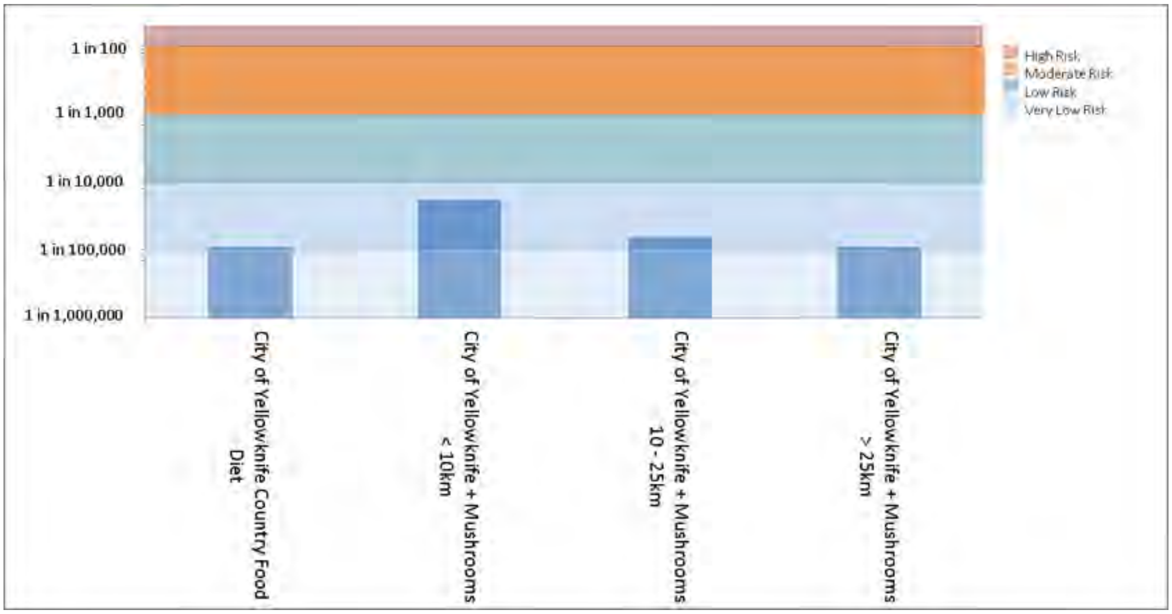
The calculation assumes that people would eat mushrooms every day as adults for 60 years (i.e., from 20 to 80 years of age) and that people from the City of Yellowknife, which includes the Metis, eat mushrooms. The YKDFN indicated that they do not eat mushrooms.

P.4.4 Results

In determining the risks from arsenic exposure, bioaccessibility and speciation assumptions for mushrooms were used. These values were provided in the main document. The arsenobetaine (non-toxic form) was considered to be 34% of the total arsenic and thus the remaining arsenic was assumed to be in the toxic form. A bioaccesibility value of 70% was then applied to the remaining arsenic fraction.

Figure P.14 shows the associated incremental cancer risk for eating all mushrooms with the exception of *Tricholomataceae*.

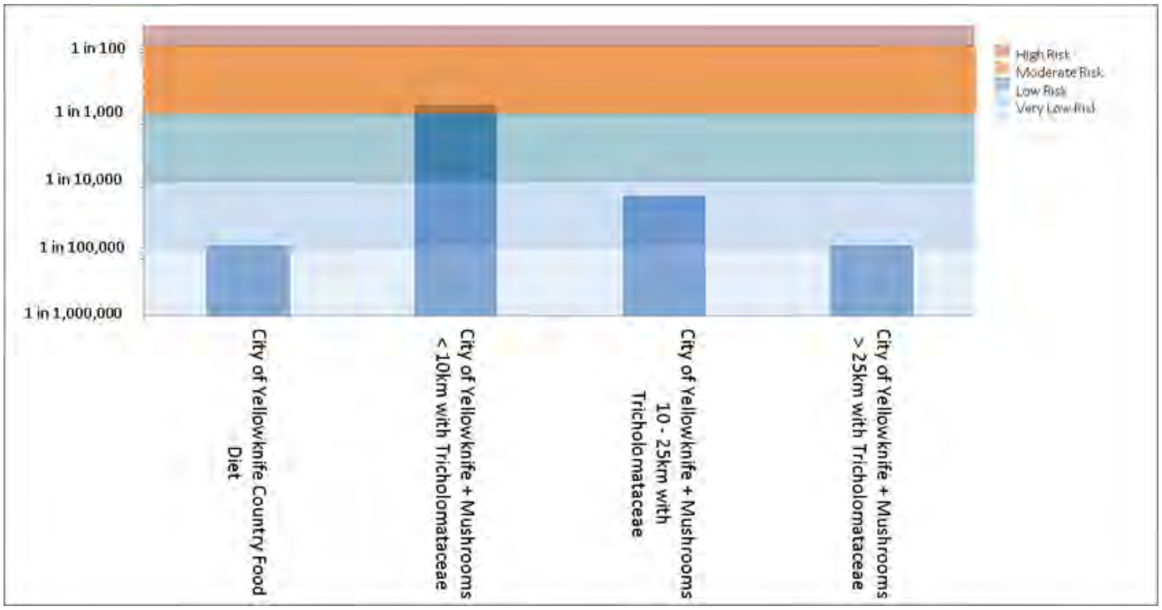
Figure P.14 Incremental arsenic risks associated with mushroom consumption



The figure provides the base case for the City of Yellowknife for comparison purposes. The results indicate that if someone eats 1.5 kg mushrooms a year from locations beyond 25 km of the Giant Mine that there is no incremental arsenic risk as the arsenic concentrations are at background. Eating mushrooms from between 10 km and 25 km of the Giant Mine results in risks in the low end of the very low risk area and eating 1.5 kg of mushrooms a year from within 10km of the Giant Mine increases the risk, however, risks are still in the very low range and are similar to having x-rays.

Figure P.15 shows the associated incremental cancer risk for eating *Tricholomataceae* only. It was assumed that people eat about 300 g/year of this high arsenic accumulator for 40 years. As seen from the figure, risks are in the moderate range for eating these high arsenic accumulating mushrooms for areas such as the golf course that is within 10 km of the Giant Mine. There is no incremental arsenic risk from eating high arsenic accumulating mushrooms at distances greater than 25 km from the Giant Mine.

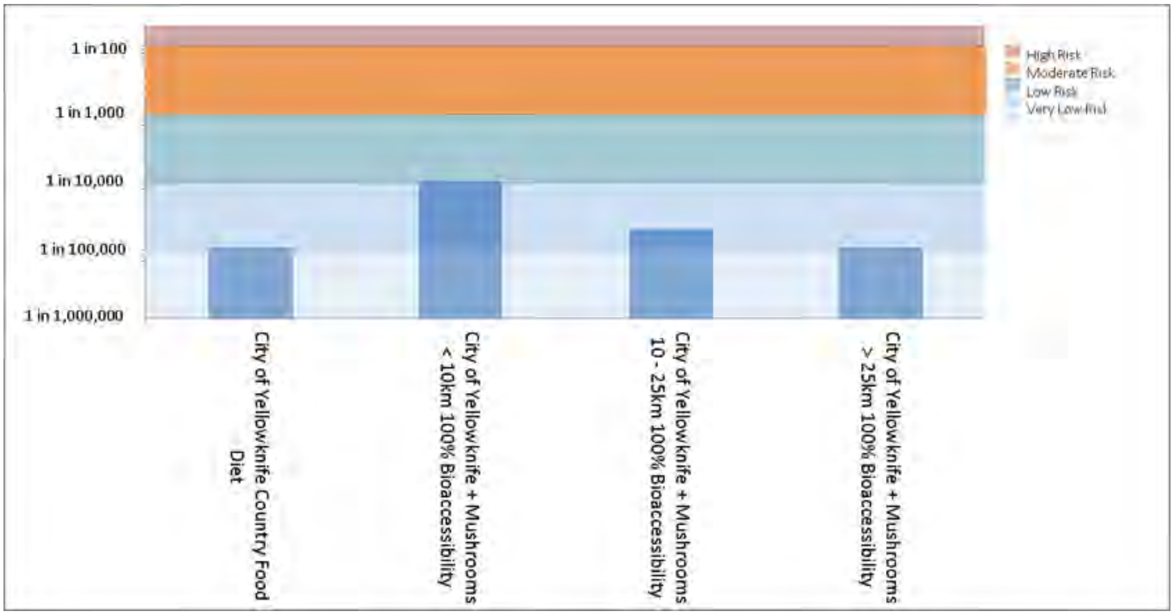
Figure P.15 Incremental arsenic risks associated with *Tricholomataceae* consumption



P.4.5 Speciation and Bioaccessibility

To evaluate the potential effect of bioaccessibility assumptions on the calculated incremental cancer risk due to mushroom consumption, a separate calculation was undertaken assuming that 100% of the arsenic was bioaccessible. While the bioaccessibility of the mushrooms was assumed to be 100%, the arsenobetaine content (non-toxic portion) was still taken into account in these calculations. The results of this calculation (see Figure P.16) show that assuming 100% bioaccessiblity of arsenic in mushrooms increases the risks slightly resulting in the risks of eating mushrooms from within 10 km of the Giant Mine tipping into the low end of the low risk range.

Figure P.16 Incremental arsenic risks associated with mushroom consumption – 100% bioaccessibility



The above results of very low risks for mushroom exposure were calculated assuming that people ate 1.5 kg of mushrooms a year from each of the locations. Additional calculations were carried out to determine how many mushrooms can be consumed from areas within 10 km of the Giant Mine and between 10 km and 25 km in order to represent a negligible risk. Table P.11 shows that in order to have a negligible risk from arsenic exposure people should only eat about 300 g of mushrooms a year from with 10 km of the Giant Mine. Within 10 to 25 km of the Giant Mine they can consume about 3.2 kg of mushrooms a year and still be at a negligible risk.

Table P.11 Annual consumption of mushrooms associated with negligible risk level

Mushroom Source	Mushroom Ingestion Rate (kg/year) for a Negligible Risk Level (1×10^{-5})
Within 10 km of Giant Mine (T1)	0.3
10 to 25 km of Giant Mine (T2)	3.2
> 25 km (T3 to T5)	Unlimited

For high arsenic accumulators such as *Tricholomataceae,* only about eight grams can be eaten each year from within 10 km of the Giant Mine without incremental cancer risks above the negligible range.

P.4.6 Antimony Results

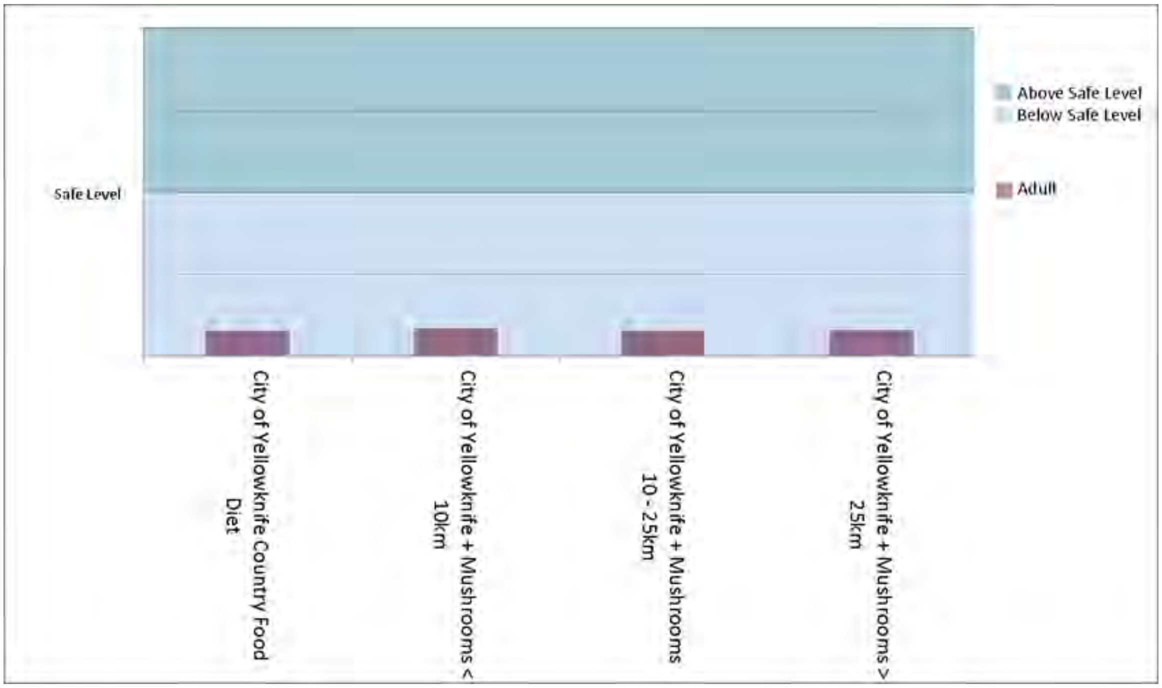
The above discussion focused on arsenic. This section provides the concentrations of antimony in mushrooms based on the combined dataset (see Table P.12) and presents the results for mushroom consumption (see Figure P.17). Table P.12 shows that in mushroom samples that the antimony concentration is similar to background for all locations except with in the 25 km to 50km distance from the Giant Mine. For *Tricholomataceae,* antimony concentrations are within background at distances greater than 10km from the Giant Mine.

As seen from the Figure P.17, antimony exposure from eating mushrooms at different distances from the Giant Mine do not add much additional exposure and are all below the safe level. It is noted that all other pathways of exposure as discussed in the main report are presented in the figure.

Table P.12 Antimony concentrations in mushrooms

Location	Without *Trichcolomataceae*		*Trichcolomataceae* Only	
	# of Samples	Average Antimony Concentration (mg/kg ww)	# of Samples	Average Antimony Concentration (mg/kg ww)
Background (> 50 km of Giant Mine)	46	0.05	3	0.014
T1 (Within 10 km of Giant Mine)	74	0.05	6	0.13
T2 (10 to 25 km of Giant Mine)	4	0.007	1	0.012
T3 (25 to 50 km of Giant Mine)	24	0.012	6	0.009
T4 (50 to 100 km of Giant Mine)	11	0.073	-	-
T5 (> 100 km of Giant Mine)	35	0.02	-	-

Figure P.17 Exposure to antimony from consumption of mushrooms



P.5 Additional Scenarios

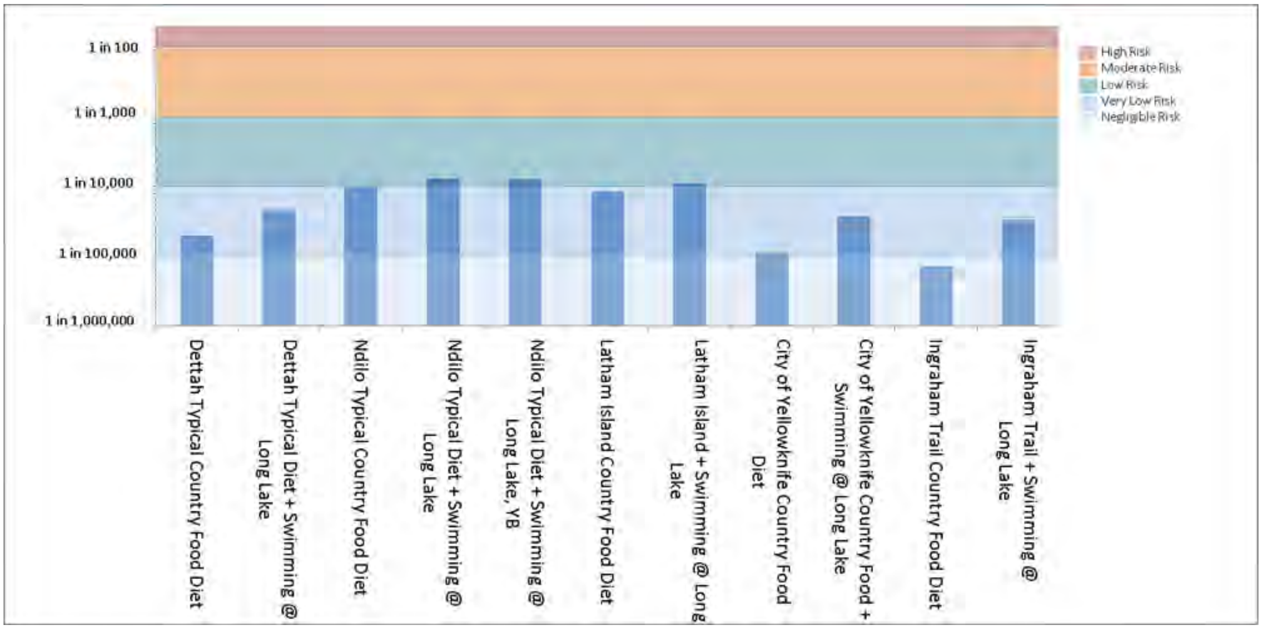
P.5.1 Long Lake Exposure from Swimming and Wading

During meetings to present the draft risk assessment, the YKDFN and other residents indicated the need to see additional analyses for exposure at Long Lake. Figure P.18 shows the results of these additional analyses. The different analyses involved:

- residents of Ndilo swimming in Long Lake;
- residents of Ndilo wading in Yellowknife Bay and Long Lake;
- residents of Latham Island swimming in Long Lake; and
- residents of Ingraham Trail swimming in Long Lake.

Figure P.18 shows the scenario for the City of Yellowknife that was presented in the main report as well as the additional scenarios. The results show that swimming in Long Lake and incidental ingestion of water while swimming increases the risk from arsenic exposure; however, results are in the very low risk range for all locations with the exception of Ndilo where the risks are in the low end of the low risk range.

Figure P.18 Incremental arsenic risks associated with wading and swimming in Long Lake



P.5.2 Yellowknife River Exposure from Swimming and Wading

There is a day use area along the Yellowknife River and members of the YKDFN requested that an analysis be completed of people wading and swimming in the Yellowknife River. There were some surface water samples and sediment samples in the Yellowknife River near to the day use area and these samples were considered to be a representation of conditions in the that people would encounter during swimming and wading activities.

Figure P.19 shows the two surface water sample locations near the mouth of the Yellowknife River that were considered as well as the two upstream background locations. Table P.13 provides the summary of the data. As seen from the table, the arsenic and antimony concentrations in the Yellowknife River are considered to be at background concentrations.

Figure P.20 shows the sediment sampling locations considered for the day use area and Table P.14 provides a summary of the data. As seen from the table, the maximum arsenic concentration was found to be 38 mg/kg, which is similar to the shallow sediment arsenic concentrations near Ndilo.

Figure P.19 Surface water samples in Yellowknife River

Table P.13 Summary of surface water concentrations from Yellowknife River

COPC	Back-ground (mg/L)	N	N<MDL	Surface Water Concentration (mg/L)				
				Min	Max	Average	Standard Deviation	95th Percentile
Antimony	0.00005	7	7	0.00003	0.0002	0.0001	8.9×10^{-5}	0.0002
Arsenic	0.0009	7	0	0.0003	0.0005	0.0004	5.1×10^{-5}	0.0005

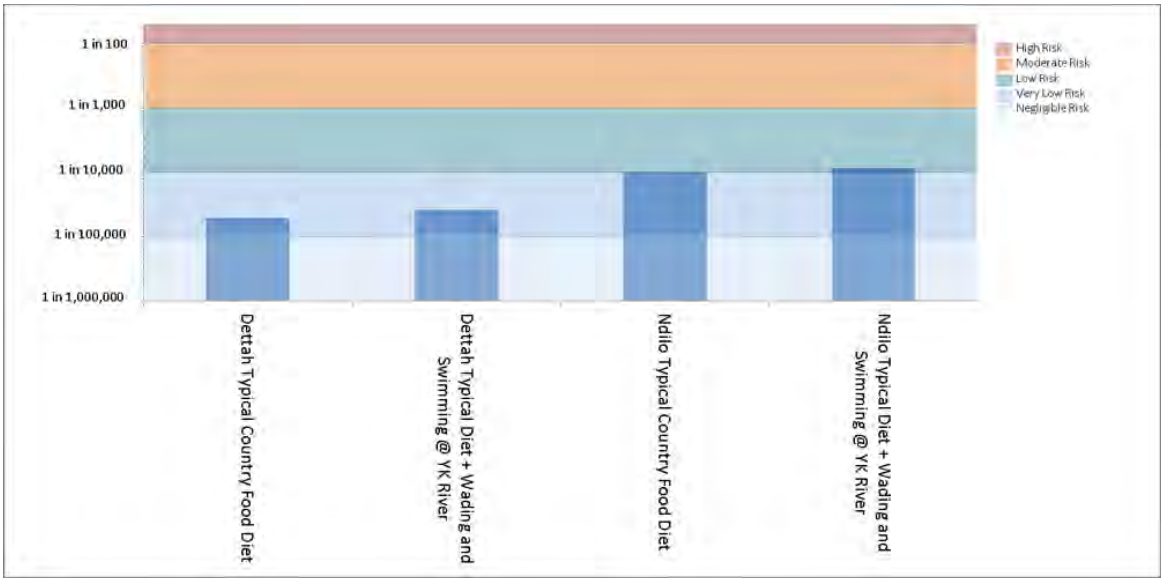
Figure P.20 Sediment samples in Yellowknife River

Table P.14 Summary of sediment concentrations from Yellowknife River

COPC	Back-ground (mg/kg)	N	N<MDL	Sediment Concentration (mg/kg)				
				Min	Max	Average	Standard Deviation	95th Percentile
Antimony	0.44	6	0	0.05	1.7	0.87	0.62	1.6
Arsenic	6.4	6	0	6.2	38	18	10	32

Figure P.21 shows the scenario for members of Ndilo and Dettah swimming and wading in the Yellowknife River for their lifetime. The results show that swimming and wading in the Yellowknife River does not change the incremental arsenic risks very much.

Figure P.21 Incremental arsenic risks associated with wading and swimming in Yellowknife River



P.6 Literature Cited

Jamieson, H.E., K.M. Maitland, J.T. Oliver, and M.J. Palmer. 2017. Regional distribution of arsenic in near-surface soils in the Yellowknife area. Northwest Territories Geological Survey, NWT Open File 2017-03.

McAuley, C., A. Dersch, L.N. Kates, D.R. Sowan, and C.A. Ollson. 2016. Improving risk assessment calculations for traditional foods through collaborative research with First Nations communities. Risk Analysis 36(12): 2195–2207. doi:10.1111/risa.12578.

Obst, J. 2014. Heavy metals in soil and edible wild mushrooms in the North Slave Region, Northwest Territories, Canada, and assessment of the potential human health risk from the consumption of edible wild mushrooms.

LIST OF ATTACHMENTS

ATTACHMENT P.1

SUMMARY OF ADDITIONAL SUBMITTED SAMPLES

APPENDIX P – ATTACHMENT 1: SUMMARY OF ADDITIONAL SUBMITTED SAMPLES

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	%	Moisture	12
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Aluminum (Al)	91.3
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Antimony (Sb)	0.418
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Arsenic (As)	0.697
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Barium (Ba)	132
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Beryllium (Be)	<0.1
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Bismuth (Bi)	<0.1
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Boron (B)	16.8
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Cadmium (Cd)	0.091
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Calcium (Ca)	2980
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Chromium (Cr)	0.47
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Cobalt (Co)	0.51
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Copper (Cu)	3.63
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Iron (Fe)	137
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Lead (Pb)	24.3
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Magnesium (Mg)	4440
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Manganese (Mn)	217
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Mercury (Hg)	0.022
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Molybdenum (Mo)	0.053
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Nickel (Ni)	0.616
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Phosphorus (P)	191
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Potassium (K)	40300
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Selenium (Se)	<0.05
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Silver (Ag)	0.068
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Sodium (Na)	24
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Strontium (Sr)	7.86
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Thallium (Tl)	0.0661
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Tin (Sn)	0.13
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Titanium (Ti)	4.7
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Uranium (U)	0.0154
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Vanadium (V)	0.25
2385_GIANT_104	01/07/2017	Chaga (Inonotus obliquus)	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	mg/kg dw	Total Zinc (Zn)	44.3

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Aluminum (Al)	31.6
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Antimony (Sb)	0.212
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Arsenic (As)	2.23
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Barium (Ba)	9.15
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Boron (B)	8.6
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Cadmium (Cd)	0.467
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Calcium (Ca)	18000
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Chromium (Cr)	0.46
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Cobalt (Co)	0.969
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Copper (Cu)	23.4
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Iron (Fe)	90
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Lead (Pb)	0.055
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Magnesium (Mg)	8730
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Manganese (Mn)	51.6
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Mercury (Hg)	0.019
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Molybdenum (Mo)	1.53
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Nickel (Ni)	1.64
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Phosphorus (P)	17900
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Potassium (K)	32100
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Selenium (Se)	0.263
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Silver (Ag)	0.048
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Sodium (Na)	460
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Strontium (Sr)	37.6
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Thallium (Tl)	0.0443
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Tin (Sn)	0.22
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Titanium (Ti)	1.9
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Uranium (U)	0.147
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Vanadium (V)	0.32
2385_GIANT_105	01/07/2017	Morels	Reid Lake	mg/kg dw	Total Zinc (Zn)	125
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Aluminum (Al)	19.6
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Antimony (Sb)	0.0265
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Arsenic (As)	1.04
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Barium (Ba)	0.27

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Beryllium (Be)	0.002
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Bismuth (Bi)	0.02
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Boron (B)	2.96
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Cadmium (Cd)	0.002
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Calcium (Ca)	725
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Chromium (Cr)	0.068
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Cobalt (Co)	0.0289
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Copper (Cu)	0.978
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Iron (Fe)	34.6
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Lead (Pb)	0.0267
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Magnesium (Mg)	277
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Manganese (Mn)	2.44
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Mercury (Hg)	0.002
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Molybdenum (Mo)	0.031
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Nickel (Ni)	0.097
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Phosphorus (P)	578
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Potassium (K)	3920
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Selenium (Se)	0.01
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Silver (Ag)	0.004
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Sodium (Na)	2.9
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Strontium (Sr)	0.891
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Thallium (Tl)	0.0004
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Tin (Sn)	0.02
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Titanium (Ti)	0.05
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Uranium (U)	0.00124
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Vanadium (V)	0.051
2385_GIANT_106	2015	black currant	Giant Lease, Vee Lake Rd; 62 31 53N, 114 21 21W	mg/kg ww	Total Zinc (Zn)	2.42
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	%	Moisture	10
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Aluminum (Al)	8.8
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Antimony (Sb)	0.178
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Arsenic (As)	9.36
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Barium (Ba)	1.25
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Beryllium (Be)	<0.1
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Bismuth (Bi)	<0.1
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Boron (B)	<2

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Cadmium (Cd)	1.05
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Calcium (Ca)	2520
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Chromium (Cr)	<0.2
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Cobalt (Co)	0.222
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Copper (Cu)	28.2
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Iron (Fe)	49
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Lead (Pb)	0.098
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Magnesium (Mg)	1530
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Manganese (Mn)	24.7
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Mercury (Hg)	0.023
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Molybdenum (Mo)	0.148
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Nickel (Ni)	0.77
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Phosphorus (P)	14800
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Potassium (K)	40000
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Selenium (Se)	0.073
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Silver (Ag)	0.041
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Sodium (Na)	558
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Strontium (Sr)	2.25
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Thallium (Tl)	0.0077
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Tin (Sn)	<0.1
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Titanium (Ti)	<1
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Uranium (U)	0.019
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Vanadium (V)	<0.2
2385_GIANT_107	22/06/2017	morchella elata (clade)	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	mg/kg dw	Total Zinc (Zn)	119
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Aluminum (Al)	54.2
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Antimony (Sb)	0.0201
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Arsenic (As)	10.9
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Barium (Ba)	3.07
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Boron (B)	7.8
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Cadmium (Cd)	0.395
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Calcium (Ca)	532
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Chromium (Cr)	0.42
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Cobalt (Co)	1.05

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2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Copper (Cu)	13.5
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Iron (Fe)	98
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Lead (Pb)	0.184
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Magnesium (Mg)	968
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Manganese (Mn)	10.1
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Mercury (Hg)	0.054
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Molybdenum (Mo)	0.272
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Nickel (Ni)	0.543
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Phosphorus (P)	4680
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Potassium (K)	44000
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Selenium (Se)	0.197
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Silver (Ag)	0.139
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Sodium (Na)	766
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Strontium (Sr)	1.36
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Thallium (Tl)	0.0041
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Titanium (Ti)	2.6
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Uranium (U)	0.03
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Vanadium (V)	0.21
2385_GIANT_108	29/06/2017	Leccinum scabrum	Rotary Park, Yellowknife	mg/kg dw	Total Zinc (Zn)	145
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	%	Moisture	76
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Aluminum (Al)	2.29
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Antimony (Sb)	0.0022
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Arsenic (As)	0.114
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Barium (Ba)	0.672
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Beryllium (Be)	<0.002
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Bismuth (Bi)	<0.02
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Boron (B)	4.7
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Cadmium (Cd)	0.0062
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Calcium (Ca)	941
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Chromium (Cr)	<0.01
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Cobalt (Co)	0.0354
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Copper (Cu)	1.68
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Iron (Fe)	17.9
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Lead (Pb)	0.0029

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2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Magnesium (Mg)	334
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Manganese (Mn)	17.9
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Mercury (Hg)	<0.002
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Molybdenum (Mo)	0.087
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Nickel (Ni)	0.698
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Phosphorus (P)	754
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Potassium (K)	2010
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Selenium (Se)	<0.01
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Silver (Ag)	<0.004
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Sodium (Na)	58.5
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Strontium (Sr)	0.819
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Thallium (Tl)	<0.0004
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Tin (Sn)	0.258
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Titanium (Ti)	0.39
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Uranium (U)	<0.0004
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Vanadium (V)	<0.02
2385_GIANT_109	01/07/2017	Raspberry	Ndilo	mg/kg ww	Total Zinc (Zn)	7.92
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Aluminum (Al)	70.4
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Antimony (Sb)	0.119
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Arsenic (As)	2.76
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Barium (Ba)	10.5
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Beryllium (Be)	0.01
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Bismuth (Bi)	0.1
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Boron (B)	2.1
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Cadmium (Cd)	0.012
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Calcium (Ca)	1830
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Chromium (Cr)	0.192
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Cobalt (Co)	0.08
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Copper (Cu)	1.04
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Iron (Fe)	126
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Lead (Pb)	0.267
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Magnesium (Mg)	111
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Manganese (Mn)	27.8
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Mercury (Hg)	0.016
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Molybdenum (Mo)	0.05

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2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Nickel (Ni)	0.202
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Phosphorus (P)	59
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Potassium (K)	144
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Selenium (Se)	0.05
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Silver (Ag)	0.02
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Sodium (Na)	12
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Strontium (Sr)	6.27
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Thallium (Tl)	0.002
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Tin (Sn)	0.1
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Titanium (Ti)	3.9
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Uranium (U)	0.0212
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Vanadium (V)	0.19
2385_GIANT_110	01/07/2017	Spruce gum	Ndilo	mg/kg ww	Total Zinc (Zn)	18.5
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	%	Moisture	74
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Aluminum (Al)	0.64
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Antimony (Sb)	0.0018
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Arsenic (As)	0.133
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Barium (Ba)	0.819
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Beryllium (Be)	<0.002
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Bismuth (Bi)	<0.02
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Boron (B)	7.31
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Cadmium (Cd)	0.0152
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Calcium (Ca)	327
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Chromium (Cr)	<0.01
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Cobalt (Co)	0.0874
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Copper (Cu)	1.9
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Iron (Fe)	9.2
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Lead (Pb)	<0.002
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Magnesium (Mg)	478
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Manganese (Mn)	16.9
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Mercury (Hg)	<0.002
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Molybdenum (Mo)	0.037
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Nickel (Ni)	1.08
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Phosphorus (P)	1510
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Potassium (K)	8320

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2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Selenium (Se)	<0.01
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Silver (Ag)	<0.004
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Sodium (Na)	11
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Strontium (Sr)	1.05
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Thallium (Tl)	<0.0004
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Tin (Sn)	0.073
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Titanium (Ti)	0.176
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Uranium (U)	<0.0004
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Vanadium (V)	<0.02
2385_GIANT_111	01/07/2017	orange berry (bear berry?)	Ndilo	mg/kg ww	Total Zinc (Zn)	6.5
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Aluminum (Al)	94
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Antimony (Sb)	0.306
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Arsenic (As)	2.14
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Barium (Ba)	4.99
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Boron (B)	2.7
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Cadmium (Cd)	0.112
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Calcium (Ca)	731
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Chromium (Cr)	0.32
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Cobalt (Co)	0.169
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Copper (Cu)	5.83
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Iron (Fe)	209
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Lead (Pb)	0.674
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Magnesium (Mg)	220
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Manganese (Mn)	175
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Mercury (Hg)	0.037
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Molybdenum (Mo)	0.063
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Nickel (Ni)	0.415
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Phosphorus (P)	354
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Potassium (K)	515
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Selenium (Se)	0.05
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Silver (Ag)	0.027
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Sodium (Na)	190
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Strontium (Sr)	2.33

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Thallium (Tl)	0.0021
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Titanium (Ti)	4.8
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Uranium (U)	0.0149
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Vanadium (V)	0.25
2385_GIANT_112	01/07/2017	birch bark	Ndilo	mg/kg dw	Total Zinc (Zn)	130
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Aluminum (Al)	24.6
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Antimony (Sb)	0.114
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Arsenic (As)	0.953
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Barium (Ba)	27.9
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Boron (B)	27.7
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Cadmium (Cd)	0.381
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Calcium (Ca)	7590
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Chromium (Cr)	0.2
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Cobalt (Co)	0.288
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Copper (Cu)	6.31
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Iron (Fe)	78
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Lead (Pb)	0.279
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Magnesium (Mg)	2960
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Manganese (Mn)	371
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Mercury (Hg)	0.014
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Molybdenum (Mo)	0.398
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Nickel (Ni)	1.41
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Phosphorus (P)	2150
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Potassium (K)	6770
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Selenium (Se)	0.05
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Silver (Ag)	0.022
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Sodium (Na)	61
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Strontium (Sr)	14.9
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Thallium (Tl)	0.0033
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Titanium (Ti)	1.3
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Uranium (U)	0.0047

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_113	01/07/2017	birch leaves and twigs	Ndilo	mg/kg dw	Total Zinc (Zn)	310
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Aluminum (Al)	4.6
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Antimony (Sb)	0.053
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Arsenic (As)	<0.1
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Barium (Ba)	35.4
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Beryllium (Be)	<0.2
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Bismuth (Bi)	<0.2
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Boron (B)	22.2
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Cadmium (Cd)	0.022
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Calcium (Ca)	5230
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Chromium (Cr)	0.45
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Cobalt (Co)	0.067
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Copper (Cu)	0.89
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Iron (Fe)	175
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Lead (Pb)	0.197
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Magnesium (Mg)	1200
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Manganese (Mn)	17.7
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Mercury (Hg)	<0.02
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Molybdenum (Mo)	1.8
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Nickel (Ni)	0.39
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Phosphorus (P)	1010
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Potassium (K)	12500
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Selenium (Se)	<0.1
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Silver (Ag)	0.068
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Sodium (Na)	1110
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Strontium (Sr)	41.5
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Thallium (Tl)	0.0236
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Tin (Sn)	<0.2
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Titanium (Ti)	<2
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Uranium (U)	0.0043
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Vanadium (V)	<0.4
2385_GIANT_114	Summer 2017	rat root	Dettah	mg/kg dw	Total Zinc (Zn)	16.2
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Aluminum (Al)	6
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Antimony (Sb)	0.0067

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Arsenic (As)	8.61
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Barium (Ba)	0.2
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Boron (B)	6.8
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Cadmium (Cd)	3.15
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Calcium (Ca)	132
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Chromium (Cr)	0.2
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Cobalt (Co)	0.228
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Copper (Cu)	25.2
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Iron (Fe)	29
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Lead (Pb)	0.035
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Magnesium (Mg)	634
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Manganese (Mn)	5.77
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Mercury (Hg)	0.048
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Molybdenum (Mo)	0.05
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Nickel (Ni)	0.244
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Phosphorus (P)	4160
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Potassium (K)	24600
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Selenium (Se)	3.03
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Silver (Ag)	0.906
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Sodium (Na)	502
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Strontium (Sr)	0.19
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Thallium (Tl)	0.0073
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Titanium (Ti)	1
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Uranium (U)	0.0051
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Vanadium (V)	70
2385_GIANT_115	11/08/2017	Amanita muscaria	Frame Lake trail, NE corder	mg/kg dw	Total Zinc (Zn)	194
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	%	Moisture	12
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Aluminum (Al)	13.3
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Antimony (Sb)	0.0189
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Arsenic (As)	6.33
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Barium (Ba)	0.42
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Beryllium (Be)	<0.1

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Bismuth (Bi)	<0.1
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Boron (B)	3.8
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Cadmium (Cd)	0.321
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Calcium (Ca)	202
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Chromium (Cr)	<0.2
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Cobalt (Co)	0.761
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Copper (Cu)	15.2
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Iron (Fe)	36
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Lead (Pb)	0.155
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Magnesium (Mg)	832
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Manganese (Mn)	9.48
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Mercury (Hg)	0.049
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Molybdenum (Mo)	0.206
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Nickel (Ni)	0.268
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Phosphorus (P)	4780
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Potassium (K)	31000
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Selenium (Se)	0.201
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Silver (Ag)	0.19
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Sodium (Na)	1760
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Strontium (Sr)	0.44
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Thallium (Tl)	0.0283
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Tin (Sn)	<0.1
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Titanium (Ti)	<1
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Uranium (U)	0.0057
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Vanadium (V)	<0.2
2385_GIANT_116	11/08/2017	Leccinum holopus	Frame Lake trail, NE corder	mg/kg dw	Total Zinc (Zn)	80.9
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	%	Moisture	12
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Aluminum (Al)	10.5
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Antimony (Sb)	0.0186
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Arsenic (As)	9.47
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Barium (Ba)	0.37
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Beryllium (Be)	<0.1
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Bismuth (Bi)	<0.1
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Boron (B)	5.3
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Cadmium (Cd)	0.373

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Calcium (Ca)	236
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Chromium (Cr)	<0.2
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Cobalt (Co)	0.167
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Copper (Cu)	17.4
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Iron (Fe)	38
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Lead (Pb)	0.068
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Magnesium (Mg)	874
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Manganese (Mn)	11.6
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Mercury (Hg)	0.089
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Molybdenum (Mo)	0.302
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Nickel (Ni)	0.265
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Phosphorus (P)	6570
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Potassium (K)	33900
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Selenium (Se)	0.305
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Silver (Ag)	0.454
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Sodium (Na)	698
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Strontium (Sr)	0.51
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Thallium (Tl)	0.0049
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Tin (Sn)	<0.1
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Titanium (Ti)	<1
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Uranium (U)	0.0052
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Vanadium (V)	<0.2
2385_GIANT_117	11/08/2017	Leccinum scabrum	Frame Lake trail, NE corder	mg/kg dw	Total Zinc (Zn)	128
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Aluminum (Al)	24.5
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Antimony (Sb)	0.0209
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Arsenic (As)	3.43
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Barium (Ba)	0.43
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Boron (B)	4.1
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Cadmium (Cd)	0.06
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Calcium (Ca)	334
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Chromium (Cr)	0.2
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Cobalt (Co)	0.047
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Copper (Cu)	11.7

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Iron (Fe)	61
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Lead (Pb)	0.057
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Magnesium (Mg)	1200
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Manganese (Mn)	7.58
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Mercury (Hg)	0.035
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Molybdenum (Mo)	0.05
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Nickel (Ni)	0.331
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Phosphorus (P)	4560
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Potassium (K)	29700
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Selenium (Se)	2.05
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Silver (Ag)	0.97
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Sodium (Na)	70
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Strontium (Sr)	0.7
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Thallium (Tl)	0.002
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Tin (Sn)	10.9
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Titanium (Ti)	1
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Uranium (U)	0.0355
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_118	11/08/2017	Lactarius torminosus	Frame Lake trail, NE corder	mg/kg dw	Total Zinc (Zn)	51.1
2385_GIANT_119	03/08/2017	Chaga	Dettah	%	Moisture	21
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Aluminum (Al)	33.1
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Antimony (Sb)	<0.005
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Arsenic (As)	0.138
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Barium (Ba)	267
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Beryllium (Be)	<0.1
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Bismuth (Bi)	<0.1
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Boron (B)	17.9
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Cadmium (Cd)	0.186
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Calcium (Ca)	2330
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Chromium (Cr)	<0.2
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Cobalt (Co)	0.428
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Copper (Cu)	15
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Iron (Fe)	85
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Lead (Pb)	0.365
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Magnesium (Mg)	2100

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Manganese (Mn)	226
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Mercury (Hg)	0.016
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Molybdenum (Mo)	<0.05
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Nickel (Ni)	0.732
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Phosphorus (P)	280
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Potassium (K)	69200
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Selenium (Se)	0.053
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Silver (Ag)	0.078
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Sodium (Na)	14
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Strontium (Sr)	12.1
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Thallium (Tl)	0.0377
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Tin (Sn)	<0.1
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Titanium (Ti)	<1
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Uranium (U)	<0.002
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Vanadium (V)	<0.2
2385_GIANT_119	03/08/2017	Chaga	Dettah	mg/kg dw	Total Zinc (Zn)	50.2
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Aluminum (Al)	0.58
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Antimony (Sb)	0.0012
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Arsenic (As)	0.0067
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Barium (Ba)	0.521
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Beryllium (Be)	0.002
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Bismuth (Bi)	0.02
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Boron (B)	3.31
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Cadmium (Cd)	0.002
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Calcium (Ca)	248
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Chromium (Cr)	0.031
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Cobalt (Co)	0.0154
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Copper (Cu)	1.59
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Iron (Fe)	8.9
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Lead (Pb)	0.0028
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Magnesium (Mg)	239
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Manganese (Mn)	4.5
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Mercury (Hg)	0.002
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Molybdenum (Mo)	0.327
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Nickel (Ni)	1.94

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Phosphorus (P)	657
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Potassium (K)	2610
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Selenium (Se)	0.078
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Silver (Ag)	0.004
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Sodium (Na)	8.3
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Strontium (Sr)	0.857
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Thallium (Tl)	0.0004
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Tin (Sn)	0.128
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Titanium (Ti)	0.05
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Uranium (U)	0.00078
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Vanadium (V)	0.02
2385_GIANT_120	03/08/2017	high bush cranberry	Dettah	mg/kg ww	Total Zinc (Zn)	3.99
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Aluminum (Al)	34.5
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Antimony (Sb)	0.0328
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Arsenic (As)	2.01
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Barium (Ba)	64.8
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Boron (B)	14.3
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Cadmium (Cd)	0.268
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Calcium (Ca)	2210
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Chromium (Cr)	0.2
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Cobalt (Co)	1.03
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Copper (Cu)	8.64
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Iron (Fe)	39
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Lead (Pb)	0.229
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Magnesium (Mg)	1830
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Manganese (Mn)	54
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Mercury (Hg)	0.012
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Molybdenum (Mo)	0.4
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Nickel (Ni)	2.96
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Phosphorus (P)	1410
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Potassium (K)	11900
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Selenium (Se)	0.05
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Silver (Ag)	0.02

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Sodium (Na)	11
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Strontium (Sr)	9.04
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Thallium (Tl)	0.0509
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Tin (Sn)	0.18
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Titanium (Ti)	1
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Uranium (U)	0.0046
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_121	03/08/2017	fern	Dettah	mg/kg dw	Total Zinc (Zn)	44.4
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Aluminum (Al)	71.8
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Antimony (Sb)	0.102
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Arsenic (As)	1.35
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Barium (Ba)	70.4
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Boron (B)	6.2
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Cadmium (Cd)	0.041
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Calcium (Ca)	4850
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Chromium (Cr)	0.2
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Cobalt (Co)	0.284
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Copper (Cu)	5.1
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Iron (Fe)	82
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Lead (Pb)	0.281
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Magnesium (Mg)	1480
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Manganese (Mn)	228
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Mercury (Hg)	0.026
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Molybdenum (Mo)	0.164
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Nickel (Ni)	4.45
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Phosphorus (P)	718
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Potassium (K)	1890
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Selenium (Se)	0.05
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Silver (Ag)	0.02
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Sodium (Na)	13
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Strontium (Sr)	11
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Thallium (Tl)	0.0062
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Tin (Sn)	0.1

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Titanium (Ti)	1.2
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Uranium (U)	0.0075
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_122	03/08/2017	crowberry and twigs	Dettah	mg/kg dw	Total Zinc (Zn)	21.1
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Aluminum (Al)	63.4
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Antimony (Sb)	0.097
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Arsenic (As)	0.871
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Barium (Ba)	58.8
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Boron (B)	11
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Cadmium (Cd)	0.06
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Calcium (Ca)	5850
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Chromium (Cr)	0.2
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Cobalt (Co)	0.08
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Copper (Cu)	2.49
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Iron (Fe)	28
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Lead (Pb)	0.197
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Magnesium (Mg)	654
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Manganese (Mn)	462
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Mercury (Hg)	0.031
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Molybdenum (Mo)	0.05
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Nickel (Ni)	0.568
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Phosphorus (P)	336
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Potassium (K)	1830
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Selenium (Se)	0.05
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Silver (Ag)	0.02
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Sodium (Na)	15
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Strontium (Sr)	26.9
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Thallium (Tl)	0.0156
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Titanium (Ti)	1
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Uranium (U)	0.0022
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_123	03/08/2017	tamarack bark	Dettah	mg/kg dw	Total Zinc (Zn)	64.5

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Aluminum (Al)	1.46
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Antimony (Sb)	0.0012
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Arsenic (As)	0.0335
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Barium (Ba)	0.739
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Beryllium (Be)	0.002
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Bismuth (Bi)	0.02
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Boron (B)	1.74
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Cadmium (Cd)	0.002
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Calcium (Ca)	844
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Chromium (Cr)	0.01
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Cobalt (Co)	0.0052
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Copper (Cu)	1.08
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Iron (Fe)	7.4
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Lead (Pb)	0.0049
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Magnesium (Mg)	192
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Manganese (Mn)	5.06
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Mercury (Hg)	0.002
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Molybdenum (Mo)	0.055
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Nickel (Ni)	0.056
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Phosphorus (P)	653
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Potassium (K)	3620
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Selenium (Se)	0.01
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Silver (Ag)	0.004
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Sodium (Na)	5.1
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Strontium (Sr)	1.22
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Thallium (Tl)	0.0004
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Tin (Sn)	0.209
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Titanium (Ti)	0.053
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Uranium (U)	0.00063
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Vanadium (V)	0.02
2385_GIANT_124	01/08/2017	Ribes lacustre (prickly black currant)	100 ndilo	mg/kg ww	Total Zinc (Zn)	2.8
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Aluminum (Al)	0.48
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Antimony (Sb)	0.001
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Arsenic (As)	0.0545
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Barium (Ba)	2.98

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Beryllium (Be)	0.002
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Bismuth (Bi)	0.02
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Boron (B)	8.79
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Cadmium (Cd)	0.002
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Calcium (Ca)	361
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Chromium (Cr)	0.019
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Cobalt (Co)	0.024
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Copper (Cu)	1.66
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Iron (Fe)	6.7
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Lead (Pb)	0.002
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Magnesium (Mg)	398
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Manganese (Mn)	12.5
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Mercury (Hg)	0.002
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Molybdenum (Mo)	0.037
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Nickel (Ni)	0.792
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Phosphorus (P)	1210
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Potassium (K)	5720
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Selenium (Se)	0.01
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Silver (Ag)	0.004
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Sodium (Na)	5.2
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Strontium (Sr)	2.65
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Thallium (Tl)	0.0004
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Tin (Sn)	0.028
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Titanium (Ti)	0.05
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Uranium (U)	0.00131
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Vanadium (V)	0.02
2385_GIANT_125	01/08/2017	orange berry (bear berry?)	100 ndilo	mg/kg ww	Total Zinc (Zn)	4.79
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Aluminum (Al)	2.14
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Antimony (Sb)	0.0027
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Arsenic (As)	0.13
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Barium (Ba)	1.28
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Beryllium (Be)	0.002
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Bismuth (Bi)	0.02
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Boron (B)	5.55
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Cadmium (Cd)	0.002

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Calcium (Ca)	1590
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Chromium (Cr)	0.028
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Cobalt (Co)	0.0319
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Copper (Cu)	1.68
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Iron (Fe)	10.9
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Lead (Pb)	0.0048
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Magnesium (Mg)	636
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Manganese (Mn)	5.58
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Mercury (Hg)	0.002
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Molybdenum (Mo)	0.068
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Nickel (Ni)	0.255
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Phosphorus (P)	659
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Potassium (K)	3120
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Selenium (Se)	0.01
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Silver (Ag)	0.004
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Sodium (Na)	8.4
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Strontium (Sr)	2.66
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Thallium (Tl)	0.0004
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Tin (Sn)	0.022
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Titanium (Ti)	0.085
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Uranium (U)	0.00045
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Vanadium (V)	0.02
2385_GIANT_126	01/08/2017	raspberries	10 Con Place	mg/kg ww	Total Zinc (Zn)	6.23
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Aluminum (Al)	5.12
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Antimony (Sb)	0.0237
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Arsenic (As)	0.209
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Barium (Ba)	0.964
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Beryllium (Be)	0.002
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Bismuth (Bi)	0.02
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Boron (B)	9.56
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Cadmium (Cd)	0.004
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Calcium (Ca)	858
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Chromium (Cr)	0.015
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Cobalt (Co)	0.0098
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Copper (Cu)	0.645

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Iron (Fe)	10.1
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Lead (Pb)	0.007
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Magnesium (Mg)	287
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Manganese (Mn)	5.72
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Mercury (Hg)	0.002
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Molybdenum (Mo)	0.034
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Nickel (Ni)	0.056
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Phosphorus (P)	374
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Potassium (K)	1910
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Selenium (Se)	0.01
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Silver (Ag)	0.004
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Sodium (Na)	34.4
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Strontium (Sr)	3.99
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Thallium (Tl)	0.0004
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Tin (Sn)	0.121
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Titanium (Ti)	0.246
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Uranium (U)	0.0157
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Vanadium (V)	0.02
2385_GIANT_127	01/08/2017	Saskatoon berries	183 Curry (Kam Lake water)	mg/kg ww	Total Zinc (Zn)	3.42
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Aluminum (Al)	3.46
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Antimony (Sb)	0.0194
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Arsenic (As)	0.221
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Barium (Ba)	1.93
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Beryllium (Be)	0.002
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Bismuth (Bi)	0.02
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Boron (B)	1.99
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Cadmium (Cd)	0.002
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Calcium (Ca)	1440
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Chromium (Cr)	0.011
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Cobalt (Co)	0.0109
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Copper (Cu)	0.769
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Iron (Fe)	10.2
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Lead (Pb)	0.0124
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Magnesium (Mg)	620
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Manganese (Mn)	5.67

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Mercury (Hg)	0.002
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Molybdenum (Mo)	0.557
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Nickel (Ni)	0.151
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Phosphorus (P)	558
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Potassium (K)	2690
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Selenium (Se)	0.01
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Silver (Ag)	0.004
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Sodium (Na)	71.3
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Strontium (Sr)	5.66
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Thallium (Tl)	0.0004
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Tin (Sn)	0.02
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Titanium (Ti)	0.115
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Uranium (U)	0.00352
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Vanadium (V)	0.02
2385_GIANT_128	01/08/2017	raspberries	Kam Lake water	mg/kg ww	Total Zinc (Zn)	4.72
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Aluminum (Al)	5.1
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Antimony (Sb)	<0.005
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Arsenic (As)	1.67
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Barium (Ba)	34.6
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Beryllium (Be)	<0.1
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Bismuth (Bi)	<0.1
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Boron (B)	18.5
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Cadmium (Cd)	0.019
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Calcium (Ca)	4990
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Chromium (Cr)	<0.2
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Cobalt (Co)	0.357
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Copper (Cu)	18.2
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Iron (Fe)	1920
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Lead (Pb)	0.044
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Magnesium (Mg)	1770
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Manganese (Mn)	116
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Mercury (Hg)	<0.01
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Molybdenum (Mo)	1.31
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Nickel (Ni)	0.266
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Phosphorus (P)	3250

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Potassium (K)	22400
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Selenium (Se)	<0.05
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Silver (Ag)	<0.02
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Sodium (Na)	682
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Strontium (Sr)	48
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Thallium (Tl)	0.0156
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Tin (Sn)	0.12
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Titanium (Ti)	<1
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Uranium (U)	0.0042
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Vanadium (V)	<0.2
2385_GIANT_129	august 2017?	rat root	Fort Providence	mg/kg dw	Total Zinc (Zn)	16.3
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	%	Moisture	92
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Aluminum (Al)	12.1
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Antimony (Sb)	<0.005
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Arsenic (As)	0.71
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Barium (Ba)	0.11
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Beryllium (Be)	<0.1
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Bismuth (Bi)	<0.1
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Boron (B)	<2
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Cadmium (Cd)	0.667
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Calcium (Ca)	18
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Chromium (Cr)	<0.2
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Cobalt (Co)	0.029
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Copper (Cu)	2.32
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Iron (Fe)	15
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Lead (Pb)	0.015
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Magnesium (Mg)	90
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Manganese (Mn)	0.78
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Mercury (Hg)	0.011
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Molybdenum (Mo)	<0.05
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Nickel (Ni)	0.054
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Phosphorus (P)	646
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Potassium (K)	3020
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Selenium (Se)	0.497
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Silver (Ag)	0.089

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Sodium (Na)	340
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Strontium (Sr)	<0.1
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Thallium (Tl)	<0.002
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Tin (Sn)	<0.1
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Titanium (Ti)	<1
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Uranium (U)	0.0075
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Vanadium (V)	6.95
2385_GIANT_130	01/08/2017	Amanita muscaria	Yellowknife golf course	mg/kg dw	Total Zinc (Zn)	4.3
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Aluminum (Al)	8.6
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Antimony (Sb)	0.128
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Arsenic (As)	1.79
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Barium (Ba)	0.66
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Boron (B)	8.2
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Cadmium (Cd)	0.688
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Calcium (Ca)	229
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Chromium (Cr)	0.2
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Cobalt (Co)	0.308
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Copper (Cu)	26.7
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Iron (Fe)	29
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Lead (Pb)	0.07
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Magnesium (Mg)	1100
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Manganese (Mn)	7.63
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Mercury (Hg)	0.074
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Molybdenum (Mo)	0.137
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Nickel (Ni)	0.252
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Phosphorus (P)	7460
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Potassium (K)	40400
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Selenium (Se)	0.726
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Silver (Ag)	1.92
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Sodium (Na)	43
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Strontium (Sr)	0.53
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Thallium (Tl)	0.002
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Tin (Sn)	0.1

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Titanium (Ti)	1
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Uranium (U)	0.0592
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_131	01/08/2017	suillus grevillei	Deh Cho Blvd, Yk	mg/kg dw	Total Zinc (Zn)	69.2
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Aluminum (Al)	9.8
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Antimony (Sb)	0.0602
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Arsenic (As)	3.3
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Barium (Ba)	0.65
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Boron (B)	5.7
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Cadmium (Cd)	0.64
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Calcium (Ca)	238
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Chromium (Cr)	0.2
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Cobalt (Co)	0.232
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Copper (Cu)	28.7
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Iron (Fe)	25
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Lead (Pb)	0.036
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Magnesium (Mg)	1050
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Manganese (Mn)	9.45
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Mercury (Hg)	0.035
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Molybdenum (Mo)	0.157
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Nickel (Ni)	0.127
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Phosphorus (P)	5630
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Potassium (K)	30400
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Selenium (Se)	0.517
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Silver (Ag)	0.631
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Sodium (Na)	1040
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Strontium (Sr)	0.6
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Thallium (Tl)	0.002
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Titanium (Ti)	1
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Uranium (U)	0.0153
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_132	01/08/2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Zinc (Zn)	47.9

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Aluminum (Al)	80.1
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Antimony (Sb)	0.0151
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Arsenic (As)	1.51
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Barium (Ba)	0.76
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Boron (B)	2
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Cadmium (Cd)	0.051
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Calcium (Ca)	285
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Chromium (Cr)	0.2
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Cobalt (Co)	0.067
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Copper (Cu)	16.8
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Iron (Fe)	349
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Lead (Pb)	0.051
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Magnesium (Mg)	1040
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Manganese (Mn)	9.52
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Mercury (Hg)	0.029
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Molybdenum (Mo)	0.207
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Nickel (Ni)	0.116
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Phosphorus (P)	6610
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Potassium (K)	23000
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Selenium (Se)	0.242
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Silver (Ag)	0.195
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Sodium (Na)	390
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Strontium (Sr)	0.52
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Thallium (Tl)	0.0028
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Titanium (Ti)	1
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Uranium (U)	0.009
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_133	01/08/2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Deh Cho Blvd, Yk	mg/kg dw	Total Zinc (Zn)	57.1
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Aluminum (Al)	135
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Antimony (Sb)	2.83
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Arsenic (As)	11.9
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Barium (Ba)	2.98

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Boron (B)	2
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Cadmium (Cd)	2.58
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Calcium (Ca)	419
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Chromium (Cr)	0.53
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Cobalt (Co)	0.35
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Copper (Cu)	30.5
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Iron (Fe)	235
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Lead (Pb)	0.288
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Magnesium (Mg)	1660
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Manganese (Mn)	11.7
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Mercury (Hg)	0.199
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Molybdenum (Mo)	0.156
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Nickel (Ni)	0.362
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Phosphorus (P)	10900
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Potassium (K)	41300
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Selenium (Se)	0.392
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Silver (Ag)	1.34
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Sodium (Na)	73
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Strontium (Sr)	0.84
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Thallium (Tl)	0.005
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Tin (Sn)	0.14
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Titanium (Ti)	5.6
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Uranium (U)	0.027
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Vanadium (V)	0.4
2385_GIANT_134	01/08/2017	Fuscoboletus sinuspaulianus	Niven Lake Trail	mg/kg dw	Total Zinc (Zn)	131
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Aluminum (Al)	39.4
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Antimony (Sb)	0.0587
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Arsenic (As)	10
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Barium (Ba)	0.66
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Boron (B)	3
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Cadmium (Cd)	2.67

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Calcium (Ca)	228
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Chromium (Cr)	0.2
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Cobalt (Co)	0.288
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Copper (Cu)	59.7
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Iron (Fe)	1840
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Lead (Pb)	0.081
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Magnesium (Mg)	1350
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Manganese (Mn)	11.5
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Mercury (Hg)	0.176
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Molybdenum (Mo)	0.225
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Nickel (Ni)	0.33
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Phosphorus (P)	11100
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Potassium (K)	34800
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Selenium (Se)	0.448
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Silver (Ag)	0.348
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Sodium (Na)	333
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Strontium (Sr)	0.42
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Thallium (Tl)	0.0091
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Titanium (Ti)	1.2
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Uranium (U)	0.0034
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_135	01/08/2017	Suillus hirtellus	yk golf course	mg/kg dw	Total Zinc (Zn)	126
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Aluminum (Al)	2.4
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Antimony (Sb)	3.74
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Arsenic (As)	28.9
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Barium (Ba)	0.3
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Boron (B)	15.1
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Cadmium (Cd)	6.24
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Calcium (Ca)	37
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Chromium (Cr)	0.2
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Cobalt (Co)	0.324
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Copper (Cu)	22.9

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Iron (Fe)	22
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Lead (Pb)	0.088
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Magnesium (Mg)	1220
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Manganese (Mn)	4.06
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Mercury (Hg)	0.213
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Molybdenum (Mo)	0.183
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Nickel (Ni)	0.709
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Phosphorus (P)	8750
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Potassium (K)	41100
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Selenium (Se)	9.73
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Silver (Ag)	0.901
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Sodium (Na)	16
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Strontium (Sr)	0.19
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Thallium (Tl)	0.278
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Tin (Sn)	0.41
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Titanium (Ti)	1
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Uranium (U)	0.002
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_136	01/08/2017	Sarcodon imbricatus	Deh Cho Blvd, Yk	mg/kg dw	Total Zinc (Zn)	178
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Aluminum (Al)	38.4
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Antimony (Sb)	0.105
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Arsenic (As)	4.07
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Barium (Ba)	1.36
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Boron (B)	2
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Cadmium (Cd)	1.94
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Calcium (Ca)	358
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Chromium (Cr)	0.2
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Cobalt (Co)	0.485
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Copper (Cu)	9.39
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Iron (Fe)	68
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Lead (Pb)	0.2
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Magnesium (Mg)	1330
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Manganese (Mn)	18.8

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Mercury (Hg)	0.037
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Molybdenum (Mo)	0.05
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Nickel (Ni)	0.245
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Phosphorus (P)	9380
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Potassium (K)	45500
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Selenium (Se)	0.351
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Silver (Ag)	0.22
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Sodium (Na)	1250
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Strontium (Sr)	0.87
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Thallium (Tl)	0.393
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Titanium (Ti)	1.5
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Uranium (U)	0.0061
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_137	01/08/2017	Clomphidius maculatos	yk golf course	mg/kg dw	Total Zinc (Zn)	44.1
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	%	Moisture	12
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Aluminum (Al)	27.6
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Antimony (Sb)	0.696
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Arsenic (As)	2.92
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Barium (Ba)	0.81
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Beryllium (Be)	<0.1
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Bismuth (Bi)	<0.1
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Boron (B)	3.2
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Cadmium (Cd)	0.188
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Calcium (Ca)	256
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Chromium (Cr)	0.22
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Cobalt (Co)	0.138
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Copper (Cu)	8.83
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Iron (Fe)	330
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Lead (Pb)	0.089
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Magnesium (Mg)	701
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Manganese (Mn)	5.28
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Mercury (Hg)	0.04
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Molybdenum (Mo)	0.145
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Nickel (Ni)	0.168

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Phosphorus (P)	3400
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Potassium (K)	24100
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Selenium (Se)	0.616
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Silver (Ag)	0.1
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Sodium (Na)	204
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Strontium (Sr)	0.46
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Thallium (Tl)	0.007
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Tin (Sn)	<0.1
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Titanium (Ti)	<1
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Uranium (U)	0.0032
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Vanadium (V)	<0.2
2385_GIANT_138	01/08/2017	Suillus #2 (possible granulatus?)	yk golf course	mg/kg dw	Total Zinc (Zn)	36
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Aluminum (Al)	140
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Antimony (Sb)	2.06
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Arsenic (As)	8.77
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Barium (Ba)	2.51
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Boron (B)	2
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Cadmium (Cd)	0.259
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Calcium (Ca)	492
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Chromium (Cr)	0.4
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Cobalt (Co)	0.242
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Copper (Cu)	26.4
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Iron (Fe)	250
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Lead (Pb)	0.157
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Magnesium (Mg)	1350
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Manganese (Mn)	11.1
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Mercury (Hg)	0.142
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Molybdenum (Mo)	0.278
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Nickel (Ni)	0.27
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Phosphorus (P)	8150
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Potassium (K)	38800
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Selenium (Se)	2.84
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Silver (Ag)	0.6

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Sodium (Na)	269
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Strontium (Sr)	0.92
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Thallium (Tl)	0.0061
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Titanium (Ti)	10.3
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Uranium (U)	0.0085
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Vanadium (V)	0.49
2385_GIANT_139	01/08/2017	Suillus #1	yk golf course	mg/kg dw	Total Zinc (Zn)	81.3
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Aluminum (Al)	63.4
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Antimony (Sb)	4
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Arsenic (As)	2300
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Barium (Ba)	1
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Boron (B)	2
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Cadmium (Cd)	2.44
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Calcium (Ca)	93
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Chromium (Cr)	0.55
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Cobalt (Co)	0.525
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Copper (Cu)	5.96
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Iron (Fe)	118
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Lead (Pb)	0.134
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Magnesium (Mg)	1040
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Manganese (Mn)	11.4
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Mercury (Hg)	0.095
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Molybdenum (Mo)	0.122
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Nickel (Ni)	0.335
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Phosphorus (P)	8570
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Potassium (K)	43700
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Selenium (Se)	3.4
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Silver (Ag)	0.481
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Sodium (Na)	24
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Strontium (Sr)	0.32
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Thallium (Tl)	0.0233
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Tin (Sn)	0.45

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Titanium (Ti)	2.1
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Uranium (U)	0.0172
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_140	01/08/2017	Tricholoma imbricatom	yk golf course	mg/kg dw	Total Zinc (Zn)	96.7
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Aluminum (Al)	89.6
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Antimony (Sb)	0.514
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Arsenic (As)	5.22
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Barium (Ba)	1.99
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Boron (B)	2.7
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Cadmium (Cd)	1.32
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Calcium (Ca)	588
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Chromium (Cr)	0.2
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Cobalt (Co)	0.239
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Copper (Cu)	12.5
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Iron (Fe)	242
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Lead (Pb)	0.246
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Magnesium (Mg)	958
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Manganese (Mn)	8.8
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Mercury (Hg)	0.091
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Molybdenum (Mo)	0.131
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Nickel (Ni)	0.224
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Phosphorus (P)	5550
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Potassium (K)	40100
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Selenium (Se)	0.552
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Silver (Ag)	0.179
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Sodium (Na)	234
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Strontium (Sr)	1.01
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Thallium (Tl)	0.0056
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Titanium (Ti)	1.9
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Uranium (U)	0.0126
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_141	01/08/2017	Suillus luteus	yk golf course	mg/kg dw	Total Zinc (Zn)	55

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Aluminum (Al)	1.78
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Antimony (Sb)	0.001
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Arsenic (As)	0.0412
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Barium (Ba)	1.57
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Beryllium (Be)	0.002
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Bismuth (Bi)	0.02
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Boron (B)	1.25
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Cadmium (Cd)	0.002
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Calcium (Ca)	142
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Chromium (Cr)	0.01
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Cobalt (Co)	0.004
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Copper (Cu)	1.12
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Iron (Fe)	5
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Lead (Pb)	0.0059
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Magnesium (Mg)	124
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Manganese (Mn)	2.8
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Mercury (Hg)	0.002
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Molybdenum (Mo)	0.013
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Nickel (Ni)	0.112
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Phosphorus (P)	202
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Potassium (K)	2000
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Selenium (Se)	0.01
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Silver (Ag)	0.004
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Sodium (Na)	12
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Strontium (Sr)	0.311
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Thallium (Tl)	0.0004
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Tin (Sn)	0.02
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Titanium (Ti)	0.05
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Uranium (U)	0.0004
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Vanadium (V)	0.02
2385_GIANT_142	01/08/2017	crowberries	yk golf course	mg/kg ww	Total Zinc (Zn)	1.01
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Aluminum (Al)	10
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Antimony (Sb)	0.002
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Arsenic (As)	0.152
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Barium (Ba)	4.42

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Beryllium (Be)	0.002
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Bismuth (Bi)	0.02
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Boron (B)	2.04
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Cadmium (Cd)	0.002
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Calcium (Ca)	552
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Chromium (Cr)	0.031
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Cobalt (Co)	0.0063
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Copper (Cu)	0.925
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Iron (Fe)	11.7
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Lead (Pb)	0.0296
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Magnesium (Mg)	234
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Manganese (Mn)	17.7
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Mercury (Hg)	0.002
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Molybdenum (Mo)	0.085
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Nickel (Ni)	0.139
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Phosphorus (P)	319
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Potassium (K)	1660
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Selenium (Se)	0.01
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Silver (Ag)	0.004
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Sodium (Na)	3.9
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Strontium (Sr)	1.79
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Thallium (Tl)	0.0004
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Tin (Sn)	0.109
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Titanium (Ti)	0.229
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Uranium (U)	0.00049
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Vanadium (V)	0.02
2385_GIANT_143	01/08/2017	cranberries	yk golf course	mg/kg ww	Total Zinc (Zn)	2.6
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Aluminum (Al)	26.1
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Antimony (Sb)	0.0277
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Arsenic (As)	2.39
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Barium (Ba)	0.58
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Boron (B)	2
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Cadmium (Cd)	0.517

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Calcium (Ca)	161
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Chromium (Cr)	0.2
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Cobalt (Co)	0.105
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Copper (Cu)	16
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Iron (Fe)	587
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Lead (Pb)	0.056
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Magnesium (Mg)	740
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Manganese (Mn)	4.69
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Mercury (Hg)	0.06
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Molybdenum (Mo)	0.133
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Nickel (Ni)	0.109
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Phosphorus (P)	4820
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Potassium (K)	25000
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Selenium (Se)	0.269
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Silver (Ag)	0.157
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Sodium (Na)	99
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Strontium (Sr)	0.31
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Thallium (Tl)	0.0122
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Titanium (Ti)	1
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Uranium (U)	0.0026
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_144	01/08/2017	Suillus tomentosus	yk golf course	mg/kg dw	Total Zinc (Zn)	61.1
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Aluminum (Al)	41.1
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Antimony (Sb)	1.21
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Arsenic (As)	4.17
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Barium (Ba)	0.98
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Boron (B)	4
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Cadmium (Cd)	0.571
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Calcium (Ca)	362
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Chromium (Cr)	0.24
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Cobalt (Co)	0.413
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Copper (Cu)	37.2

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Iron (Fe)	75
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Lead (Pb)	0.191
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Magnesium (Mg)	1150
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Manganese (Mn)	11.2
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Mercury (Hg)	0.083
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Molybdenum (Mo)	0.265
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Nickel (Ni)	0.345
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Phosphorus (P)	8540
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Potassium (K)	36600
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Selenium (Se)	6.96
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Silver (Ag)	0.6
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Sodium (Na)	115
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Strontium (Sr)	1.01
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Thallium (Tl)	0.002
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Titanium (Ti)	2.2
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Uranium (U)	0.0218
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_145	01/08/2017	Suillus brevipes	yk golf course	mg/kg dw	Total Zinc (Zn)	106
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Aluminum (Al)	20.3
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Antimony (Sb)	0.034
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Arsenic (As)	0.429
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Barium (Ba)	1.42
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Boron (B)	18.1
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Cadmium (Cd)	0.02
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Calcium (Ca)	562
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Chromium (Cr)	0.2
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Cobalt (Co)	0.187
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Copper (Cu)	4.8
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Iron (Fe)	38
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Lead (Pb)	0.062
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Magnesium (Mg)	1550
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Manganese (Mn)	19.1

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Mercury (Hg)	0.013
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Molybdenum (Mo)	0.055
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Nickel (Ni)	0.248
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Phosphorus (P)	10000
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Potassium (K)	52000
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Selenium (Se)	0.74
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Silver (Ag)	0.05
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Sodium (Na)	730
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Strontium (Sr)	1.01
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Thallium (Tl)	0.002
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Tin (Sn)	97.7
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Titanium (Ti)	1
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Uranium (U)	0.0172
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_146	01/08/2017	Clomphidius #1	Deh Cho Blvd, Yk	mg/kg dw	Total Zinc (Zn)	33.5
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Aluminum (Al)	342
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Antimony (Sb)	1.08
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Arsenic (As)	973
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Barium (Ba)	1.99
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Boron (B)	6.5
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Cadmium (Cd)	2.25
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Calcium (Ca)	93
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Chromium (Cr)	1.62
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Cobalt (Co)	3.02
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Copper (Cu)	27.2
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Iron (Fe)	418
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Lead (Pb)	0.247
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Magnesium (Mg)	944
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Manganese (Mn)	12.5
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Mercury (Hg)	0.714
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Molybdenum (Mo)	0.069
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Nickel (Ni)	1.04
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Phosphorus (P)	6130

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Potassium (K)	33100
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Selenium (Se)	2.78
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Silver (Ag)	2.71
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Sodium (Na)	129
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Strontium (Sr)	0.41
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Thallium (Tl)	0.121
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Titanium (Ti)	11.7
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Uranium (U)	0.0549
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Vanadium (V)	0.72
2385_GIANT_147	01/08/2017	Tricholoma magnivelare	yk golf course	mg/kg dw	Total Zinc (Zn)	49.6
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Aluminum (Al)	14.3
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Antimony (Sb)	0.0158
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Arsenic (As)	3.14
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Barium (Ba)	1.08
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Boron (B)	2
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Cadmium (Cd)	1.5
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Calcium (Ca)	242
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Chromium (Cr)	0.2
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Cobalt (Co)	0.193
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Copper (Cu)	39.1
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Iron (Fe)	37
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Lead (Pb)	0.08
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Magnesium (Mg)	738
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Manganese (Mn)	13.1
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Mercury (Hg)	0.062
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Molybdenum (Mo)	0.411
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Nickel (Ni)	0.315
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Phosphorus (P)	5620
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Potassium (K)	31700
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Selenium (Se)	1.57
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Silver (Ag)	0.178
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Sodium (Na)	91

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Strontium (Sr)	0.89
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Thallium (Tl)	0.0191
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Titanium (Ti)	1
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Uranium (U)	0.016
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_148	01/08/2017	Leccinum aurantiacum	yk golf course	mg/kg dw	Total Zinc (Zn)	65.4
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	%	Moisture	14
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Aluminum (Al)	17
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Antimony (Sb)	0.0102
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Arsenic (As)	3.71
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Barium (Ba)	0.53
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Beryllium (Be)	<0.1
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Bismuth (Bi)	<0.1
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Boron (B)	3.6
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Cadmium (Cd)	1.19
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Calcium (Ca)	150
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Chromium (Cr)	<0.2
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Cobalt (Co)	1.26
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Copper (Cu)	52.8
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Iron (Fe)	37
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Lead (Pb)	0.102
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Magnesium (Mg)	823
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Manganese (Mn)	9.39
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Mercury (Hg)	0.094
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Molybdenum (Mo)	0.421
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Nickel (Ni)	0.434
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Phosphorus (P)	8030
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Potassium (K)	41600
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Selenium (Se)	1.53
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Silver (Ag)	1.27
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Sodium (Na)	27
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Strontium (Sr)	0.38
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Thallium (Tl)	0.0028
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Tin (Sn)	<0.1

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Titanium (Ti)	<1
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Uranium (U)	0.0143
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Vanadium (V)	<0.2
2385_GIANT_149	01/08/2017	Leccinum aurantiacum	Frame Lake trail south	mg/kg dw	Total Zinc (Zn)	75.4
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	%	Moisture	15
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Aluminum (Al)	75.8
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Antimony (Sb)	0.0765
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Arsenic (As)	25.1
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Barium (Ba)	1.59
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Beryllium (Be)	<0.1
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Bismuth (Bi)	<0.1
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Boron (B)	3
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Cadmium (Cd)	2
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Calcium (Ca)	503
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Chromium (Cr)	0.27
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Cobalt (Co)	0.434
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Copper (Cu)	100
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Iron (Fe)	160
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Lead (Pb)	0.537
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Magnesium (Mg)	1590
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Manganese (Mn)	10.3
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Mercury (Hg)	0.72
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Molybdenum (Mo)	0.248
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Nickel (Ni)	0.345
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Phosphorus (P)	11000
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Potassium (K)	64500
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Selenium (Se)	11.6
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Silver (Ag)	15.1
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Sodium (Na)	1500
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Strontium (Sr)	1.07
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Thallium (Tl)	<0.002
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Tin (Sn)	<0.1
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Titanium (Ti)	2.9
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Uranium (U)	0.0637
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Vanadium (V)	<0.2

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_150	01/08/2017	Agaricus arvensis	Rat Lake area (on lawn)	mg/kg dw	Total Zinc (Zn)	91.1
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Aluminum (Al)	20.4
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Antimony (Sb)	0.0171
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Arsenic (As)	5.65
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Barium (Ba)	0.5
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Boron (B)	4.4
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Cadmium (Cd)	1.03
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Calcium (Ca)	170
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Chromium (Cr)	0.31
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Cobalt (Co)	0.212
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Copper (Cu)	17.1
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Iron (Fe)	50
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Lead (Pb)	0.078
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Magnesium (Mg)	946
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Manganese (Mn)	12.7
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Mercury (Hg)	0.047
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Molybdenum (Mo)	0.179
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Nickel (Ni)	0.35
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Phosphorus (P)	5990
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Potassium (K)	32100
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Selenium (Se)	0.569
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Silver (Ag)	0.427
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Sodium (Na)	1410
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Strontium (Sr)	0.45
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Thallium (Tl)	0.0911
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Titanium (Ti)	1
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Uranium (U)	0.0591
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_151	01/08/2017	Leccinum scabrum	yk golf course	mg/kg dw	Total Zinc (Zn)	84
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Aluminum (Al)	30.5
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Antimony (Sb)	0.0135
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Arsenic (As)	6.56

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Barium (Ba)	0.48
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Boron (B)	3.8
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Cadmium (Cd)	0.797
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Calcium (Ca)	104
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Chromium (Cr)	0.2
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Cobalt (Co)	0.055
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Copper (Cu)	14.1
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Iron (Fe)	61
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Lead (Pb)	0.081
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Magnesium (Mg)	942
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Manganese (Mn)	15.7
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Mercury (Hg)	0.042
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Molybdenum (Mo)	0.437
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Nickel (Ni)	0.221
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Phosphorus (P)	8160
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Potassium (K)	21700
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Selenium (Se)	0.21
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Silver (Ag)	0.354
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Sodium (Na)	1440
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Strontium (Sr)	0.3
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Thallium (Tl)	0.0702
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Titanium (Ti)	1.4
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Uranium (U)	0.0091
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_152	01/08/2017	Leccinum unknown species	yk golf course	mg/kg dw	Total Zinc (Zn)	125
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Aluminum (Al)	83.6
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Antimony (Sb)	1.89
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Arsenic (As)	11.1
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Barium (Ba)	1.44
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Boron (B)	6.1

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Cadmium (Cd)	1.54
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Calcium (Ca)	464
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Chromium (Cr)	0.35
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Cobalt (Co)	0.124
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Copper (Cu)	22.3
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Iron (Fe)	120
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Lead (Pb)	0.242
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Magnesium (Mg)	1290
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Manganese (Mn)	10.9
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Mercury (Hg)	0.174
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Molybdenum (Mo)	0.133
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Nickel (Ni)	0.252
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Phosphorus (P)	8190
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Potassium (K)	40900
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Selenium (Se)	0.411
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Silver (Ag)	1.25
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Sodium (Na)	132
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Strontium (Sr)	0.84
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Thallium (Tl)	0.0045
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Titanium (Ti)	2.8
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Uranium (U)	0.0085
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_153	01/08/2017	suillus grevillei	yk golf course	mg/kg dw	Total Zinc (Zn)	90.4
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Aluminum (Al)	60.1
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Antimony (Sb)	0.0353
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Arsenic (As)	7.7
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Barium (Ba)	0.93
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Boron (B)	4
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Cadmium (Cd)	0.958
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Calcium (Ca)	252
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Chromium (Cr)	0.31
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Cobalt (Co)	0.342

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Copper (Cu)	14.9
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Iron (Fe)	100
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Lead (Pb)	0.167
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Magnesium (Mg)	916
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Manganese (Mn)	12.3
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Mercury (Hg)	0.091
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Molybdenum (Mo)	0.337
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Nickel (Ni)	0.435
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Phosphorus (P)	6410
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Potassium (K)	32400
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Selenium (Se)	0.459
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Silver (Ag)	0.188
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Sodium (Na)	625
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Strontium (Sr)	0.61
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Thallium (Tl)	0.0178
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Titanium (Ti)	3.1
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Uranium (U)	0.0259
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_154	01/08/2017	Leccinum scabrum	Frame Lake Trail south	mg/kg dw	Total Zinc (Zn)	152
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Aluminum (Al)	36.9
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Antimony (Sb)	0.0696
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Arsenic (As)	4.8
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Barium (Ba)	0.99
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Boron (B)	2.4
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Cadmium (Cd)	1.72
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Calcium (Ca)	230
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Chromium (Cr)	0.2
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Cobalt (Co)	0.23
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Copper (Cu)	40.8
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Iron (Fe)	60
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Lead (Pb)	0.109
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Magnesium (Mg)	870

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Manganese (Mn)	12.5
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Mercury (Hg)	0.084
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Molybdenum (Mo)	0.51
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Nickel (Ni)	0.439
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Phosphorus (P)	6210
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Potassium (K)	33000
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Selenium (Se)	1.84
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Silver (Ag)	0.272
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Sodium (Na)	63
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Strontium (Sr)	0.56
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Thallium (Tl)	0.0143
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Titanium (Ti)	1.8
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Uranium (U)	0.0101
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_155	01/08/2017	Leccinum testaceoscabrum?	yk golf course	mg/kg dw	Total Zinc (Zn)	70.5
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Aluminum (Al)	1460
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Antimony (Sb)	0.082
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Arsenic (As)	10.2
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Barium (Ba)	12.6
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Boron (B)	2.1
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Cadmium (Cd)	1
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Calcium (Ca)	1410
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Chromium (Cr)	4.86
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Cobalt (Co)	0.922
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Copper (Cu)	58.7
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Iron (Fe)	1850
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Lead (Pb)	1.44
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Magnesium (Mg)	1810
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Manganese (Mn)	36.9
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Mercury (Hg)	0.651
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Molybdenum (Mo)	0.274
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Nickel (Ni)	3.01

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Phosphorus (P)	7890
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Potassium (K)	37900
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Selenium (Se)	10.9
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Silver (Ag)	1.87
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Sodium (Na)	1510
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Strontium (Sr)	3.86
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Thallium (Tl)	0.02
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Tin (Sn)	0.11
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Titanium (Ti)	56.6
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Uranium (U)	0.619
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Vanadium (V)	3.91
2385_GIANT_156	01/08/2017	Agaricus augustus	Rat Lake area (on lawn)	mg/kg dw	Total Zinc (Zn)	98.9
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Aluminum (Al)	158
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Antimony (Sb)	0.0659
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Arsenic (As)	18.2
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Barium (Ba)	8.58
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Boron (B)	8.2
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Cadmium (Cd)	0.297
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Calcium (Ca)	2570
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Chromium (Cr)	0.62
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Cobalt (Co)	0.233
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Copper (Cu)	177
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Iron (Fe)	305
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Lead (Pb)	0.488
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Magnesium (Mg)	1390
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Manganese (Mn)	119
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Mercury (Hg)	0.655
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Molybdenum (Mo)	0.75
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Nickel (Ni)	0.574
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Phosphorus (P)	13800
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Potassium (K)	31200
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Selenium (Se)	0.378
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Silver (Ag)	2.47

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Sodium (Na)	453
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Strontium (Sr)	5.18
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Thallium (Tl)	0.0042
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Titanium (Ti)	8.1
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Uranium (U)	0.0228
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Vanadium (V)	0.76
2385_GIANT_157	01/08/2017	Clitocybe deceptiva	Frame Lake trail south	mg/kg dw	Total Zinc (Zn)	80.6
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Aluminum (Al)	39.1
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Antimony (Sb)	0.094
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Arsenic (As)	13.6
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Barium (Ba)	0.89
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Boron (B)	3.4
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Cadmium (Cd)	1.85
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Calcium (Ca)	182
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Chromium (Cr)	0.26
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Cobalt (Co)	0.809
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Copper (Cu)	8.08
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Iron (Fe)	87
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Lead (Pb)	0.105
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Magnesium (Mg)	1110
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Manganese (Mn)	7.54
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Mercury (Hg)	0.103
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Molybdenum (Mo)	0.075
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Nickel (Ni)	0.24
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Phosphorus (P)	7630
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Potassium (K)	26000
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Selenium (Se)	1.17
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Silver (Ag)	0.29
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Sodium (Na)	303
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Strontium (Sr)	0.57
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Thallium (Tl)	0.0098
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Tin (Sn)	0.1

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Titanium (Ti)	1.5
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Uranium (U)	0.0175
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_158	01/08/2017	Suillus cavipes	yk golf course	mg/kg dw	Total Zinc (Zn)	61.2
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Aluminum (Al)	1560
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Antimony (Sb)	0.24
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Arsenic (As)	16.3
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Barium (Ba)	18.9
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Boron (B)	6.1
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Cadmium (Cd)	1.66
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Calcium (Ca)	4200
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Chromium (Cr)	5.78
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Cobalt (Co)	1.32
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Copper (Cu)	65.8
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Iron (Fe)	2130
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Lead (Pb)	3
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Magnesium (Mg)	2340
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Manganese (Mn)	79.2
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Mercury (Hg)	0.745
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Molybdenum (Mo)	0.512
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Nickel (Ni)	3.96
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Phosphorus (P)	10700
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Potassium (K)	64000
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Selenium (Se)	11
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Silver (Ag)	3.91
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Sodium (Na)	3380
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Strontium (Sr)	8.38
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Thallium (Tl)	0.0198
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Tin (Sn)	0.16
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Titanium (Ti)	68.1
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Uranium (U)	0.548
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Vanadium (V)	4.16
2385_GIANT_159	01/08/2017	Agaricus #1? (some variant of campestris?)	Rat Lake area (on lawn)	mg/kg dw	Total Zinc (Zn)	129

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Aluminum (Al)	1260
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Antimony (Sb)	0.444
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Arsenic (As)	95.6
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Barium (Ba)	15.5
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Boron (B)	3.7
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Cadmium (Cd)	2.78
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Calcium (Ca)	2740
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Chromium (Cr)	5.52
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Cobalt (Co)	1.36
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Copper (Cu)	132
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Iron (Fe)	1820
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Lead (Pb)	3.37
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Magnesium (Mg)	2680
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Manganese (Mn)	59.4
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Mercury (Hg)	1.82
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Molybdenum (Mo)	0.314
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Nickel (Ni)	3.46
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Phosphorus (P)	16500
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Potassium (K)	55800
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Selenium (Se)	18.7
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Silver (Ag)	1.39
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Sodium (Na)	6680
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Strontium (Sr)	6.44
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Thallium (Tl)	0.0181
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Titanium (Ti)	40.1
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Uranium (U)	0.303
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Vanadium (V)	3.31
2385_GIANT_160	01/08/2017	Agaricus #2 (some variant of campestris or arvensis?)	Rat Lake area (on lawn)	mg/kg dw	Total Zinc (Zn)	170
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Aluminum (Al)	16.8
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Antimony (Sb)	0.5
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Arsenic (As)	1.03
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Barium (Ba)	5.4

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Beryllium (Be)	0.1
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Bismuth (Bi)	1
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Boron (B)	50
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Cadmium (Cd)	0.024
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Chromium (Cr)	1
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Cobalt (Co)	0.2
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Copper (Cu)	250
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Iron (Fe)	41
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Lead (Pb)	4.69
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Lithium (Li)	2
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Manganese (Mn)	131
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Mercury (Hg)	0.05
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Mercury (Hg)	0.01
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Molybdenum (Mo)	1
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Nickel (Ni)	1
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Selenium (Se)	0.1
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Silicon (Si)	379
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Silver (Ag)	0.026
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Strontium (Sr)	20.1
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Thallium (Tl)	0.01
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Tin (Sn)	5
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Titanium (Ti)	5
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Uranium (U)	0.1
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Vanadium (V)	5
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Zinc (Zn)	54.4
2385_GIANT_161	07/09/2017	Birch tea	0	ug/L	Total Zirconium (Zr)	0.1
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Aluminum (Al)	21.8
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Antimony (Sb)	0.5
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Arsenic (As)	3.74
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Barium (Ba)	17.1
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Beryllium (Be)	0.1
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Bismuth (Bi)	1
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Boron (B)	50
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Cadmium (Cd)	0.018
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Chromium (Cr)	1

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Cobalt (Co)	0.59
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Copper (Cu)	255
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Iron (Fe)	11
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Lead (Pb)	4.17
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Lithium (Li)	2.2
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Manganese (Mn)	42.1
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Mercury (Hg)	0.05
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Mercury (Hg)	0.01
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Molybdenum (Mo)	1
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Nickel (Ni)	3.6
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Selenium (Se)	0.1
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Silicon (Si)	824
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Silver (Ag)	0.02
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Strontium (Sr)	21.6
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Thallium (Tl)	0.059
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Tin (Sn)	5
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Titanium (Ti)	5
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Uranium (U)	0.1
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Vanadium (V)	5
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Zinc (Zn)	14.2
2385_GIANT_162	07/09/2017	Crowberry and fern tea	0	ug/L	Total Zirconium (Zr)	0.1
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Aluminum (Al)	1560
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Antimony (Sb)	2.23
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Arsenic (As)	24.2
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Barium (Ba)	20.4
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Boron (B)	14.6
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Cadmium (Cd)	0.379
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Calcium (Ca)	5700
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Chromium (Cr)	5.93
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Cobalt (Co)	1.67
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Copper (Cu)	9.5
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Iron (Fe)	2280
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Lead (Pb)	1.97

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Magnesium (Mg)	2590
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Manganese (Mn)	132
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Mercury (Hg)	0.032
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Molybdenum (Mo)	0.423
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Nickel (Ni)	5.06
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Phosphorus (P)	2920
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Potassium (K)	15500
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Selenium (Se)	0.052
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Silver (Ag)	0.02
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Sodium (Na)	182
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Strontium (Sr)	12.2
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Thallium (Tl)	0.0152
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Titanium (Ti)	50.6
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Uranium (U)	0.156
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Vanadium (V)	4.16
2385_GIANT_163	Summer 2017	Dandelion	Middle Ndlilo	mg/kg dw	Total Zinc (Zn)	34.2
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	%	Moisture	90
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Aluminum (Al)	0.31
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Antimony (Sb)	<0.001
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Arsenic (As)	0.0152
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Barium (Ba)	0.182
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Beryllium (Be)	<0.002
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Bismuth (Bi)	<0.02
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Boron (B)	1.36
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Cadmium (Cd)	0.0034
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Calcium (Ca)	253
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Chromium (Cr)	<0.01
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Cobalt (Co)	<0.004
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Copper (Cu)	1.07
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Iron (Fe)	6.5
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Lead (Pb)	0.0028
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Magnesium (Mg)	294
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Manganese (Mn)	2.12
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Mercury (Hg)	<0.002

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Molybdenum (Mo)	0.244
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Nickel (Ni)	0.041
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Phosphorus (P)	501
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Potassium (K)	1910
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Selenium (Se)	<0.01
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Silver (Ag)	<0.004
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Sodium (Na)	5.2
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Strontium (Sr)	0.546
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Thallium (Tl)	<0.0004
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Tin (Sn)	0.235
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Titanium (Ti)	<0.05
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Uranium (U)	<0.0004
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Vanadium (V)	<0.02
2385_GIANT_164	Summer 2017	raspberries	North Ndilo	mg/kg ww	Total Zinc (Zn)	11
2385_GIANT_165	04/08/2017	raspberries	Ndilo	%	Moisture	81
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Aluminum (Al)	4.84
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Antimony (Sb)	0.0021
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Arsenic (As)	0.0639
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Barium (Ba)	0.355
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Beryllium (Be)	<0.002
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Bismuth (Bi)	<0.02
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Boron (B)	2.46
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Cadmium (Cd)	<0.002
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Calcium (Ca)	1120
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Chromium (Cr)	0.02
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Cobalt (Co)	0.0066
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Copper (Cu)	0.723
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Iron (Fe)	12.2
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Lead (Pb)	0.006
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Magnesium (Mg)	542
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Manganese (Mn)	2.73
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Mercury (Hg)	<0.002
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Molybdenum (Mo)	0.571
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Nickel (Ni)	0.125
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Phosphorus (P)	717

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Potassium (K)	3560
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Selenium (Se)	<0.01
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Silver (Ag)	<0.004
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Sodium (Na)	12
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Strontium (Sr)	1.98
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Thallium (Tl)	<0.0004
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Tin (Sn)	0.17
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Titanium (Ti)	0.175
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Uranium (U)	0.00073
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Vanadium (V)	<0.02
2385_GIANT_165	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Zinc (Zn)	3.22
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Aluminum (Al)	0.33
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Antimony (Sb)	0.001
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Arsenic (As)	0.005
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Barium (Ba)	5.34
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Beryllium (Be)	0.002
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Bismuth (Bi)	0.02
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Boron (B)	5.23
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Cadmium (Cd)	0.0021
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Calcium (Ca)	2120
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Chromium (Cr)	0.011
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Cobalt (Co)	0.0253
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Copper (Cu)	0.921
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Iron (Fe)	6.1
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Lead (Pb)	0.002
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Magnesium (Mg)	751
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Manganese (Mn)	23.9
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Mercury (Hg)	0.002
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Molybdenum (Mo)	0.13
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Nickel (Ni)	0.143
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Phosphorus (P)	760
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Potassium (K)	3470
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Selenium (Se)	0.01
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Silver (Ag)	0.004
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Sodium (Na)	2.6

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Strontium (Sr)	4.81
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Thallium (Tl)	0.0004
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Tin (Sn)	0.02
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Titanium (Ti)	0.05
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Uranium (U)	0.0004
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Vanadium (V)	0.02
2385_GIANT_166	11/08/2017	rosehips	Enodah	mg/kg ww	Total Zinc (Zn)	4.3
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Aluminum (Al)	8.2
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Antimony (Sb)	0.075
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Arsenic (As)	0.41
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Barium (Ba)	23.1
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Beryllium (Be)	<0.4
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Bismuth (Bi)	<0.4
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Boron (B)	16
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Cadmium (Cd)	<0.04
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Calcium (Ca)	4530
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Chromium (Cr)	<0.8
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Cobalt (Co)	0.203
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Copper (Cu)	27.5
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Iron (Fe)	851
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Lead (Pb)	0.092
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Magnesium (Mg)	1130
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Manganese (Mn)	96.1
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Mercury (Hg)	<0.04
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Molybdenum (Mo)	0.25
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Nickel (Ni)	0.76
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Phosphorus (P)	1850
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Potassium (K)	11400
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Selenium (Se)	<0.2
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Silver (Ag)	<0.08
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Sodium (Na)	528
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Strontium (Sr)	38.6
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Thallium (Tl)	<0.008
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Tin (Sn)	0.48
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Titanium (Ti)	<4

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Uranium (U)	<0.008
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Vanadium (V)	<0.8
2385_GIANT_167	Summer 2017	rat root	Duck Lake north east	mg/kg dw	Total Zinc (Zn)	40.9
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Aluminum (Al)	54.5
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Antimony (Sb)	0.0583
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Arsenic (As)	0.847
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Barium (Ba)	21.1
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Beryllium (Be)	<0.1
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Bismuth (Bi)	<0.1
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Boron (B)	14.9
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Cadmium (Cd)	0.035
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Calcium (Ca)	4180
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Chromium (Cr)	<0.2
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Cobalt (Co)	0.22
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Copper (Cu)	3.64
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Iron (Fe)	1370
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Lead (Pb)	1.23
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Magnesium (Mg)	933
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Manganese (Mn)	118
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Mercury (Hg)	0.013
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Molybdenum (Mo)	0.376
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Nickel (Ni)	0.618
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Phosphorus (P)	829
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Potassium (K)	13600
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Selenium (Se)	<0.05
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Silver (Ag)	2.23
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Sodium (Na)	674
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Strontium (Sr)	41.7
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Thallium (Tl)	0.0036
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Tin (Sn)	0.28
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Titanium (Ti)	2.4
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Uranium (U)	0.0687
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Vanadium (V)	0.24
2385_GIANT_168	Summer 2017	rat root	Duck Lake North	mg/kg dw	Total Zinc (Zn)	7.49
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	%	Moisture	32

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Aluminum (Al)	1.7
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Antimony (Sb)	0.0025
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Arsenic (As)	0.209
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Barium (Ba)	2.31
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Beryllium (Be)	<0.002
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Bismuth (Bi)	<0.02
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Boron (B)	9.46
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Cadmium (Cd)	<0.002
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Calcium (Ca)	1040
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Chromium (Cr)	0.057
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Cobalt (Co)	0.0133
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Copper (Cu)	1.09
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Iron (Fe)	9.3
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Lead (Pb)	<0.002
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Magnesium (Mg)	520
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Manganese (Mn)	4.87
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Mercury (Hg)	0.0034
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Molybdenum (Mo)	0.223
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Nickel (Ni)	0.271
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Phosphorus (P)	845
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Potassium (K)	8940
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Selenium (Se)	<0.01
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Silver (Ag)	<0.004
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Sodium (Na)	8.3
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Strontium (Sr)	4.16
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Thallium (Tl)	<0.0004
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Tin (Sn)	<0.02
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Titanium (Ti)	<0.05
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Uranium (U)	<0.0004
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Vanadium (V)	<0.02
2385_GIANT_169	Summer 2017	Juniper berries	North Ndilo	mg/kg ww	Total Zinc (Zn)	6.69
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	%	Moisture	74
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Aluminum (Al)	1.5
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Antimony (Sb)	0.0038
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Arsenic (As)	<0.005

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Barium (Ba)	0.045
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Beryllium (Be)	<0.002
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Bismuth (Bi)	<0.02
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Boron (B)	<0.4
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Cadmium (Cd)	0.0023
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Calcium (Ca)	69.1
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Chromium (Cr)	0.052
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Cobalt (Co)	0.015
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Copper (Cu)	1.71
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Iron (Fe)	32.6
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Lead (Pb)	0.006
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Magnesium (Mg)	340
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Manganese (Mn)	0.215
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Mercury (Hg)	<0.002
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Molybdenum (Mo)	<0.01
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Nickel (Ni)	0.034
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Phosphorus (P)	3060
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Potassium (K)	4540
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Selenium (Se)	0.097
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Silver (Ag)	<0.004
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Sodium (Na)	575
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Strontium (Sr)	0.062
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Thallium (Tl)	0.00052
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Tin (Sn)	0.028
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Titanium (Ti)	0.13
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Uranium (U)	<0.0004
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Vanadium (V)	<0.02
2385_GIANT_170	Summer 2017	Rabbit	Reid Lake	mg/kg ww	Total Zinc (Zn)	19.6
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Aluminum (Al)	28.7
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Antimony (Sb)	0.0379
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Arsenic (As)	0.161
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Barium (Ba)	301
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Beryllium (Be)	0.1
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Bismuth (Bi)	0.1
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Boron (B)	14.1

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Cadmium (Cd)	0.376
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Calcium (Ca)	13900
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Chromium (Cr)	0.3
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Cobalt (Co)	2.62
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Copper (Cu)	12
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Iron (Fe)	41
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Lead (Pb)	0.208
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Magnesium (Mg)	3720
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Manganese (Mn)	1520
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Mercury (Hg)	0.04
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Molybdenum (Mo)	0.05
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Nickel (Ni)	2.23
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Phosphorus (P)	473
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Potassium (K)	1900
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Selenium (Se)	0.11
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Silver (Ag)	0.17
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Sodium (Na)	16
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Strontium (Sr)	78.1
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Thallium (Tl)	0.0038
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Tin (Sn)	0.1
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Titanium (Ti)	1.3
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Uranium (U)	0.003
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Vanadium (V)	0.2
2385_GIANT_171	Summer 2017	Birch fungus	Bdene camp, Dettah	mg/kg dw	Total Zinc (Zn)	258
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	%	Moisture	76
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Aluminum (Al)	1.87
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Antimony (Sb)	0.0018
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Arsenic (As)	0.0109
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Barium (Ba)	0.041
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Beryllium (Be)	<0.002
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Bismuth (Bi)	<0.02
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Boron (B)	<0.4
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Cadmium (Cd)	<0.002
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Calcium (Ca)	61.1
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Chromium (Cr)	0.068

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Cobalt (Co)	0.015
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Copper (Cu)	1.55
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Iron (Fe)	21.1
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Lead (Pb)	0.0049
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Magnesium (Mg)	332
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Manganese (Mn)	0.318
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Mercury (Hg)	<0.002
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Molybdenum (Mo)	<0.01
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Nickel (Ni)	0.014
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Phosphorus (P)	2960
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Potassium (K)	4510
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Selenium (Se)	0.132
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Silver (Ag)	<0.004
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Sodium (Na)	592
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Strontium (Sr)	0.069
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Thallium (Tl)	0.00052
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Tin (Sn)	0.028
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Titanium (Ti)	0.132
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Uranium (U)	<0.0004
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Vanadium (V)	<0.02
2385_GIANT_172	Summer 2017	rabbit	Reid Lake	mg/kg ww	Total Zinc (Zn)	16.5
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	%	Moisture	80
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Aluminum (Al)	0.35
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Antimony (Sb)	<0.001
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Arsenic (As)	0.0141
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Barium (Ba)	0.049
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Beryllium (Be)	<0.002
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Bismuth (Bi)	<0.02
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Boron (B)	3.77
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Cadmium (Cd)	0.111
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Calcium (Ca)	298
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Chromium (Cr)	0.019
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Cobalt (Co)	0.0088
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Copper (Cu)	1.97
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Iron (Fe)	9.9

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Lead (Pb)	0.0094
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Magnesium (Mg)	608
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Manganese (Mn)	12.2
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Mercury (Hg)	0.0035
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Molybdenum (Mo)	0.092
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Nickel (Ni)	0.448
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Phosphorus (P)	985
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Potassium (K)	3400
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Selenium (Se)	<0.01
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Silver (Ag)	<0.004
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Sodium (Na)	29.4
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Strontium (Sr)	0.103
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Thallium (Tl)	<0.0004
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Tin (Sn)	0.186
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Titanium (Ti)	<0.05
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Uranium (U)	<0.0004
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Vanadium (V)	<0.02
2385_GIANT_173	24/08/2017	cloud berry	Berry Island	mg/kg ww	Total Zinc (Zn)	7.91
2385_GIANT_174	04/08/2017	raspberries	Ndilo	%	Moisture	84
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Aluminum (Al)	4.87
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Antimony (Sb)	0.0014
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Arsenic (As)	0.0394
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Barium (Ba)	0.512
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Beryllium (Be)	<0.002
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Bismuth (Bi)	<0.02
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Boron (B)	2.52
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Cadmium (Cd)	<0.002
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Calcium (Ca)	1480
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Chromium (Cr)	0.034
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Cobalt (Co)	0.0064
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Copper (Cu)	0.842
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Iron (Fe)	13.9
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Lead (Pb)	0.0057
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Magnesium (Mg)	648
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Manganese (Mn)	3.67

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Mercury (Hg)	<0.002
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Molybdenum (Mo)	0.584
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Nickel (Ni)	0.118
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Phosphorus (P)	810
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Potassium (K)	3760
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Selenium (Se)	<0.01
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Silver (Ag)	<0.004
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Sodium (Na)	19
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Strontium (Sr)	2.29
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Thallium (Tl)	<0.0004
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Tin (Sn)	0.312
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Titanium (Ti)	0.146
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Uranium (U)	0.00093
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Vanadium (V)	<0.02
2385_GIANT_174	04/08/2017	raspberries	Ndilo	mg/kg ww	Total Zinc (Zn)	4.35
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Aluminum (Al)	4.27
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Antimony (Sb)	0.005
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Arsenic (As)	0.0295
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Barium (Ba)	0.446
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Beryllium (Be)	0.002
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Bismuth (Bi)	0.02
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Boron (B)	0.4
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Cadmium (Cd)	0.002
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Calcium (Ca)	942
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Chromium (Cr)	0.08
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Cobalt (Co)	0.0063
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Copper (Cu)	0.784
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Iron (Fe)	61.2
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Lead (Pb)	0.0298
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Magnesium (Mg)	274
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Manganese (Mn)	0.756
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Mercury (Hg)	0.002
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Molybdenum (Mo)	0.01
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Nickel (Ni)	0.035
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Phosphorus (P)	2660

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Potassium (K)	3310
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Selenium (Se)	0.101
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Silver (Ag)	0.004
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Sodium (Na)	1070
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Strontium (Sr)	1.36
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Thallium (Tl)	0.0004
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Tin (Sn)	0.02
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Titanium (Ti)	0.2
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Uranium (U)	0.0004
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Vanadium (V)	0.02
2385_GIANT_175	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Zinc (Zn)	23.7
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Aluminum (Al)	1.16
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Antimony (Sb)	0.0031
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Arsenic (As)	0.0257
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Barium (Ba)	7.44
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Beryllium (Be)	0.002
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Bismuth (Bi)	0.02
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Boron (B)	0.4
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Cadmium (Cd)	0.002
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Calcium (Ca)	16900
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Chromium (Cr)	0.15
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Cobalt (Co)	0.0099
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Copper (Cu)	0.581
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Iron (Fe)	86.7
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Lead (Pb)	0.0996
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Magnesium (Mg)	564
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Manganese (Mn)	0.555
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Mercury (Hg)	0.002
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Molybdenum (Mo)	0.01
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Nickel (Ni)	0.016
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Phosphorus (P)	11200
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Potassium (K)	4020
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Selenium (Se)	0.064
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Silver (Ag)	0.004
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Sodium (Na)	1080

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Strontium (Sr)	24.7
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Thallium (Tl)	0.0004
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Tin (Sn)	0.02
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Titanium (Ti)	0.567
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Uranium (U)	0.0005
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Vanadium (V)	0.02
2385_GIANT_176	Spring 2017	muskrat	Hidden Lake	mg/kg ww	Total Zinc (Zn)	27.8
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Aluminum (Al)	1.23
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Antimony (Sb)	0.0013
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Arsenic (As)	0.0081
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Barium (Ba)	0.065
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Beryllium (Be)	0.002
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Bismuth (Bi)	0.02
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Boron (B)	0.4
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Cadmium (Cd)	0.0033
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Calcium (Ca)	94.8
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Chromium (Cr)	0.013
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Cobalt (Co)	0.0619
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Copper (Cu)	6.1
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Iron (Fe)	82.7
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Lead (Pb)	0.0082
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Magnesium (Mg)	232
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Manganese (Mn)	0.806
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Mercury (Hg)	0.002
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Molybdenum (Mo)	0.01
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Nickel (Ni)	0.027
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Phosphorus (P)	2670
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Potassium (K)	2990
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Selenium (Se)	0.173
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Silver (Ag)	0.004
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Sodium (Na)	907
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Strontium (Sr)	0.165
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Thallium (Tl)	0.00068
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Tin (Sn)	0.02
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Titanium (Ti)	0.119

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Uranium (U)	0.0004
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Vanadium (V)	0.02
2385_GIANT_177	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Zinc (Zn)	22.7
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	%	Moisture	76
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Aluminum (Al)	1.96
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Antimony (Sb)	0.0045
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Arsenic (As)	0.0094
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Barium (Ba)	0.084
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Beryllium (Be)	<0.002
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Bismuth (Bi)	<0.02
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Boron (B)	<0.4
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Cadmium (Cd)	0.0049
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Calcium (Ca)	140
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Chromium (Cr)	0.263
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Cobalt (Co)	0.0156
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Copper (Cu)	1.56
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Iron (Fe)	41.3
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Lead (Pb)	0.0061
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Magnesium (Mg)	315
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Manganese (Mn)	0.241
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Mercury (Hg)	<0.002
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Molybdenum (Mo)	0.012
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Nickel (Ni)	0.03
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Phosphorus (P)	2760
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Potassium (K)	4240
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Selenium (Se)	0.112
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Silver (Ag)	<0.004
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Sodium (Na)	652
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Strontium (Sr)	0.112
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Thallium (Tl)	0.00099
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Tin (Sn)	0.088
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Titanium (Ti)	0.207
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Uranium (U)	<0.0004
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Vanadium (V)	<0.02
2385_GIANT_178	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Zinc (Zn)	30.2

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_179	Spring 2017	rabbit	Prelude	%	Moisture	74
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Aluminum (Al)	1.5
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Antimony (Sb)	0.0011
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Arsenic (As)	0.044
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Barium (Ba)	0.061
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Beryllium (Be)	<0.002
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Bismuth (Bi)	<0.02
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Boron (B)	<0.4
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Cadmium (Cd)	0.0064
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Calcium (Ca)	152
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Chromium (Cr)	0.065
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Cobalt (Co)	0.0094
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Copper (Cu)	2.49
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Iron (Fe)	43.5
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Lead (Pb)	0.007
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Magnesium (Mg)	323
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Manganese (Mn)	0.232
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Mercury (Hg)	<0.002
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Molybdenum (Mo)	0.012
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Nickel (Ni)	0.017
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Phosphorus (P)	2860
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Potassium (K)	4030
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Selenium (Se)	0.085
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Silver (Ag)	<0.004
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Sodium (Na)	948
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Strontium (Sr)	0.098
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Thallium (Tl)	0.00054
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Tin (Sn)	0.074
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Titanium (Ti)	0.091
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Uranium (U)	<0.0004
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Vanadium (V)	<0.02
2385_GIANT_179	Spring 2017	rabbit	Prelude	mg/kg ww	Total Zinc (Zn)	32.2
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	%	Moisture	75
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Aluminum (Al)	2
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Antimony (Sb)	0.0067

Lab Sample ID	Date (dd/mm/yr)	Species	Location	Units	Constituent	Result
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Arsenic (As)	0.0101
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Barium (Ba)	0.041
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Beryllium (Be)	<0.002
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Bismuth (Bi)	<0.02
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Boron (B)	<0.4
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Cadmium (Cd)	0.0024
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Calcium (Ca)	74
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Chromium (Cr)	0.085
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Cobalt (Co)	0.008
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Copper (Cu)	1.46
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Iron (Fe)	32
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Lead (Pb)	0.008
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Magnesium (Mg)	322
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Manganese (Mn)	0.197
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Mercury (Hg)	0.0028
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Molybdenum (Mo)	<0.01
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Nickel (Ni)	0.028
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Phosphorus (P)	2850
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Potassium (K)	4410
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Selenium (Se)	0.062
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Silver (Ag)	<0.004
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Sodium (Na)	722
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Strontium (Sr)	0.063
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Thallium (Tl)	0.00061
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Tin (Sn)	0.034
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Titanium (Ti)	0.172
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Uranium (U)	<0.0004
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Vanadium (V)	<0.02
2385_GIANT_180	Spring 2017	rabbit	Reid Lake	mg/kg ww	Total Zinc (Zn)	24

ATTACHMENT P.2

COMBINED (OBST AND COUNTRY FOODS 2017) MUSHROOM ARSENIC DATASET

APPENDIX P – ATTACHMENT 2: COMBINED (OBST AND CANNORTH) MUSHROOM ARSENIC DATASET

Sample ID	Study	Sample Name	Family	Location	Sub-area	start units	Result 1	<MDL	Result 2	Moisture	Result ww	End Unit
2385_GIANT_171	Country Foods 2017	Birch fungus	Unknown	Bdene camp, Dettah	T2	mg/kg dw	0.161		0.161	88	0.01932	mg/kg ww
51	Obst 2014	Meadow Mushroom (mushroom)	Agaricaceae	YK Giant Mine	T1	mg/kg dw	16.9		16.9	88	2.028	mg/kg ww
43 (obst 2001)	Obst 2014	Meadow Mushroom (mushroom)	Agaricaceae	YK Old Town	T1	mg/kg dw	2.3		2.3	88	0.276	mg/kg ww
55 (obst 2001)	Obst 2014	Spring Agaricus (mushroom)	Agaricaceae	YK River Park	T1	mg/kg dw	1.4		1.4	88	0.168	mg/kg ww
60 (obst 2001)	Obst 2014	Forest Mushroom (mushroom)	Agaricaceae	Yk Treminco Mine	T1	mg/kg dw	5		5	88	0.6	mg/kg ww
26	Obst 2014	Meadow Mushroom yg. (mushroom)	Agaricaceae	YK Sewage Road	T1	mg/kg dw	97.2		97.2	88	11.664	mg/kg ww
27	Obst 2014	Meadow Mushroom ad. (mushroom)	Agaricaceae	YK Sewage Road	T1	mg/kg dw	47.1		47.1	88	5.652	mg/kg ww
28	Obst 2014	Meadow Mushroom (mushroom)	Agaricaceae	YK Sewage Road	T1	mg/kg dw	58.2		58.2	88	6.984	mg/kg ww
30	Obst 2014	Meadow Mushroom (mushroom)	Agaricaceae	YK Sewage Road	T1	mg/kg dw	286		286	88	34.32	mg/kg ww
40	Obst 2014	Meadow Mushroom yg. (mushroom)	Agaricaceae	YK Con Mine	T1	mg/kg dw	38.2		38.2	88	4.584	mg/kg ww
41	Obst 2014	Meadow Mushroom ad. (mushroom)	Agaricaceae	YK Con Mine	T1	mg/kg dw	37.5		37.5	88	4.5	mg/kg ww
2385_GIANT_150	Country Foods 2017	Agaricus arvensis	Agaricaceae	Rat Lake area (on lawn)	T1	mg/kg dw	25.1		25.1	88	3.012	mg/kg ww
2385_GIANT_156	Country Foods 2017	Agaricus augustus	Agaricaceae	Rat Lake area (on lawn)	T1	mg/kg dw	10.2		10.2	88	1.224	mg/kg ww
2385_GIANT_159	Country Foods 2017	Agaricus #1? (some variant of campestris?)	Agaricaceae	Rat Lake area (on lawn)	T1	mg/kg dw	16.3		16.3	91	1.467	mg/kg ww
2385_GIANT_160	Country Foods 2017	Agaricus #2 (some variant of campestris or arvensis?)	Agaricaceae	Rat Lake area (on lawn)	T1	mg/kg dw	95.6		95.6	87	12.428	mg/kg ww
2385_GIANT_130	Country Foods 2017	Amanita muscaria	Amanitaceae	Yellowknife golf course	T1	mg/kg dw	0.71		0.71	92	0.0568	mg/kg ww
2385_GIANT_115	Country Foods 2017	Amanita muscaria	Amanitaceae	Frame Lake trail, NE corder	T1	mg/kg dw	8.61		8.61	88	1.0332	mg/kg ww
34	Obst 2014	Fly Agaric (mushroom)	Amanitaceae	YK Frame Lake	T1	mg/kg dw	17.2		17.2	88	2.064	mg/kg ww

Sample ID	Study	Sample Name	Family	Location	Sub-area	start units	Result 1	<MDL	Result 2	Moisture	Result ww	End Unit
39	Obst 2014	Fly Agaric (mushroom)	Amanitaceae	YK Frame Lake	T1	mg/kg dw	8.3		8.3	88	0.996	mg/kg ww
46	Obst 2014	Fly Agaric (mushroom)	Amanitaceae	YK Jolliffe Island	T1	mg/kg dw	3.8		3.8	88	0.456	mg/kg ww
102	Obst 2014	Fly Agaric (mushroom)	Amanitaceae	Tundra Jolly Lake	T5	mg/kg dw	<0.5	1	0.25	88	0.03	mg/kg ww
103	Obst 2014	Fly Agaric (mushroom)	Amanitaceae	Tundra Jolly Lake	T5	mg/kg dw	<0.5	1	0.25	88	0.03	mg/kg ww
76 (obst 2001)	Obst 2014	Sarcodon (mushroom)	Bankeraceae	Ingraham/C. Antler	T3	mg/kg dw	<0.2	1	0.1	88	0.012	mg/kg ww
2385_GIANT_136	Country Foods 2017	Sarcodon imbricatus	Bankeraceae	Deh Cho Blvd, Yk	T1	mg/kg dw	28.9		28.9	88	3.468	mg/kg ww
19 (obst 2001)	Obst 2014	Hollow-stem Bolete (mushroom)	Boletaceae	YK Golf Course	T1	mg/kg dw	19.9		19.9	88	2.388	mg/kg ww
21 (obst 2001)	Obst 2014	Red-capped Bolete (mushroom)	Boletaceae	YK Golf Course	T1	mg/kg dw	5.7		5.7	88	0.684	mg/kg ww
22 (obst 2001)	Obst 2014	Sand Bolete (mushroom)	Boletaceae	YK Golf Course	T1	mg/kg dw	1		1	88	0.12	mg/kg ww
45 (obst 2001)	Obst 2014	Birch Bolete (mushroom)	Boletaceae	YK Jolliffe Island	T1	mg/kg dw	5.6		5.6	88	0.672	mg/kg ww
48 (obst 2001)	Obst 2014	Red-capped Bolete (mushroom)	Boletaceae	YK Jolliffe Island	T1	mg/kg dw	1.8		1.8	88	0.216	mg/kg ww
53 (obst 2001)	Obst 2014	Birch Bolete (mushroom)	Boletaceae	YK Vee Lake Rd.	T1	mg/kg dw	7.8		7.8	88	0.936	mg/kg ww
54 (obst 2001)	Obst 2014	Hollow-stem Bolete (mushroom)	Boletaceae	YK River Park	T1	mg/kg dw	7.8		7.8	88	0.936	mg/kg ww
31	Obst 2014	Red-capped Bolete yg. (mushroom)	Boletaceae	YK Frame Lake	T1	mg/kg dw	2		2	88	0.24	mg/kg ww
32	Obst 2014	Red-capped Bolete (mushroom)	Boletaceae	YK Frame Lake	T1	mg/kg dw	1.9		1.9	88	0.228	mg/kg ww
33	Obst 2014	Red-capped Bolete ad. (mushroom)	Boletaceae	YK Frame Lake	T1	mg/kg dw	1.4		1.4	88	0.168	mg/kg ww
35	Obst 2014	Birch Bolete yg. (mushroom)	Boletaceae	YK Frame Lake	T1	mg/kg dw	14.3		14.3	88	1.716	mg/kg ww
36	Obst 2014	Birch Bolete yg. (mushroom)	Boletaceae	YK Frame Lake	T1	mg/kg dw	13.7		13.7	88	1.644	mg/kg ww
37	Obst 2014	Birch Bolete ad. (mushroom)	Boletaceae	YK Frame Lake	T1	mg/kg dw	4.9		4.9	88	0.588	mg/kg ww
38	Obst 2014	Birch Bolete ad. (mushroom)	Boletaceae	YK Frame Lake	T1	mg/kg dw	5		5	88	0.6	mg/kg ww
42	Obst 2014	Birch Bolete (mushroom)	Boletaceae	YK Con Mine	T1	mg/kg dw	10.2		10.2	88	1.224	mg/kg ww
62 (obst 2001)	Obst 2014	Red-capped Bolete (mushroom)	Boletaceae	Prelude Lake Trail	T2	mg/kg dw	2		2	88	0.24	mg/kg ww

Sample ID	Study	Sample Name	Family	Location	Sub-area	start units	Result 1	<MDL	Result 2	Moisture	Result ww	End Unit
63 (obst 2001)	Obst 2014	Sand Bolete (mushroom)	Boletaceae	Prelude Lake Trail	T2	mg/kg dw	4.1		4.1	88	0.492	mg/kg ww
65	Obst 2014	Sand Bolete (mushroom)	Boletaceae	Cameron Fall Trail	T3	mg/kg dw	1.5		1.5	88	0.18	mg/kg ww
66	Obst 2014	Slippery Jack (mushroom)	Boletaceae	Cameron Fall Trail	T3	mg/kg dw	1.5		1.5	88	0.18	mg/kg ww
67	Obst 2014	Birch Bolete (mushroom)	Boletaceae	Cameron Fall Trail	T3	mg/kg dw	1.4		1.4	88	0.168	mg/kg ww
18	Obst 2014	Yellow Bolete (mushroom)	Boletaceae	40 km W of YK	T3	mg/kg dw	1.7		1.7	88	0.204	mg/kg ww
69 (obst 2001)	Obst 2014	Red-capped Bolete (mushroom)	Boletaceae	Cameron River Pk.	T3	mg/kg dw	<0.2	1	0.1	88	0.012	mg/kg ww
71 (obst 2001)	Obst 2014	Birch Bolete (mushroom)	Boletaceae	Ingraham/C. Antler	T3	mg/kg dw	<0.2	1	0.1	88	0.012	mg/kg ww
72 (obst 2001)	Obst 2014	Larch Bolete (mushroom)	Boletaceae	Ingraham/C. Antler	T3	mg/kg dw	4.6		4.6	88	0.552	mg/kg ww
73 (obst 2001)	Obst 2014	Red-capped Bolete (mushroom)	Boletaceae	Ingraham/C. Antler	T3	mg/kg dw	1.7		1.7	88	0.204	mg/kg ww
74 (obst 2001)	Obst 2014	Red-capped Bolete (mushroom)	Boletaceae	Ingraham/C. Antler	T3	mg/kg dw	<0.2	1	0.1	88	0.012	mg/kg ww
75 (obst 2001)	Obst 2014	Sand Bolete (mushroom)	Boletaceae	Ingraham/C. Antler	T3	mg/kg dw	2.4		2.4	88	0.288	mg/kg ww
82	Obst 2014	Birch Bolete (mushroom)	Boletaceae	Ingraham/Tibbitt L.	T3	mg/kg dw	<0.5	1	0.25	88	0.03	mg/kg ww
83	Obst 2014	Birch Bolete (mushroom)	Boletaceae	Ingraham/Tibbitt L.	T3	mg/kg dw	<0.5	1	0.25	88	0.03	mg/kg ww
100 (obst 2001)	Obst 2014	Yellow Bolete (mushroom)	Boletaceae	Tibbitt Lake	T4	mg/kg dw	<0.2	1	0.1	88	0.012	mg/kg ww
98 (obst 2001)	Obst 2014	Sand Bolete (mushroom)	Boletaceae	Tibbitt Lake	T4	mg/kg dw	<0.2	1	0.1	88	0.012	mg/kg ww
99 (obst 2001)	Obst 2014	Suillus (mushroom)	Boletaceae	Tibbitt Lake	T4	mg/kg dw	<0.2	1	0.1	88	0.012	mg/kg ww
8	Obst 2014	Sand Bolete (mushroom)	Boletaceae	46 km SW of Edzo	T5	mg/kg dw	0.6		0.6	88	0.072	mg/kg ww
9	Obst 2014	Sand Bolete (mushroom)	Boletaceae	46 km SW of Edzo	T5	mg/kg dw	0.8		0.8	88	0.096	mg/kg ww
11	Obst 2014	Sand Bolete (mushroom)	Boletaceae	46 km SW of Edzo	T5	mg/kg dw	<0.5	1	0.25	88	0.03	mg/kg ww
12	Obst 2014	Sand Bolete (mushroom)	Boletaceae	46 km SW of Edzo	T5	mg/kg dw	<0.5	1	0.25	88	0.03	mg/kg ww
16	Obst 2014	Sand Bolete (mushroom)	Boletaceae	17 km SW of Edzo	T5	mg/kg dw	<0.5	1	0.25	88	0.03	mg/kg ww
104	Obst 2014	Red-capped Bolete (mushroom)	Boletaceae	Tundra Jolly Lake	T5	mg/kg dw	1.7		1.7	88	0.204	mg/kg ww
105	Obst 2014	Birch Bolete (mushroom)	Boletaceae	Tundra Jolly Lake	T5	mg/kg dw	<0.5	1	0.25	88	0.03	mg/kg ww
106	Obst 2014	Birch Bolete (mushroom)	Boletaceae	Tundra Jolly Lake	T5	mg/kg dw	<0.5	1	0.25	88	0.03	mg/kg ww
107	Obst 2014	Birch Bolete (mushroom)	Boletaceae	Tundra Jolly Lake	T5	mg/kg dw	<0.5	1	0.25	88	0.03	mg/kg ww
108	Obst 2014	Birch Bolete (mushroom)	Boletaceae	Tundra Jolly Lake	T5	mg/kg dw	0.6		0.6	88	0.072	mg/kg ww

Sample ID	Study	Sample Name	Family	Location	Sub-area	start units	Result 1	<MDL	Result 2	Moisture	Result ww	End Unit
109	Obst 2014	Birch Bolete (mushroom)	Boletaceae	Tundra Daring Lake	T5	mg/kg dw	<1	1	0.5	88	0.06	mg/kg ww
110	Obst 2014	Birch Bolete (mushroom)	Boletaceae	Tundra Daring Lake	T5	mg/kg dw	20.3		20.3	88	2.436	mg/kg ww
111	Obst 2014	Birch Bolete (mushroom)	Boletaceae	Tundra Daring Lake	T5	mg/kg dw	5.4		5.4	88	0.648	mg/kg ww
14 (obst 2001)	Obst 2014	Red-capped Bolete (mushroom)	Boletaceae	43 km SW of Edzo	T5	mg/kg dw	<0.2	1	0.1	88	0.012	mg/kg ww
15 (obst 2001)	Obst 2014	Sand Bolete (mushroom)	Boletaceae	43 km SW of Edzo	T5	mg/kg dw	<0.2	1	0.1	88	0.012	mg/kg ww
2385_GIANT_116	Country Foods 2017	Leccinum holopus	Boletaceae	Frame Lake trail, NE corder	T1	mg/kg dw	6.33		6.33	88	0.7596	mg/kg ww
2385_GIANT_117	Country Foods 2017	Leccinum scabrum	Boletaceae	Frame Lake trail, NE corder	T1	mg/kg dw	9.47		9.47	88	1.1364	mg/kg ww
2385_GIANT_149	Country Foods 2017	Leccinum aurantiacum	Boletaceae	Frame Lake trail south	T1	mg/kg dw	3.71		3.71	88	0.4452	mg/kg ww
2385_GIANT_108	Country Foods 2017	Leccinum scabrum	Boletaceae	Rotary Park, Yellowknife	T1	mg/kg dw	10.9		10.9	84	1.744	mg/kg ww
2385_GIANT_148	Country Foods 2017	Leccinum aurantiacum	Boletaceae	yk golf course	T1	mg/kg dw	3.14		3.14	88	0.3768	mg/kg ww
2385_GIANT_151	Country Foods 2017	Leccinum scabrum	Boletaceae	yk golf course	T1	mg/kg dw	5.65		5.65	88	0.678	mg/kg ww
2385_GIANT_152	Country Foods 2017	Leccinum unknown species	Boletaceae	yk golf course	T1	mg/kg dw	6.56		6.56	88	0.7872	mg/kg ww
2385_GIANT_154	Country Foods 2017	Leccinum scabrum	Boletaceae	Frame Lake Trail south	T1	mg/kg dw	7.7		7.7	88	0.924	mg/kg ww
2385_GIANT_155	Country Foods 2017	Leccinum testaceoscabrum?	Boletaceae	yk golf course	T1	mg/kg dw	4.8		4.8	88	0.576	mg/kg ww
49 (obst 2001)	Obst 2014	Shaggy Mane (mushroom)	Coprinaceae	YK Giant Mine	T1	mg/kg dw	6.6		6.6	88	0.792	mg/kg ww
50 (obst 2001)	Obst 2014	Shaggy Mane (mushroom)	Coprinaceae	YK Giant Mine	T1	mg/kg dw	46.3		46.3	88	5.556	mg/kg ww
52 (obst 2001)	Obst 2014	Shaggy Mane (mushroom)	Coprinaceae	YK Giant/Vee L.	T1	mg/kg dw	4.8		4.8	88	0.576	mg/kg ww
56 (obst 2001)	Obst 2014	Shaggy Mane (mushroom)	Coprinaceae	Yk Treminco Mine	T1	mg/kg dw	4.9		4.9	88	0.588	mg/kg ww
57 (obst 2001)	Obst 2014	Shaggy Mane (mushroom)	Coprinaceae	Yk Treminco Mine	T1	mg/kg dw	494		494	88	59.28	mg/kg ww
58 (backup sample)	Obst 2014	Shaggy Mane (mushroom)	Coprinaceae	Yk Treminco Mine	T1	mg/kg dw	298		298	88	35.76	mg/kg ww
59 (obst 2001)	Obst 2014	Shaggy Mane (mushroom)	Coprinaceae	Yk Treminco Mine	T1	mg/kg dw	3.6		3.6	88	0.432	mg/kg ww
61 (obst 2001)	Obst 2014	Tippler's Bane (mushroom)	Coprinaceae	Yk Treminco Mine	T1	mg/kg dw	11.1		11.1	88	1.332	mg/kg ww
29	Obst 2014	Shaggy Mane (mushroom)	Coprinaceae	YK Sewage Road	T1	mg/kg dw	44		44	88	5.28	mg/kg ww

Sample ID	Study	Sample Name	Family	Location	Sub-area	start units	Result 1	<MDL	Result 2	Moisture	Result ww	End Unit
81	Obst 2014	Hooded False Morel (mushroom)	Helvellaceae	Ingraham/Tibbitt L.	T3	mg/kg dw	<0.5	1	0.25	88	0.03	mg/kg ww
84	Obst 2014	Hooded False Morel (mushroom)	Helvellaceae	Ingraham/Tibbitt L.	T3	mg/kg dw	<0.5	1	0.25	88	0.03	mg/kg ww
85	Obst 2014	Hooded False Morel (mushroom)	Helvellaceae	Ingraham/Tibbitt L.	T3	mg/kg dw	<0.5	1	0.25	88	0.03	mg/kg ww
86	Obst 2014	Hooded False Morel (mushroom)	Helvellaceae	Ingraham/Tibbitt L.	T3	mg/kg dw	<0.5	1	0.25	88	0.03	mg/kg ww
17	Obst 2014	Hooded False Morel (mushroom)	Helvellaceae	2 km SW of Edzo	T4	mg/kg dw	<0.5	1	0.25	88	0.03	mg/kg ww
2385_GIANT_104	Country Foods 2017	Chaga (Inonotus obliquus)	Hymenochaetaceae	62 32 .56; 114 22.24; Beginning of Martin Lake Trail	T1	mg/kg dw	0.697		0.697	88	0.08364	mg/kg ww
2385_GIANT_119	Country Foods 2017	Chaga	Hymenochaetaceae	Dettah	T2	mg/kg dw	0.138		0.138	88	0.01656	mg/kg ww
20 (obst 2001)	Obst 2014	Puffball (mushroom)	Lycoperdaceae	YK Golf Course	T1	mg/kg dw	135		135	88	16.2	mg/kg ww
44 (obst 2001)	Obst 2014	Puffball (mushroom)	Lycoperdaceae	YK Old Town	T1	mg/kg dw	1.8		1.8	88	0.216	mg/kg ww
47 (obst 2001)	Obst 2014	Puffball (mushroom)	Lycoperdaceae	YK Jolliffe Island	T1	mg/kg dw	90.7		90.7	88	10.884	mg/kg ww
2385_GIANT_107	Country Foods 2017	morchella elata (clade)	Morchellaceae	Within 5km of Giant Mine, within city limits, Long Lake/Martin Lake side	T1	mg/kg dw	9.36		9.36	88	1.1232	mg/kg ww
2385_GIANT_105	Country Foods 2017	Morels	Morchellaceae	Reid Lake	T5	mg/kg dw	2.23		2.23	88	0.2676	mg/kg ww
112	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	Drybones Bay	T3	mg/kg dw	3.5		3.5	88	0.42	mg/kg ww
113	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	Drybones Bay	T3	mg/kg dw	1.6		1.6	88	0.192	mg/kg ww
114	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	Drybones Bay	T3	mg/kg dw	1.7		1.7	88	0.204	mg/kg ww
87 (obst 2001)	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	Ingraham/Tibbitt L.	T3	mg/kg dw	<0.2	1	0.1	88	0.012	mg/kg ww
88 (backup sample)	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	Ingraham/Tibbitt L.	T3	mg/kg dw	1.4		1.4	88	0.168	mg/kg ww
89 (backup sample)	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	Ingraham/Tibbitt L.	T3	mg/kg dw	0.6		0.6	88	0.072	mg/kg ww
90 (backup sample)	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	Ingraham/Tibbitt L.	T3	mg/kg dw	2.3		2.3	88	0.276	mg/kg ww

Sample ID	Study	Sample Name	Family	Location	Sub-area	start units	Result 1	<MDL	Result 2	Moisture	Result ww	End Unit
91 (obst 2001)	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	Ingraham/Tibbitt L.	T4	mg/kg dw	<0.2	1	0.1	88	0.012	mg/kg ww
92 (backup sample)	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	Ingraham/Tibbitt L.	T4	mg/kg dw	1.5		1.5	88	0.18	mg/kg ww
93 (obst 2001)	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	Ingraham/Tibbitt L.	T4	mg/kg dw	<0.2	1	0.1	88	0.012	mg/kg ww
94 (backup sample)	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	Ingraham/Tibbitt L.	T4	mg/kg dw	0.6		0.6	88	0.072	mg/kg ww
95 (backup sample)	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	Ingraham/Tibbitt L.	T4	mg/kg dw	0.5		0.5	88	0.06	mg/kg ww
96 (obst 2001)	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	Ingraham/Tibbitt L.	T4	mg/kg dw	<0.2	1	0.1	88	0.012	mg/kg ww
97 (backup sample)	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	Ingraham/Tibbitt L.	T4	mg/kg dw	0.6		0.6	88	0.072	mg/kg ww
1	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	100 km S of Edzo	T5	mg/kg dw	0.4		0.4	88	0.048	mg/kg ww
2	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	100 km S of Edzo	T5	mg/kg dw	0.6		0.6	88	0.072	mg/kg ww
3	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	100 km S of Edzo	T5	mg/kg dw	0.4		0.4	88	0.048	mg/kg ww
4	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	100 km S of Edzo	T5	mg/kg dw	0.5		0.5	88	0.06	mg/kg ww
5	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	100 km S of Edzo	T5	mg/kg dw	0.7		0.7	88	0.084	mg/kg ww
6	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	100 km S of Edzo	T5	mg/kg dw	0.6		0.6	88	0.072	mg/kg ww
7	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	100 km S of Edzo	T5	mg/kg dw	1.2		1.2	88	0.144	mg/kg ww
115	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	N of YK/S of Whati	T5	mg/kg dw	1.1		1.1	88	0.132	mg/kg ww
116	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	N of YK/S of Whati	T5	mg/kg dw	1.1		1.1	88	0.132	mg/kg ww
117	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	N of YK/S of Whati	T5	mg/kg dw	0.8		0.8	88	0.096	mg/kg ww
118	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	N of YK/S of Whati	T5	mg/kg dw	0.9		0.9	88	0.108	mg/kg ww
119	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	50 km SW of Edzo	T5	mg/kg dw	1.7		1.7	88	0.204	mg/kg ww

Sample ID	Study	Sample Name	Family	Location	Sub-area	start units	Result 1	<MDL	Result 2	Moisture	Result ww	End Unit
120	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	50 km SW of Edzo	T5	mg/kg dw	0.9		0.9	88	0.108	mg/kg ww
121	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	50 km SW of Edzo	T5	mg/kg dw	1.4		1.4	88	0.168	mg/kg ww
122	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	50 km SW of Edzo	T5	mg/kg dw	0.6		0.6	88	0.072	mg/kg ww
123	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	50 km SW of Edzo	T5	mg/kg dw	1.3		1.3	88	0.156	mg/kg ww
124	Obst 2014	Burn-site Morel (mushroom)	Morchellaceae	50 km SW of Edzo	T5	mg/kg dw	1.2		1.2	88	0.144	mg/kg ww
2385_GIANT_118	Country Foods 2017	Lactarius torminosus	Russulaceae	Frame Lake trail, NE corder	T1	mg/kg dw	3.43		3.43	88	0.4116	mg/kg ww
2385_GIANT_137	Country Foods 2017	Gomphidius maculatos	Suillaceae	yk golf course	T1	mg/kg dw	4.07		4.07	88	0.4884	mg/kg ww
2385_GIANT_146	Country Foods 2017	Gomphidius #1	Suillaceae	Deh Cho Blvd, Yk	T1	mg/kg dw	0.429		0.429	88	0.05148	mg/kg ww
2385_GIANT_132	Country Foods 2017	Fuscobolitenus laricinia (aka Suillus laricinia)	Suillaceae	Deh Cho Blvd, Yk	T1	mg/kg dw	3.3		3.3	88	0.396	mg/kg ww
2385_GIANT_133	Country Foods 2017	Fuscoboletinus spectabilis (aka Suillus laricinia)	Suillaceae	Deh Cho Blvd, Yk	T1	mg/kg dw	1.51		1.51	88	0.1812	mg/kg ww
2385_GIANT_134	Country Foods 2017	Fuscoboletus sinuspaulianus	Suillaceae	Niven Lake Trail	T1	mg/kg dw	11.9		11.9	88	1.428	mg/kg ww
2385_GIANT_035	Country Foods 2017	Suilus sp. Mushroom	Suillaceae	Vee Lake	T1	mg/kg dw	8.2		8.2	85	1.23	mg/kg ww
2385_GIANT_138	Country Foods 2017	Suillus #2 (possible granulatus?)	Suillaceae	yk golf course	T1	mg/kg dw	2.92		2.92	88	0.3504	mg/kg ww
2385_GIANT_131	Country Foods 2017	suillus grevillei	Suillaceae	Deh Cho Blvd, Yk	T1	mg/kg dw	1.79		1.79	88	0.2148	mg/kg ww
2385_GIANT_135	Country Foods 2017	Suillus hirtellus	Suillaceae	yk golf course	T1	mg/kg dw	10		10	88	1.2	mg/kg ww
2385_GIANT_139	Country Foods 2017	Suillus #1	Suillaceae	yk golf course	T1	mg/kg dw	8.77		8.77	88	1.0524	mg/kg ww
2385_GIANT_141	Country Foods 2017	Suillus luteus	Suillaceae	yk golf course	T1	mg/kg dw	5.22		5.22	88	0.6264	mg/kg ww
2385_GIANT_144	Country Foods 2017	Suillus tomentosus	Suillaceae	yk golf course	T1	mg/kg dw	2.39		2.39	88	0.2868	mg/kg ww
2385_GIANT_145	Country Foods 2017	Suillus brevipes	Suillaceae	yk golf course	T1	mg/kg dw	4.17		4.17	88	0.5004	mg/kg ww

Sample ID	Study	Sample Name	Family	Location	Sub-area	start units	Result 1	<MDL	Result 2	Moisture	Result ww	End Unit
2385_GIANT_153	Country Foods 2017	suillus grevillei	Suillaceae	yk golf course	T1	mg/kg dw	11.1		11.1	88	1.332	mg/kg ww
2385_GIANT_158	Country Foods 2017	Suillus cavipes	Suillaceae	yk golf course	T1	mg/kg dw	13.6		13.6	88	1.632	mg/kg ww
2385_GIANT_157	Country Foods 2017	Clitocybe deceptiva	Tricholomataceae	Frame Lake trail south	T1	mg/kg dw	18.2		18.2	91	1.638	mg/kg ww
2385_GIANT_140	Country Foods 2017	Tricholoma imbricatom	Tricholomataceae	yk golf course	T1	mg/kg dw	2300		2300	88	276	mg/kg ww
2385_GIANT_147	Country Foods 2017	Tricholoma magnivelare	Tricholomataceae	yk golf course	T1	mg/kg dw	973		973	88	116.76	mg/kg ww
23 (obst 2001)	Obst 2014	White Matsutake (mushroom)	Tricholomataceae	YK Golf Course	T1	mg/kg dw	280		280	88	33.6	mg/kg ww
24 (obst 2001)	Obst 2014	White Matsutake (mushroom)	Tricholomataceae	YK Golf Course	T1	mg/kg dw	340		340	88	40.8	mg/kg ww
25 (backup sample)	Obst 2014	White Matsutake (mushroom)	Tricholomataceae	YK Golf Course	T1	mg/kg dw	1370		1370	88	164.4	mg/kg ww
64 (obst 2001)	Obst 2014	White Matsutake (mushroom)	Tricholomataceae	Prelude Lake Trail	T2	mg/kg dw	92.3		92.3	88	11.076	mg/kg ww
70	Obst 2014	White Matsutake (mushroom)	Tricholomataceae	Ingraham/C. Antler	T3	mg/kg dw	29.4		29.4	88	3.528	mg/kg ww
68 (obst 2001)	Obst 2014	White Matsutake (mushroom)	Tricholomataceae	Ingraham Trail	T3	mg/kg dw	28.1		28.1	88	3.372	mg/kg ww
77 (backup sample)	Obst 2014	White Matsutake (mushroom)	Tricholomataceae	Ingraham/C. Antler	T3	mg/kg dw	56.2		56.2	88	6.744	mg/kg ww
78 (obst 2001)	Obst 2014	White Matsutake (mushroom)	Tricholomataceae	Ingraham/C. Antler	T3	mg/kg dw	29.8		29.8	88	3.576	mg/kg ww
79 (obst 2001)	Obst 2014	White Matsutake (mushroom)	Tricholomataceae	Ingraham/C. Antler	T3	mg/kg dw	48.4		48.4	88	5.808	mg/kg ww
80 (backup sample)	Obst 2014	White Matsutake (mushroom)	Tricholomataceae	Ingraham/C. Antler	T3	mg/kg dw	11		11	88	1.32	mg/kg ww
101 (obst 2001)	Obst 2014	White Matsutake (mushroom)	Tricholomataceae	Tibbitt Lake	T4	mg/kg dw	53.1		53.1	88	6.372	mg/kg ww
13	Obst 2014	White Matsutake (mushroom)	Tricholomataceae	46 km SW of Edzo	T5	mg/kg dw	101		101	88	12.12	mg/kg ww
10	Obst 2014	White Matsutake (mushroom)	Tricholomataceae	46 km SW of Edzo	T5	mg/kg dw	30.8		30.8	88	3.696	mg/kg ww

ATTACHMENT P.3

SUMMARY OF ADDITIONAL GNWT OPEN FILE SOIL SAMPLES

APPENDIX P – SUMMARY OF ADDITIONAL GNWT OPEN FILE SOIL SAMPLES

Year of Report	Author	File NameTitle	Medium	Sample Date	Station Number/Name	Geographic Area	Sample Depth - top (mbgs)	Sample Depth - bottom (mbgs)	Units	Parameter	Result
2017	GNWT	Open File Soil Data	Soil	August 16, 2015	INGT-FCOSC-139	Ingraham Trail	0	10.8	mg/kg	Antimony	3.3
2017	GNWT	Open File Soil Data	Soil	August 3, 2015	INGT-FCOSG-41	Ingraham Trail	0	-	mg/kg	Antimony	1.3
2017	GNWT	Open File Soil Data	Soil	August 3, 2015	INGT-FCSC-40	Ingraham Trail	0	15	mg/kg	Antimony	<1.0
2017	GNWT	Open File Soil Data	Soil	August 3, 2015	INGT-FCSC-40 D	Ingraham Trail	0	15	mg/kg	Antimony	<1.0
2017	GNWT	Open File Soil Data	Soil	August 16, 2015	INGT-OSC-137	Ingraham Trail	0	9.2	mg/kg	Antimony	3.6
2017	GNWT	Open File Soil Data	Soil	August 16, 2015	INGT-OSC-138	Ingraham Trail	0	13.5	mg/kg	Antimony	2.1
2017	GNWT	Open File Soil Data	Soil	August 16, 2015	INGT-OSC-142	Ingraham Trail	0	14.5	mg/kg	Antimony	1.3
2017	GNWT	Open File Soil Data	Soil	August 16, 2015	INGT-OSC-142 D	Ingraham Trail	0	14.5	mg/kg	Antimony	6.3
2017	GNWT	Open File Soil Data	Soil	August 3, 2015	INGT-OSC-39	Ingraham Trail	0	14.3	mg/kg	Antimony	1.2
2017	GNWT	Open File Soil Data	Soil	August 3, 2015	INGT-OSC-39	Ingraham Trail	0	14.3	mg/kg	Antimony	1.4
2017	GNWT	Open File Soil Data	Soil	August 5, 2015	INGT-OSC-52	Ingraham Trail	0	16.5	mg/kg	Antimony	4
2017	GNWT	Open File Soil Data	Soil	August 5, 2015	INGT-OSC-52	Ingraham Trail	0	16.5	mg/kg	Antimony	2.9
2017	GNWT	Open File Soil Data	Soil	August 16, 2015	INGT-FCOSC-139	Ingraham Trail	0	10.8	mg/kg	Arsenic	38
2017	GNWT	Open File Soil Data	Soil	August 3, 2015	INGT-FCOSG-41	Ingraham Trail	0	-	mg/kg	Arsenic	12
2017	GNWT	Open File Soil Data	Soil	August 3, 2015	INGT-FCSC-40	Ingraham Trail	0	15	mg/kg	Arsenic	3.6
2017	GNWT	Open File Soil Data	Soil	August 3, 2015	INGT-FCSC-40 D	Ingraham Trail	0	15	mg/kg	Arsenic	3.7
2017	GNWT	Open File Soil Data	Soil	August 16, 2015	INGT-OSC-137	Ingraham Trail	0	9.2	mg/kg	Arsenic	30
2017	GNWT	Open File Soil Data	Soil	August 16, 2015	INGT-OSC-138	Ingraham Trail	0	13.5	mg/kg	Arsenic	13
2017	GNWT	Open File Soil Data	Soil	August 16, 2015	INGT-OSC-142	Ingraham Trail	0	14.5	mg/kg	Arsenic	16
2017	GNWT	Open File Soil Data	Soil	August 16, 2015	INGT-OSC-142 D	Ingraham Trail	0	14.5	mg/kg	Arsenic	16
2017	GNWT	Open File Soil Data	Soil	August 3, 2015	INGT-OSC-39	Ingraham Trail	0	14.3	mg/kg	Arsenic	21
2017	GNWT	Open File Soil Data	Soil	August 3, 2015	INGT-OSC-39	Ingraham Trail	0	14.3	mg/kg	Arsenic	21
2017	GNWT	Open File Soil Data	Soil	July 29, 2016	YR-07	Ingraham Trail	0	13.3	mg/kg	Arsenic	47
2017	GNWT	Open File Soil Data	Soil	July 29, 2016	YR-07	Ingraham Trail	0	13.3	mg/kg	Arsenic	47
2017	GNWT	Open File Soil Data	Soil	July 29, 2016	YR-07	Ingraham Trail	0	13.3	mg/kg	Arsenic	48
2017	GNWT	Open File Soil Data	Soil	July 29, 2016	YR-07	Ingraham Trail	0	13.3	mg/kg	Arsenic	45
2017	GNWT	Open File Soil Data	Soil	August 5, 2015	INGT-OSC-52	Ingraham Trail	0	16.5	mg/kg	Arsenic	47

Year of Report	Author	File NameTitle	Medium	Sample Date	Station Number/Name	Geographic Area	Sample Depth - top (mbgs)	Sample Depth - bottom (mbgs)	Units	Parameter	Result
2017	GNWT	Open File Soil Data	Soil	August 5, 2015	INGT-OSC-52	Ingraham Trail	0	16.5	mg/kg	Arsenic	37
2017	GNWT	Open File Soil Data	Soil	July 29, 2015	DETR-FCSC-31	Dettah	0	13	mg/kg	Antimony	1.2
2017	GNWT	Open File Soil Data	Soil	July 29, 2015	DETR-FCSC-31 S	Dettah	0	13	mg/kg	Antimony	<3.0
2017	GNWT	Open File Soil Data	Soil	July 29, 2015	DETR-FCSC-31	Dettah	0	13	mg/kg	Arsenic	18
2017	GNWT	Open File Soil Data	Soil	July 29, 2015	DETR-FCSC-31 S	Dettah	0	13	mg/kg	Arsenic	15

From GNWT Open File (Jamieson et al. 2017).

Jamieson, H.E., K.M. Maitland, J.T. Oliver, and M.J. Palmer. 2017. Regional distribution of arsenic in near-surface soils in the Yellowknife area. Northwest Territories Geological Survey, NWT Open File 2017-03.

APPENDIX Q

CONCORDANCE WITH EA FINDINGS

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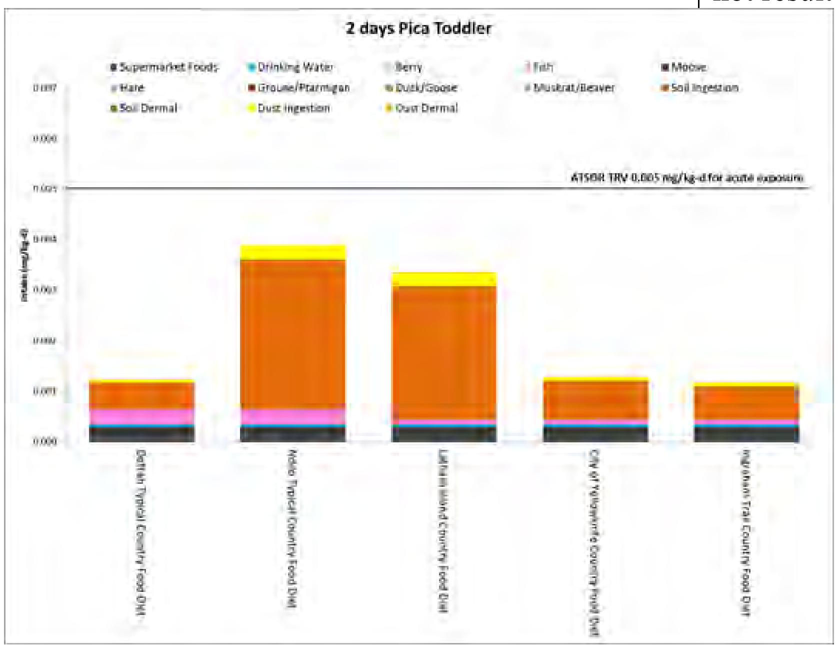
APPENDIX Q: CONCORDANCE WITH EA FINDINGS

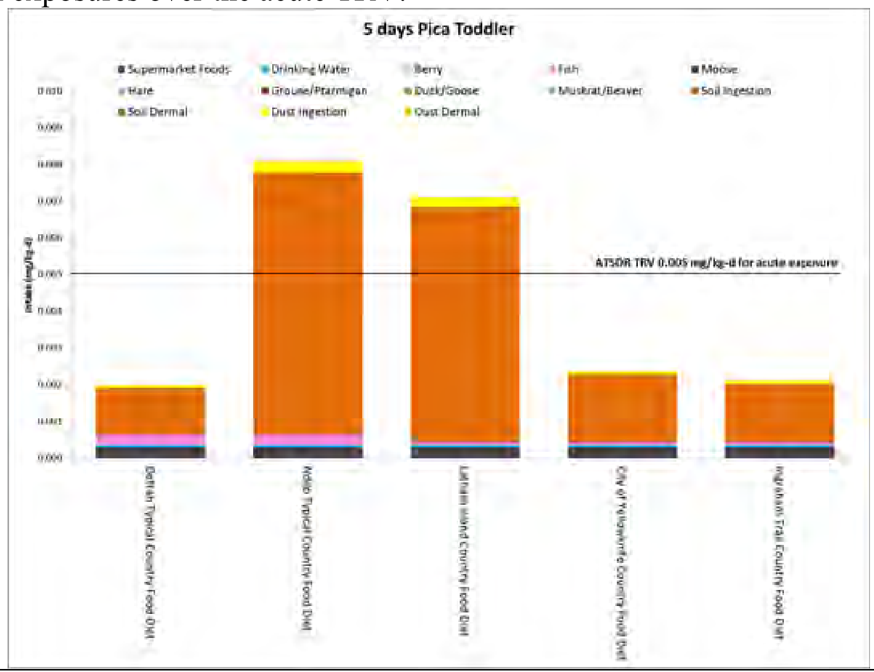
The human health and ecological risk assessment for the Giant Mine is intended to fulfil the requirements of Measure 10 from the Environmental Assessment, including addressing the requirements specified in Appendix F of the Report of Environmental Assessment. Table Q.1 provides information as to how the HHERA fulfils the requirements specified in Appendix F of the Report of Environmental Assessment.

Table Q.1 Concordance with EA findings

Comment	Where Addressed
Include a critical review of the 2006 Tier II risk assessment [PR#139b] and the previous screening reports, and based on this, consider the valid results of the Tier II risk assessment in its recommendations or discussions.	This was conducted by Stantec (2015) and discussed in the Problem Formulation that was used to define the scope of work for the HHERA.
Consider baseline historical data (CPHA 1977), current Canadian Guidelines for human and environmental exposures to arsenic, and baseline studies.	Historical data and current data were considered in developing baseline/background to be used in the HHERA. Section 2 and Appendices B and C discuss all the data used in the HHERA. Comparisons to Canadian Guidelines are provided in Appendix D and Section 3.2 of the report.
Review the existing distribution of concentrations of arsenic in various media effecting humans and the environment of Yellowknife and surrounding communities and compare these with the range of concentrations and exposures in the current literature on human and environmental health impacts.	Historical data and current data were considered in the HHERA. Section 2 and Appendix B of the HHERA discuss all the data that were used in the HHERA. A comparison of chemical concentrations in soil and water to established guidelines provided by various sources including the CCME Environmental Quality Guidelines, Health Canada's Drinking Water guidelines and background were undertaken in the report. Arsenic concentrations in country foods in the Yellowknife area and surroundings were generally higher than those found in similar foods available on the Canadian market. Arsenic concentrations in fish were within the range of concentrations reported in commercial freshwater fish. Arsenic concentrations in moose samples were similar to samples collected from the Yukon (see Section 3.3.6).
Conduct a Risk Assessment Sensitivity Analysis that completes the evaluation of pre-born, toddler, child, teen and adult receptors in all four localities of the mine site (N'dilo / Latham Island, Yellowknife and Dettah) without combining these receptors into a composite receptor.	Section 3.5 of the report presents the results for toddlers (the most exposed receptors) for exposure to non-carcinogenic constituents such as antimony and manganese. The risks from arsenic are provided for a composite receptor as required by Health Canada guidance. The detailed results for the exposure to COPC for different life stages, including toddler, child, teen, adult and elders for total arsenic, antimony and manganese are presented in Appendix F. As discussed in Appendix E, infants were not included as COPC are expected to be low in breast milk. The toxicity reference values used in the assessment are derived to be protective of sensitive life stages including pregnant women (pre-born) and the elderly.

Comment	**Where Addressed**
Evaluate impacts on toddlers considering potential soil pica episodes and acute arsenic toxication (per *Calabrese, et al*. 1997). The results of this component of the risk assessment should be used to inform and assist the health effects monitoring program.	The U.S. EPA (2011) indicates that pica behavior in a toddler results in the ingestion of approximately 1000 mg of soil per day. The Agency for Toxic Substances and Disease Registry (ATSDR 2007) provides an acute arsenic TRV of 0.005 mg/kg-d based on acute poisoning from arsenic laced soy sauce. The following figures show the arsenic intakes for a pica toddler for 2 days exposure a week and 5 days exposure a week. The results show that if a toddler exhibits pica behavior 2 days a week, the arsenic exposure at all locations in Yellowknife are below the acute TRV. Toddlers in Ndilo and Latham Island are the most exposed. At 5 days pica exposure, the exposures in Ndilo and Latham Island exceed the acute TRV. 3 days pica behavior results in intakes below the acute TRV. At all other locations, pica behavior over a week does not result in exposures over the acute TRV.





Comment	Where Addressed
Consider a range of current cancer slope factors to evaluate and explain the results of the analysis. This will: a. use the most conservative approach to most accurately reflect potential increased susceptibility from early life exposures to carcinogens; b. include a particular focus on the Yellowknives Dene and lifetime Yellowknife residents, who are most likely to reside within the realm of exposure to arsenic from the Giant Mine Remediation Project for their entire lifetime; and c. consider long term cumulative exposure from pre-born to adult stages	The evaluation of exposure to arsenic considered a receptor that lives their entire life at various locations in Yellowknife including the Yellowknives Dene living in Ndilo and Dettah. The exposure scenarios are presented in Section 3.3 and the results in Section 3.5. Detailed information on the exposure assessment are provided in Appendix F with the detailed results being presented in Appendix H. Section 3.5.4 of the report provides an analysis of the use of 2 different slope factors from Health Canada and the U.S. EPA on the evaluation. The toxicity reference values used in the assessment are derived to be protective of sensitive life stages including pregnant women (pre-born) and the elderly.
Use data that reflect site-specific local concentrations that people are exposed to, instead of regionally or territorially averaged measures, for any of the consumed items in the models. This must consider: d. concentrations in local soils, sediments, drinking water, traditional foods and store-bought food as well as local aerial emissions. In the case of wide ranging animals used as food such as caribou, it is permissible to use data that are relevant to the local hunting patterns of the receptors; e. worst case scenario exposures as well as local (not regional or territorial) averaged exposures.	Local data on air, soil, water (both surface water for swimming and drinking water) as well as food were used in the assessment. Voluntary samples of country foods were provided to the study team and analysed and used in the HHRA. The detailed results are provided in Appendix B and Appendix P. Section 2 of the report also provides a summary of the various studies and maps of the locations. The Sensitivity analysis presented in Section 3.5.3 explores a number of worst case scenarios.

Comment	Where Addressed
Compare the identified arsenic levels with thresholds from a range of guidance available for the use of various Toxicological Reference Values and their equivalents (HC 2010), identifying where Toxicological Reference Values and equivalents are exceeded, and interpreting the importance of any such exceedances	The Health Canada TRVs were used in the assessment and Health Canada guidance was followed in the HHRA. Graphical representation and interpretation of the results in comparison to Health Canada TRVs are presented in Section 3.5.
Consider potential impacts of soil concentrations on receptors, and apply the results to the human health monitoring program.	The exposure from soil pathways at various residential locations around Yellowknife were considered in the HHERA report. Section 3.3.7 of the report presents the exposures by the various pathways including soil. Appendix F presents the detailed results. Section 3.5 presents the total risks for each location and Appendix H provides the detailed results. The team conducting the Health Effects Monitoring Program will consider these results when evaluating their findings.
Use recently collected water data to reflect current conditions, instead of the surface water data from the late 1990s in some localities used in the 2006 Tier II study.	Section 2 and Appendix B of the HHERA report discuss all the data for drinking water sources including the municipal drinking water supply and Yellowknife Bay that were used in the HHERA. Data available in the last 5 years were used in the assessment.
Provide guidance and interpretation of the current and predicted exposures, subsequent human health risk, and risk management to the health effects monitoring program. This will include exposure data with ambient concentrations in soil, water and air, geographically displayed and interpolated if feasible, to indicate where risk is presented to human populations.	Section 3.3 of the HHERA provides maps showing the samples considered in the HHERA for different locations and media. In addition the derived exposure point concentrations (EPCs) for both the current and future conditions are presented. Section 3.5 of the report provides the risks from exposure to arsenic, antimony and manganese in different graphical formats.
Evaluate indirect effects of potential exposures to arsenic on wellness, including stress effects	The Stress study is being carried out by a different team and is a separate study from the HHRA.

Q.1.1 Literature Cited

Note that the literature cited list only includes those references cited in the "Where Addressed" column of Table Q.1

Agency for Toxic Substances and Disease Registry [ATSDR]. 2007. Toxicological profile for arsenic. Division of Toxicology and Environmental Medicine/Applied Toxicology Branch. Atlanta, Georgia, August.

Stantec. 2015. Human health risk assessment of the Giant Mine Remediation Project: Preliminary problem formulation. Final report, September.

United States Environmental Protection Agency [U.S. EPA]. 2011. Exposure factors handbook: 2011 Edition. National Center for Environmental Assessment, U.S. Environmental Protection Agency. Washington, DC. EPA/600/R-09/052F. September.