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DEMPSTER HIGHWAY MANAGEMENT PLAN

Northern Roads and Airstrips Division,
Department of Indian Affairs and
Northern Development.

January 1978.

DEMPSTER HIGHWAY MANAGEMENT PLAN

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PREAMBLE

The Northern Roads and Airstrips Division wishes to express appreciation for all the reviews of the draft proposal that were carried out by various Divisions and individuals in the Department of Indian Affairs and Northern Development, by the regions and by headquarters officers of Department of Fisheries and the Environment, by officers working for the Government of the Northwest Territories and the Yukon Territorial Government and by individual citizens and organizations.

Not all recommendations could be accepted as different groups have different philosophies regarding the future of the north and therefore view the idea of management in different ways.

The plan as it stands, must be regarded as a guide. Changes have been made as it has evolved and further changes will be necessary. It is still possible that there are significant omissions; but it is now important that the principle of the plan be accepted in order to avoid delays in its implementation. Adherence to the schedule is essential. Should the date of the Dempster's completion be changed, a new schedule will be necessary.

The names of the selected representatives should be sent to:

Dr. V.E. Hume,
Northern Roads and Airstrips Division,
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We look forward to the continued co-operation of all those who will be involved in the plan's implementation.

SUMMARY OF MAJOR RECOMMENDATIONS

In order to ensure that the Dempster Highway can be used by traffic throughout the year with minimal damage to the environment within the limitations imposed by social and fiscal constraints, it is recommended that:

1. The Department of Indian Affairs and Northern Development, the Yukon Territorial Government and the Government of the Northwest Territories approve the plan in principle.
2. A Dempster Highway Management Committee be formed consisting of one federal government representative, one representative of the Yukon Territorial Government appointed by the Commissioner of the Yukon Territory and one representative of the Government of the Northwest Territories appointed by the Commissioner of the Northwest Territories; one native representative from the Yukon Territory and one native representative from the Northwest Territories appointed by the Minister of Indian Affairs and Northern Development.
3. The Management Committee appoint a Dempster Highway Manager who will be responsible for the co-ordination of the plan.
4. The results of environmental research and monitoring pertaining to the environment be reviewed regularly so that modifications can be made.
5. After one year of its implementation the Dempster Highway Management Committee evaluate the plan and recommend the manner, if any, in which it should be continued.
6. The territorial governments give the Dempster Highway Management Committee the necessary authority to implement the plan effectively.

SCHEDULE

The following schedule is based on the assumption that the highway will be completed by the spring of 1979. Any change will require re-scheduling.

1. Agreement to the plan by the Territorial Governments and D.I.A.N.D., and appointment of representatives to Dempster Highway Management Committee, April 30, 1978.
2. First Dempster Highway Management Committee Meeting, June 1978.
3. Dempster Highway Manager appointment effective April 1, 1979 at the latest.
4. Implementation of convoy system, November 1979.
5. First major review and modifications to plan, April 1980.

INTRODUCTION

In February 1977 a Dempster Highway Management Programme discussion paper was distributed to the people considered to be directly involved in the management of the Dempster Highway. They included representatives of federal and territorial government departments, native organizations and settlements. Biologists and conservation societies were also asked for their observations about highway management. Oral and written responses revealed conflicting opinions about the philosophy of highway management as well as the strategy to be adopted.

Following the discussion paper a draft plan was circulated in July 1977 to a broad spectrum of organizations and specialists whereby further comments and criticisms were solicited. On the basis of these contributions the recommendations found in this plan have been formulated. The Northern Roads and Airstrips Division of D.I.A.N.D. appreciates the great care with which many individuals and groups have prepared their responses.

Further correspondence regarding the Dempster Highway's management should be directed to Dr. V.E. Hume, Head, Physical Planning Section, Northern Roads and Airstrips Division, 400 Laurier Avenue West, (Room 539), Ottawa, Ontario K1A 0H4.

BACKGROUND

When the Dempster Highway's construction was started in 1959 it was conceived as a road to resources. Progress on the highway was interrupted during the 1960's, but during the present decade a decision was made to complete it as far as the Mackenzie Highway south of Inuvik thereby providing an all-weather road to Canada's Arctic region. The only incomplete section lies between mile 254 and mile 290. It is anticipated that the 417-mile (667 km) road will be finished in 1979.

GOALS

The aims of the Dempster Highway Management Plan are:

1. To allow year-round use of the highway with minimum adverse impact of the highway and its users on the environment. Conservation and management are to be regarded as interdependent;
2. To introduce a method of control that is technically and economically feasible as well as being socially and environmentally acceptable. It is recognized that certain aspects that are environmentally or socially acceptable to one sector of our society are often unacceptable to another group. Conflict of this nature would possibly occur among the following highway users: native people, tourists, hunters, truckers, hikers, campers, canoeists, photographers, artists, miners, petroleum and mineral exploration crews. It is hoped, however, that the plan will be able to accommodate the needs and interests of the majority of people;
3. To ensure a comprehensive programme is implemented before the highway is completed;
4. To make management sufficiently flexible so that modifications can easily be made to accommodate the conditions of the settlement of native land claims; and
5. To be receptive to the findings of research activity pertaining to the northern environment.

In order to achieve these goals the plan will require commitment to the concept of highway management, the full co-operation of both territorial governments, skilled management, continuous monitoring of the environment and careful maintenance of the highway.

HIGHWAY MANAGEMENT AND CARIBOU

Potential adverse effects of the highway on flora and fauna are feared. Fauna most affected could be caribou, Dall's sheep, raptors, moose and fish, but there may also be increased killing of grizzly bears, increased trapping of fur bearers, harassment of sheep and the inappropriate feeding of wolves, foxes, bears and sheep.

As a result of evidence given by biologists and native people at various enquiries concerning northern pipelines and from statements issued by conservation societies, it appears as if the impact of the highway on the Porcupine caribou herd could be particularly significant. Any decimation of the herd or changes in migration patterns could have adverse sociological, environmental and political implications. For example, inhabitants of Old Crow, Aklavik, Fort McPherson and Arctic Red River could be denied their normal meat supply and thus seriously threaten their traditional cultural activities. Furthermore, as the Porcupine caribou herd is international as well as inter-territorial, interference with the herd's movements in the area around the Dempster Highway could ultimately affect the character of the herd's migration on the Northwest Territories, the Yukon Territory and Alaska. Considerable effort has thus been devoted to proposals related to the protection of caribou.

Although methods of predicting the behaviour or movements of caribou under varying conditions are not yet known a number of eminent biologists have stated that sufficient research has been carried out to allow the implementation of a rigorous management programme. As a result of monitoring and additional studies it should be possible to revise and perhaps relax the conditions of the programme. In the meantime, over-regulation is preferable to something that is inadequate.

At present little is known about the effects of highways on caribou behaviour or the effect of a transportation corridor on the caribou's traditional movements and range distribution. It may be decades before satisfactory information is available. It is estimated that the Porcupine caribou herd consists of 110,000 animals and it is anticipated that either the highway itself or the highway users or a combination of both could cause a reduction in numbers. Natural fluctuations in the size of the herd are normal and are bound to recur. The optimum range size is not yet known. If range reduction is believed to be a highway related problem, then the assumption is that existing caribou will be forced onto a smaller range which will be incapable of supporting that number. But it is not known if all the available range is currently being utilized or to what degree the range is currently utilized. Another prominent concern is that a highway might prevent cows from reaching calving grounds or the animals from reaching critical grazing areas.

Within the limitations imposed on engineers designing the Dempster in recent years, a greater effort has been made to take environmental conditions into consideration. For example, the road design is such that it is not a major physical barrier to animals' movements over an extensive stretch. Deep cuts across ridges have been kept to a minimum in the hope they will not affect movements. Generally they are short. Cuts along slopes are inevitable and it is believed after observing the animals' behaviour, that neither the removal of that small area of vegetation nor the road itself deters the animals from using the slopes.

Roadside slopes have been groomed to reduce or eliminate future erosion so that vegetation can become established. Up until now no major revegetation programme has been initiated.

Frequent cross-drainages have where possible been provided to prevent a collection of large quantities of run-off water in one place, and provision has been made in the design for the water to move off the right-of-way directly from each drain.

In 1977 hundreds of caribou were observed crossing the road and sections of the road under construction leading designers and biologists to assume that the highway was not proving to be a major physical obstacle in the short term at least.

Clauses in contracts and stipulations in Land Use Permits have required contractors to pay attention to environmental factors related to right-of-way clearing and to highway construction. Current Land Use Permits reflect measures to protect the caribou. The operators "shall not use machinery or otherwise conduct the operation so as to harass or unnecessarily disturb wildlife or wildlife habitat", and "If during the progress of this operation, the operator should encounter the migration of caribou, he will curtail or shut down the operation until the migration has passed the area of operation".

It is important that the protection of caribou remains a high priority in northern conservation. Post-construction management must continue the protective measures given the herd during the pre-construction and construction phases.

The following recommendations on highway maintenance, hunting, export of animal products and traffic control result from the concern for the caribou herd.

Highway Maintenance

Engineers and biologists agree that attention to the environment is essential both during and after road construction. It is the post-construction phase to which this plan refers.

Concern has focused more on the possibility that snowbanks along the edges of the highway may become barriers. The evidence that snowbanks prove to be barriers is weak. Deep snow is apparently no problem for caribou if the surface is firm. Caribou have been observed wading through deep snow barriers in order to get on and off frozen rivers and lakes. However, like steep road embankments and snow fences, snowbanks could perhaps prove to be a psychological deterrent which may condition the animals to avoid crossing such obstructions in later years.

Recommendations related to maintenance operations and snow clearing in particular follow:

1. Maintenance engineers must be aware of the potential environmental impact of maintenance operations.
2. At no time should the build-up of snow along the right-of-way be permitted to pile higher than 60 centimetres above the grade of the road. This should ensure that excessive snow does not present a significant barrier to animal movement.

3. Speed ploughing should be practised where possible so that the snow is spread over a larger area than by normal ploughing and thereby help to reduce the size of snowbanks at the roadside.
4. On the basis of available information on snow conditions on the Dempster, it is recommended that consideration be given to the use of a high performance snowblower in appropriate areas. This equipment is built to be effective in deep snow and could also be used to create gaps.
5. Snowbanks of a length greater than 0.5 km. should be avoided. Gaps should be left in the snowbanks at places identified by the Yukon Territory Wildlife Branch and the Northwest Territories Fish and Wildlife Service. The sizes of the gaps and their location in relation to neighbouring gaps, the terrain and other pertinent factors, should be determined through consultation with the same services. It is important that the snowplough operators understand the reasons for instructions regarding snowploughing.
6. Sample gaps must be monitored in order to provide information about their effectiveness, the effects of concentrating animals at crossing sites and the resulting hunting and predator response. Modifications should be instigated on the basis of this information.
7. Snow fences should be strategically placed if it is proved essential to direct animals' movements away from areas where the road could prove hazardous.
8. The feasibility of using plants or natural shrubs and trees for the containment of snow and as a replacement for artificial fences should be examined. These features must not force an unnatural over-concentration of animals on particular areas.
9. Vegetation could be used to shield the road from approaching caribou or to guide approaching caribou to suitable crossing places in areas where traffic would present a particular danger to the animals. The right species of indigenous shrubs might even enhance wildlife values including an increase in total populations of small birds, small mammals, furbearers, game birds and (to a lesser extent) big game.
10. Maintenance programmes should be scheduled so that harassment of caribou during migration is avoided, and arrangements should be made to curtail activities temporarily when caribou are moving through the area.
11. Reconstruction and maintenance practices should be examined regularly by a person or persons with training and experience in engineering and ecology to determine the effects on wildlife and when necessary, corrections should be devised to eliminate or reduce features found to be detrimental to wildlife and other environmental considerations.

Hunting Along the Highway

Although the possibility still exists that the Dempster Highway might act as a barrier to the caribou, the majority of biologists seem to concur that the effect of increased access to the area by hunters, the presence of people and the noise and movement of traffic are likely to have a much greater impact. It is feared that these things may inhibit movement of caribou to critical areas or may cause overgrazing in areas to which the animals have been funnelled in too great numbers, or may result in the uneven utilization of range and deterioration of its condition.

The majority of responses to the first discussion paper and the draft plan referred to problems associated with hunting and the need for the imposition of stringent controls. Native and non-native groups, government departments, non-governmental organizations and recreational associations have expressed a desire to see hunting controlled or prohibited in the area of the highway. Opinions differed markedly on the method of regulation.

Existing hunting regulations are not the same for the two territories and the regulations for non-natives do not apply to natives. However, the powers of the Commissioners in the two territories are similar. The Commissioner-in-Council has no authority "to make ordinances restricting or prohibiting Indians or Eskimos from hunting for food, on unoccupied Crown lands, game other than game declared by the Governor-in-Council to be game in danger of becoming extinct". Subject to these conditions the "Commissioner-in-Council may make ordinances for the government of the Territory, in relation to the preservation of game in the Territory, that are applicable to and in respect of Indians and Eskimos, and ordinances made by the Commissioner in relation to the preservation of game in the Territory, unless the contrary intention appears therein, are applicable to and in respect to Indians and Eskimos."

In the Yukon Territory on October 4, 1977, the Game Ordinance was amended so that:

- (i) ...save and except that from the fifteenth day of October to the thirty-first day of October next following, all forms of hunting are prohibited along the Dempster Highway within a five mile corridor on either side of the Dempster Highway starting at Mile 41.6 (Highway Camp) and extending to the Yukon/Northwest Territories border.
- (ii) Any activity to prevent or interfere with caribou crossing the Dempster Highway is deemed to be harassment and is prohibited at all times."

Most conservationists believe that this is inadequate because it still allows hunters to kill caribou for the two weeks of the year when the animals are most easily seen in the region of the Dempster Highway. Also, the ordinance applies to only one territory and one section of the population. The ten-mile no-hunting zone should apply in both territories throughout the year.

The Governor-in-Council has not declared the Porcupine caribou herd to be game in danger of becoming extinct and consequently the Commissioner-in-Council has no right to make ordinances that would prevent the native people from hunting in the area. Nevertheless the concept of a no-hunting corridor has had a favourable reception from many natives as well as non-natives in the territories.

Among the DFE Pacific and Northwest Regions *Conclusions and Recommendations re the Dempster Highway Management Plan*, dated October, 1977 is this statement:

"We feel that a no-hunting corridor at least four miles wide, applicable to all hunters, is absolutely necessary. If all-terrain vehicles are not restricted, then the corridor width should be twenty miles."

On the basis of this and similar comments it is recommended that the territories consider a requirement that all-terrain vehicles apply for permits so that vehicles including snowmobiles moving off the roads can be controlled.

The nature of the settlement of native land claims could dictate methods of managing wildlife in the future. Whether wildlife management will continue to be controlled directly by the territorial governments or whether there will be decentralization of control, it is essential that the governments, settlements and native groups be fully involved in decisions regarding hunting and be fully aware of its impact on the wildlife of the area.

The Northwest Territories Game Advisory Council consisting of a group of people in the Northwest Territories, but excluding civil servants, has recommended that general hunting licences be granted by people in the settlements concerned. It has also suggested that applicants would appear before the people in those settlements and that the people in the settlements - hunters' and trappers' associations, band councils, métis locals or other responsible organizations - would make the decision on issuing a new hunting licence. Any scheme such as this would require careful planning with a full realization of the migratory nature of the animals, and the use made of the road by hunters. Regulations made by different jurisdictions would have to be compatible.

Other methods of control have been discussed and it is recommended that as soon as Land Claims have been settled, comprehensive regulations that take full account of the nature of hunting in the vicinity of the Dempster Highway be made for the management of the herd. Four methods of control that have received some attention follow; but these by no means exhaust the possibilities.

1. The delineation of traditional hunting areas associated with individual bands. This would require the resolution of conflicts and agreement of all settlements as to the size and nature of the harvest in the area controlled by the band.
2. The determination of the number of animals that could be harvested in any one year in accordance with the size of a band or settlement and the degree of subsistence and/or dependence on the herd.

3. The definition of settlement-specific hunting areas. This would also require agreements relating to the size and nature of harvesting. Great care and detailed knowledge of the migration of caribou would be necessary to establish areas in a way that all would receive fair treatment.
4. The establishment of hunting zones. This would demand enforcement, the problems of which are well known in the north. A multiplicity of zones with regulations that vary according to the zone is difficult to establish and control. To all intents and purposes though, this is what has happened when the no-hunting corridor was established along the Dempster Highway by the Yukon Government.

It no longer seems necessary to explain that if all people do not accept and conform to regulations developed for the protection of the Porcupine caribou herd, there may be a decimation of the herd. Whether or not natives and non-natives continue to be regarded separately after the settlement of Land Claims it is strongly recommended that with regard to the Dempster corridor everyone, native and non-native, accept the same restrictions.

If for any reason a complete no-hunting zone is not established throughout the length of the Dempster Highway the manner of licencing will have to be reviewed. Restriction of the number of licences available to sportsmen is not a new idea. At present native people receive general hunting licences on demand. A few métis and non-natives for whom hunting provides subsistence can also obtain general hunting licences. Non-natives pay a fee and have the right to hunt in specific areas during a limited season for up to a specified number of animals. The proposal that caribou hunting be made illegal except for holders of general hunting licences has met strong opposition from sportsmen's associations as well as from casual hunters. They maintain that the number of animals killed for sport compared with the total harvest would make restrictions useless as a means of solving the problem.

The two territorial governments can determine which way licences should be allocated if the decision to do this is made. The various methods should be evaluated. Licences can be allocated on a first come-first serve basis by mail or in person though the latter method discriminates against those living furthest from issuing offices. Non-resident licences can be eliminated as in the Northwest Territories. Adjusting fees has been opposed as a method of limiting licences because of possible discrimination against those with lower incomes when the costs are raised. By itself, raising the cost of licences would not necessarily reduce the harvest to acceptable limits. It would mean that only affluent or extremely dedicated hunters would participate. The denial of licences to people who had not returned the stubs with rate of pay, place and date in previous years and to people who contravened hunting regulations would be possible if a stringent recording system were adopted. Provincial agencies have found a lottery system to be the most effective and least controversial method of controlling the number of licences made available each year.

The restriction of hunting along the highway is an essential part of this plan.

Animal Products

Regulations concerning the export of meat, hides and other animal products vary in the two territories. The demand for these products has increased both in the north and in the south. The Northwest Territories prohibits the export of commercially procured edible meat; game taken legally by licenced hunters can be exported for personal use. Licences are necessary for export from the Yukon Territory.

The Federal Game Export Act states that:

"no person shall knowingly

- (a) take, carry, send, ship, or have in possession for the purpose of taking, carrying, sending or shipping, or receive for shipment or transmission beyond the limits of the province within which such game was killed any game except under the authority of an export permit duly issued under the laws of that province; or
- (b) except as otherwise provided in this Act, have in possession, within Canada beyond the limits of the province within which such game was killed, any game not the subject of an export permit issued under the laws of that province".

It is recommended that the territories reduce hunting along the Dempster Highway (particularly in the north) by refusing to issue any game export permits. This would allay the fears of all northerners who regard the potential for increased exports as a problem. It would enable the governments that are accused of referring to caribou as an endangered species on one hand to reply to accusations of wholesale slaughter and export of carcasses on the other.

Few people accept the idea of the commercial exploitation of wildlife for meat and hides. It is believed that prohibition or severe limitation of export of game would add to the efficacy of measures to reduce wanton killing of game.

Traffic Control

Some wildlife experts believe that not enough is yet known about the effect of noise and speed of vehicles or a combination of these on the behaviour of caribou. Until the exact nature of problems caused by noise and moving vehicles is established, controls must be stringent. A relaxation of some of these controls might be possible when additional research has been carried out.

Such methods of control as the complete prohibition of traffic during migration seasons, speed restrictions, staggering of traffic and convoy systems have been reviewed by various groups. The aim is to implement a management system that will accommodate administration, development, environmental protection

and enforcement. It must be as simple as possible, minimizing inconvenience to motorists. Motorists must understand the need for the restrictions. In no way should monitoring and enforcement harm the wildlife more than would minimally controlled use of the road by motorists.

Co-ordination of traffic control by the territories is essential. Speed restrictions, the prohibition of traffic, staggering traffic and a convoy system for control are described below:

(a) Speed Restrictions

Although speed restrictions can be understood by motorists, they are frequently disregarded. Much vigilance would be required if they were to be fully effective. It might even require an additional RCMP detachment for the highway at some seasons. Regular road patrols would barely be adequate especially during winter when animals are grazing in the vicinity of the highway or are crossing it during their migrations. Another disadvantage of posting speed restrictions is their relative inflexibility. They cannot be easily changed according to the location of animals. Furthermore motorists tend to object to restrictions that are changed from one season to another and to speeds that appear to be unreasonably slow - as they would in the seasons when few animals were in the vicinity. The major problem though, is the difficulty of enforcing speed restrictions over a long distance. One suggestion has been to place obstacles across the road in the same way as some municipalities have effectively used road bumps. Highway engineers have stated this might be dangerous, particularly in snow conditions when visibility is reduced and the vehicles could be deflected by such objects.

Although speed restrictions may be one of the less expensive methods of minimizing the impact of traffic on wildlife, by itself it is likely to be one of the less effective ways and should not be considered as the only method. It should be included as a part of the traffic management. The speed restrictions along the Dempster Highway should be determined by the Department of Highways and Public Works and the Wildlife Branch in the Yukon, and by the Department of Public Works and the Fish and Wildlife Service in the Northwest Territories. It is recommended that this be done immediately.

(b) Prohibition of Traffic

This would be least expensive to administer but meets with least acceptability. It could even be considered as rendering the road useless for its intended purpose, transportation. Some of the advocates of this method have stated that the road should be closed from the beginning of the autumnal caribou migration until the end of May so that the

animals in the area throughout the migration seasons and the winter (between miles 90 and 170) are not affected by traffic in any way. This would eliminate the need for monitoring. In fact the only costs would be associated with maintenance so that the road could be used by emergency vehicles and so that extreme deterioration of the highway would not result.

It is recommended that the highway be closed to all traffic during the peak caribou migrations in the area of the highway in Spring and in the Fall.

At present it is planned that the only other times the highway will be closed on a regular basis are at Fort McPherson and Arctic Red River during freezing and break-up each year.

Many of the potential road users have stated an unwillingness to tolerate the closure of the road for the purpose of safe-guarding caribou. Even the closure of the right-of-way in the winter of 1976-77 for the purposes of construction was found unacceptable by some native people in the delta. Road closure may exacerbate the difficulties faced by commercial transportation companies in the north, but explanation and ample advertisement of closures should reduce the inconvenience faced by the road users.

On the basis of the available information it is not desirable to close the road to traffic on a long term basis, but it is hoped that closure for two to three weeks at the migration periods will be acceptable.

(c) Staggering Traffic

Staggering traffic has been suggested as one alternative for minimizing its impact on wildlife. The advocates of this method think that delays to traffic will be small compared with (b) and (d). Monitoring and control would take place at both ends of the highway and/or at critical areas depending on the location and movement of caribou or other animals. Only a limited number of vehicles would be permitted to leave a check point during specific time periods, depending on the number of animals in the vicinity. Drivers would be instructed not to exceed certain speeds, but adherence to speed limits is unusual for any length of time. This method would have most value during winter when the animals are grazing in the vicinity of the road, but would be of limited value during the migration period when bunching of traffic would be likely.

(d) Convoy System

A convoy system of traffic control was the suggestion received most favourably, particularly by environmentalists and biologists. Although the costs would be higher than for other methods described here it

has a number of inherent advantages. It would permit the highway to be opened to traffic for most of the year, should minimize long delays and need only be implemented when it is deemed necessary. It would allow the greatest control of traffic as well as providing some security for vehicles and people.

The following programme is recommended during the first winter of the plan's operation. Modification will be essential, but in view of the fact that heavy use of the road in winter is not anticipated for the first few years it will give ample time to adopt a programme that will be suited to the traffic and conditions.

1. Convoys should depart daily between the end of the Fall migration and the beginning of the Spring migration leaving Mile 0 (Klondike Highway) and Mile 344 (Fort MacPherson) at 9 a.m. (see footnote). Motorists will be obliged to travel in convoy during this season. Emergency vehicles, road maintenance vehicles, vehicles used to support research activities and other workers who can prove that travelling outside the convoy is essential to their work will be the only exceptions to this regulation. Convoys should be programmed to pass at the Ogilvie maintenance camp at Mile 123.
2. Advertisements of the convoy season, times and location of starting points must be widespread. Announcements should be through the media, motorists' organizations, local newspapers, tourist information bureaux, truckers' associations, centres of accommodation, filling stations in the Yukon Territory and Mackenzie Delta and other appropriate channels throughout North America.
3. A check-in procedure will be required at miles 0, 123 and 344 where convoy commanders will give oral and written briefings. An aide-memoire will be distributed to all drivers (see Appendix).
4. Sufficient legal powers must be given to convoy commanders to ensure they have control of the convoy's members for the purpose of travelling safely and without danger to the environment along the Dempster.
5. Convoy commanders should be trained according to prescriptions set out by the Yukon Territory Wildlife Branch, the Northwest Territories Fish and Wildlife Service, the Yukon Territory Department of Highways and Public Works and the Northwest Territories Department of Public Works. It is recommended that expertise in the Department of National Defence be used for this purpose. The training should include management of convoys, emergency procedures, and care of the northern environment.

Footnote: During the season, convoys will set off if more than three vehicles are at the check point. If one, two or three vehicles only wish to travel the route the drivers should be given route information and instructions regarding wildlife, precautions to be taken and restrictions on movement, and be permitted to travel alone.

6. Lead vehicles would normally control the speed and would not exceed 65 km.p.h. The slowest vehicle would travel immediately behind the lead vehicle. The first and last vehicles would be equipped with radios for the purpose of communication in the event of emergencies.
7. After one month the traffic density and other related factors should be reviewed to determine the need for convoy arrangements during the rest of the winter. Should convoys become regularly greater than twenty-five vehicles an additional vehicle will be required. (One vehicle should be able to control up to twenty vehicles without difficulty). This should reduce the concertina effect that occurs in convoys, ensure safe spacing of the vehicles and control the speed of each twenty vehicle packet.
8. Regular reviews of the efficacy of the convoy system are essential. The method of evaluating the system should be determined by those responsible for environment and public works. Experience gained will lead to the development of alternative systems or modified systems of traffic control that may be less expensive and allow the motorists greater freedom.
9. Dust is a potential problem that could be exacerbated by convoys. The dust clouds generated by a convoy might even deter caribou contemplating crossing the highway. It is therefore recommended that special dust control measures be adopted where conditions warrant it.
10. The results of present and future Porcupine caribou herd studies and other environmental studies should be analysed and used as a basis for modifications to the system. The monitoring of caribou along the highway should be continued and other aspects of the environment that require constant monitoring should be identified by the responsible departments.

OTHER WILDLIFE

Although much of this management plan has concentrated on protection of the Porcupine caribou herd other forms of wildlife conservation must not be neglected.

A report of a Dall's sheep study in the southern Richardson Mountains during 1977 is expected to be available by the end of March. After caribou, sheep are the most numerous big game animals in the area of the Dempster corridor.

Reports on actual and potential raptors in the area of the Dempster Highway have been written and sections of these reports appear in Appendix 2. From other sources the main recommendation to date is to ensure that campsites, parking areas and service facilities are located well away from the nesting areas.

Recommendations in these reports will be circulated among those who have the responsibility for implementing the relevant aspects of the plan.

Should the pressure of traffic on the road warrant it, the Department of Fisheries and Environment should be requested to provide further information about fish in streams crossing or near the highway and to make recommendations relating to fishing in the zone of the highway.

HIGHWAY MANAGEMENT AND SOCIETY

There is no reason why the Dempster Highway should not be one of the most interesting routes that the Canadian Federal Government has ever constructed. It certainly passes through magnificent country. Optimum use of the highway will be made by careful land use planning, by the provision of adequate information for tourists and by keeping it a beautiful, unspoiled, unpolluted area. At the same time the highway and its associated facilities will provide opportunities for employment for people in the territories.

Land Use Planning

Unless careful land use planning in the area along the Dempster is achieved the environmental management of the highway and its environs will become more and more difficult and increasingly costly. This planning will apply to the location and regulation of roadside services such as gas stations, restaurants and other refreshment facilities, comfort stations, roadside tables, picnic spots, camping places, scenic lookouts, etc. as well as other land uses that might be introduced into the area.

Freezing of present land use until decisions are made about future zoning and regulation of activities is the most practical method. It is essential that all government departments co-operate so that the facilities and activities along the highway do not conflict with each other or with the protection of the environment and the wildlife. For example, co-operation of the departments involved in land use planning, tourism and wildlife management will be essential to ensure that such facilities as campsites and service stations are not located in the vicinity of raptor nesting areas. Decisions must also be made regarding the compatibility of maintenance camps and roadside services. It is recommended that development be restricted to specific service centres so that haphazard roadside developments do not detract from the beauty of the countryside. The regulation of architecture and the aesthetics of site maintenance must be taken into account by the territorial governments.

A report on the rehabilitation of former and present borrow pits along the southern part of the highway is being prepared by a DPW landscape architect. Plans are required for the remaining pits and sidecut rehabilitation where revegetation is not occurring naturally.

It is strongly recommended that land use plans be prepared and implemented immediately to ensure orderly development along the Highway. No changes in land use should be permitted until such plans have been found acceptable by the territorial governments and land use advisory committees and have been found to be compatible with land claims settlements.

Information for Tourists

Information must be made available for tourists before undertaking journeys along the highway as well as while they are travelling. This can be in the form

of signs, pamphlets, messages via the mass media or a telephone information service.

- (a) Signposts: Care to avoid visual pollution by the excessive and unnecessary use of signs along the highway is important. The interpretative signs illustrating historical facts pertaining to the area might be augmented so that some additional information about flora, fauna, geomorphology and other points of interest is available. Consultation with the Department of Highways and Public Works (YT) and the Department of Public Works (NWT) by the Parks and Historical Sites Division of the Resource Planning Branch (YT) and the Department of Economic Development (NWT) is necessary so that the style and location of such sign boards are appropriate to the environment and interfere with neither the traffic on the road nor the animals in the vicinity. They must be designed in relation to permissible traffic speed, physical and natural features and scenic views and in conformity with designs adopted by the territories. Preferably space suitable for stopping will be available nearby.

B.C. Research has prepared a report entitled Design of a Highway Information Sign System for the Department of Tourism and Information (YTG). The report makes recommendations for the provision of suitable signs along the Dempster Highway. The Department of Economic Development (NWT) might find it acceptable to introduce a similar system of information signs and thus permit some conformity of sign styles over the length of the highway.

Regulatory signs for traffic will be necessary for the safety of travellers. These will conform to international and national conventions.

It is recommended that the Department of Highways and Public Works (YT) and the Department of Public Works (NWT) in consultation with the Engineering and Architecture Branch (D.I.A.N.D.) devise a programme for the management of signs so that changing seasonal conditions, attention to current applicability and the requirements of maintenance are taken into account.

It is also recommended that the placement of billboards be prohibited and advertisements be restricted to service centres.

- (b) Information about Road Conditions: In view of the periodic closure and stringent control of traffic along the highway, advertisement of highway conditions will be necessary on a wide scale. The following channels for the dissemination of this information should be used:
- (i) All major North American motor clubs and automobile associations should be kept informed of the nature of convoys, times of travelling, restrictions imposed on travellers using the highway and safety precautions that are recommended. These should be made available for publication in books and periodicals of the associations as well as in information given to people enquiring about travelling along the Dempster Highway.

- (ii) Arrangements can be made with television and radio stations broadcasting to Northern Canada in order to transmit information relating to the Dempster Highway.
 - (iii) Tourist information centres in Northern Canada can be kept informed of the status of the highway.
 - (iv) Other methods of transmitting information should be considered e.g. tourist information boards of various types.
 - (v) R.C.M.P. must be kept informed of the status of the highway.
- (c) Travellers' Guides: Pamphlets should be made available at tourist information centres, hotels in Dawson, Whitehorse, Inuvik and other appropriate places in the Yukon Territory and the Northwest Territories. Information in the pamphlet should include a sketch map whereon points of interest, mileages and service centres are highlighted. It should also state approximate dates of likely highway closure and advise travellers of the need for survival kits as well as a brief explanation of what to do in cases of emergency. Of value and interest would also be brief descriptions of local flora and fauna and warnings about damage and destruction arising from trampling, cutting of trees, feeding animals, harassing animals, disturbance of birds and animals, moving animals, releasing dogs, picking rare plants, disfiguring flora and destroying items or places of historical or archaeological value.

The Tourism and Information Branch (YT) and the Tourism Division (NWT) would be the most appropriate agencies to co-operate in the preparation of such a descriptive pamphlet.

- (d) Telephone Information Service: A service giving highway information could be provided by the two departments responsible for tourism.

Information from Tourists

A strong recommendation is made to encourage people to take an interest in the northern environment. Research in educational psychology indicates that involvement in activity frequently elicits interest. It is suggested that one method of involving the public in highway management is to ask those tourists who would be willing to do so, to fill in a wildlife questionnaire. It could provide a unique sense of participation and encourage adherence to conservation measures as well as relieve tedium caused by driving long distances. Conservation societies might be requested to make recommendations for such a questionnaire and they might have an interest in the responses. The information could provide an indication of the movement of animals along the route. The observations would not be of a scientific nature, but could be of considerable value to the Dempster Highway Manager particularly if participants were also encouraged to comment on other aspects of the highway's management. A annual summary of all observations might even be sent to participants.

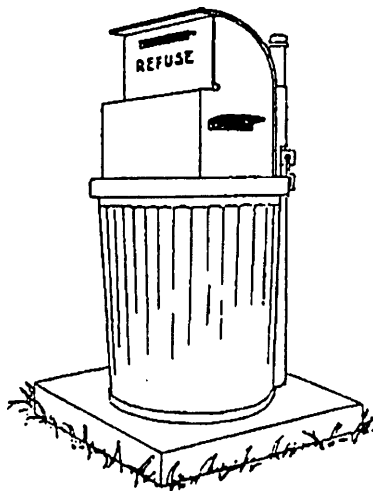
People Pollution

Experience in the past has shown not only that highway users cause visual pollution and the spoliation of habitat by discarding rubbish on the highway and the verges, but also that the highway users have been responsible for damage to flora and fauna through fire caused by the careless disposal of cigarettes, by insufficient care with campfires, by leaving fires unattended and so on. The fact that fires allow rejuvenation of the vegetation is not a reason for the non-recognition of the damage they do.

Animals have also been affected by the food offered by well-intentioned passers-by as well as by feeding on unsuitable garbage left lying in their habitat.

Garbage Disposal: One aspect of highway management therefore is to provide suitable containers for garbage disposal in order to discourage litter. The provision of old oil drums for the disposal of garbage is barely acceptable. Aesthetically they have no appeal; they attract animals and collect water that stagnates and provides a breeding ground for mosquitoes. Appropriately designed containers should be placed at all likely stopping places such as picnic spots, scenic lookouts and campgrounds. They must be emptied regularly either as part of the highway maintenance programme or as part of the duties of the groups responsible for campgrounds.

The most suitable containers would be bear-proof trash receptacles that would prevent all but the most powerful creatures from foraging. A design construction similar to mailboxes - "what goes in, stays in" - could be appropriate for use in the North. The can is screwed under a steel top by means of a locking device. To empty such cans, the top is lifted and the can slid out from under. This design can be used in high wind areas as the locking top and counterbalanced lid will keep the can stable and the contents inside. If security is a problem, the can may be attached by a lock through its handles to a post. And by keeping the can above ground on a small slab of concrete, corrosion resulting from ground moisture can be reduced.



By necessity, the "carry in - carry out" principle has long been impressed upon backpackers in wilderness areas such as the northern Yukon and N.W.T. Such reliance on the goodwill of motorists using the Dempster Highway will obviously have to continue. Some U.S. National Parks have enjoyed considerable success by posting signs asking - "Will you accept a challenge? This area will not be cleaned again, except by you, until October...". Next to the signs are boxes of big plastic garbage bags. Visitors are asked to take one, use it and deposit it in the garbage cans. Signs can be posted at intervals along the roadside indicating the proximity of such disposal sites. Such a system might well be employed along the Dempster Highway route because, notwithstanding the effectiveness of more stringent litter and pollution laws, a large measure of voluntary cooperation on the part of the highway's users will be essential due to the remoteness of the area.

Waste Management: A proposal for a waste management project has been made to D.I.A.N.D. The proposal is for the management of waste in maintenance camps, campsites and other roadside establishments. The stated objectives of the project are:

- (a) to get water use down to 10 G.P.D. or less per person and save sewage sludge for use in revegetation;
- (b) to see what reduction in fuel purchase can be realized by burning trash, and eventually all used oils and greases for preheating;
- (c) to replace the garbage disposal concept with an on-going salvage operation eventually to be linked with district salvage "depots";
- (d) to eliminate exposure of wildlife to garbage and stop the destruction that results.

If this project is found to be practical a recommendation will be made for its use in future camps and service centres.

Regulations governing the disposal of sewage and solid wastes must be prepared and enforced by the respective governments.

Campsites and Picnic Spots

Many motorists will wish to camp enroute along the Dempster Highway. In order to limit damage to roadside areas it is recommended that camping be permitted only at designated campsites. The location of these sites must be selected with particular attention to their relation to raptor nesting areas and other wildlife habitat. The knowledge and advice of the Wildlife Branch (YT), Fish and Wildlife Service (NWT), and the Canadian Wildlife Service must be heeded in planning sites so that they are developed in accordance with land, wildlife and recreational capabilities.

Guardians should be appointed to oversee the campsites and to ensure that regulations concerning sanitation and the use of fireplaces and other facilities are obeyed.

Fireplaces at campsites and picnic spots must be constructed in a manner that will prevent fire from spreading either above or below the ground. A water supply should be nearby. Information about fire prevention and firefighting should be displayed prominently at all campsites and picnic spots. Fires should be prohibited in the highway corridor except in approved fireplaces.

At least three campsites should be established in preparation for traffic along the Dempster in the summer of 1979. The Yukon Territorial Government has already developed design standards for service facilities. Again consultation by the two territories should be of mutual benefit.

Safety on the Highway

Communication in case of emergency along the Dempster Highway will be particularly important in winter when the danger of being stranded is greatest. A number of measures have been considered. Measures (a) and (d) together prove the most suitable way of providing for emergencies.

- (a) Regular highway patrols: the RCMP detachments in Inuvik and Dawson will probably be responsible for patrolling the Dempster. Although they will be prepared to cope with emergencies the surveillance over such a distance will necessarily be limited.
- (b) Emergency telephones at regular intervals along the highway: A complete network for radio-telephone communication along the Dempster has yet to be established. In winter the distance from the emergency to the nearest telephone may render it useless. The installation of emergency telephones at intervals along the Whitehorse-Keno road proved unsuccessful due to vandalism and misuse.
- (c) Checkpoints: Registration points could be established at both ends of the highway or at Mile 0 and Fort McPherson. Checkpoints could be established at each maintenance camp (Mile 41, Mile 123 and Mile 231). Motorists would be required to register when they start along the highway and give the expected time of arrival at the next checkpoint. At each checkpoint the expected time of arrival would be transmitted to the next one. Such a method might be necessary for only eight months of the year, but even that would demand at least three employees per checkpoint and would consequently be relatively labour intensive.
- (d) Vehicular radio-telephone communication: This may be considered desirable for part of the year or throughout the entire year. At present the radio network along the Dempster is incomplete but this can be rectified by the addition of repeaters north of mile 230. The use of a mobile radio

for communication has some advantages over the other system. Normally mobile radios are powered by the regular storage battery in the vehicle. Most regular users of northern roads would already have this type installed. For those without radios installed, (e.g. tourists) portable radios would be more convenient. As outside calls will work only one way this system has a big advantage in that if a vehicle breaks down a driver can call CNT in Whitehorse. The system can therefore be used exclusively for emergencies.

By making it obligatory for motorists travelling outside a convoy to carry radio-telephone equipment in their vehicles from October to May (inclusive) a degree of safety in the event of emergency is assured. A deposit for the equipment would be placed at the point of registration when the motorist starts along the Dempster. This deposit would be refunded on return of the equipment upon leaving the highway. The cost to individual travellers would depend on the use made of the equipment.

The facilities used for registration of vehicles using the highway could also be used as the places for borrowing and returning equipment and as termini during the seasons that traffic moves in convoys. Fort McPherson has been suggested as one terminus because:

- (a) the distances between settlements east and north of Fort McPherson are relatively short,
- (b) the anticipated traffic east and north of Fort McPherson is likely to be greater,
- (c) the number of radio-telephone sets required between Mile 0 and Fort McPherson would be smaller than the number required for the whole route, and
- (d) the addition of registration points east and north of Fort McPherson would be unnecessary. The other terminus would be at Mile 0 where the Dempster Highway joins the Klondike Highway.

People carrying radio-telephone equipment would be required to follow certain necessary safeguards in its use which has an element of danger. Explosives or volatile and inflammable liquids should never be carried in a car where radio equipment is installed. Radios should never be operated in a blasting area. It is important to have radios and car ignition turned off before refuelling a vehicle as gasoline vapour can be ignited by a spark from relay or switch contacts of the radio equipment.

Radio-telephone services should not be considered infallible. HF communication is subject to loss of signal (fading) due to atmospheric conditions which can vary from hour to hour and day to day. However it is believed that the use of a radio-telephone communication could reduce serious problems on the highway, especially during the winter. It is not expected that a very large number of portable radios would be required, at least not during the first few years of the highway's operation.

It is therefore recommended that motorists travelling between 1st October and 31st May be obliged to carry radio-telephone equipment.

Local Employment

The implementation of the final plan will provide employment opportunities for a number of people living in the northern territories. In particular, it can help to increase native employment in line with federal government policy. Training opportunities already exist; but it is important that training starts soon so that future employees will be ready to commence work when the completed highway is open to traffic.

The following are a number of positions identified as offering additional opportunities for northern employment:

- (a) Planning and provision of roadside facilities. This includes opportunities for public and private enterprise in designated areas. It might include such things as the provision of accommodation, automobile services and emergency services.
- (b) Campground wardens and supervisors of picnic areas.
- (c) Information officers and registration clerks.
- (d) Convoy leaders and/or road patrols.
- (e) Road and campground maintenance workers.
- (f) Wildlife monitors and technicians.
- (g) Wardens for the supervision and enforcement of hunting regulations.
- (h) Wildlife guides.
- (i) Research work and monitoring of traffic e.g. volume of traffic, origin-destination studies, purpose of travel, types of vehicles, etc.

It is recommended that departments requiring trainees through on-the-job training schemes and the Northern Careers programme should formulate their proposals and contact the Employment and Socio-Economic Planning Division of D.I.A.N.D. in the near future.

IMPLEMENTATION

It is assumed that the two territorial governments and the federal government will wish to co-operate in the implementation of the Dempster Highway Management Plan. The federal government's involvement will cease in March 1981 when the management plan has been through a trial period and modifications have been made. The reconstruction, maintenance and management of the highway will be entirely in the hands of the territorial governments by that time.

Management Committee

1. A management committee composed of one representative from the federal government, one representative from the Yukon Territorial Government, one representative from the Government of the Northwest Territories and one native representative from each of the two territories should be formed in order to co-ordinate the management of the highway by the territories and others who have associated responsibilities and to ensure it is carried out in the most efficient manner.
2. The Commissioners should appoint their representatives so that the first meeting of the Management Committee can take place in June 1978.
3. The duties of the Management Committee will be to:
 - (a) Prepare terms of reference for a Dempster Highway Manager;
 - (b) Appoint a manager, the appointment to take effect no later than April 1, 1979;
 - (c) Obtain the co-operation of all government departments and other organizations whose work will be affected by the highway's management;
 - (d) Determine the methods of evaluating the highway's management, and ensure that annual reviews and relevant modifications are made.

Dempster Highway Manager

The Management Committee will ensure that general qualifications for the Dempster Highway Manager include the following:

1. Administrative ability, with an understanding of the responsibilities of the various departments of the two territorial governments and D.I.A.N.D.
2. Training in wildlife management or a biological science or other relevant training.
3. A familiarity with the northern environment.

The Dempster Highway Manager will be expected to carry out the following and associated duties as directed by the Dempster Highway Management Committee:

1. Ensure the recommendations in the Dempster Highway Management plan are carried out.
2. Work in co-operation with the territorial governments and other agents responsible for highway maintenance, provision of services along the highway and land use planning and for social and environmental factors affecting the highway and affected by the highway.
3. Hire and supervise the training and employment of convoy leaders as from October 1, 1979.

4. Establish an office in Dawson which should be the focal point for the implementation of the plan.
5. Establish and supervise check points, a convoy system and related facilities.
6. Collect relevant information about highway conditions regularly.
7. Prepare and distribute information regarding highway management to the media and other outlets.
8. Set up a monitoring system so that accurate records of traffic and environmental conditions are maintained.
9. Report regularly to territorial and federal government departments whose activities are affected by the highways management.
10. Aim to allow people safe passage along the highway while conserving the natural environment.
11. Act as secretary of the Dempster Highway Management Committee.

Financing

It must be assumed that the costs of the project will be assumed by the three participating governments. The major costs during 1979-80 are expected to be \$200,000 and will be assumed by the federal government. The territories will assume increasing responsibility for management costs in subsequent years.

| | | |
|---|---|--------------|
| 1 | manager (1 man year) | \$25,000 |
| 3 | convoy leaders (2 man years) | 40,000 |
| 2 | 4-wheel drive vehicles capital | 40,000 |
| | O and M | 20,000 |
| 1 | office (Dawson) | 5,000 |
| 3 | trailers for check stations | |
| | (rent and maintenance) | 50,000 |
| | Equipment - gates, radios, signs etc. | 5,000 |
| | Office expenses, printing, communications | 10,000 |
| | Miscellaneous | <u>5,000</u> |
| | Total estimated cost | \$200,000 |

Evaluation

The method of evaluation of the Dempster Highway Management Plan will be determined by the Management Committee. It is essential that all participants in the plan be given the opportunity to make recommendations for changes and that these are reviewed in the context of the overall plan. On the basis of the

results of additional environmental studies and monitoring recommendations about the future of the plan will be made. The Management Committee will be charged with the responsibility of recommending to the territorial governments the continuation, discontinuation or modification of the plan.

Unless the three governments support this plan, the Dempster Highway will not be managed in a way that will ensure minimal effect on caribou, raptors, fish and other wildlife as well as optimizing the opportunities to use the highway safely and with enjoyment. It might be possible to relax stringent restrictions when the effects of the highway's management are known.

The highway will help people to see and understand a part of the country which has not been accessible by land previously. With careful management and the full co-operation of governments, travellers, hunters and people working in the region, the magnificence of the northern countryside can be maintained.

APPENDIX

CONVOY AIDE-MEMOIRE

A Convoy Aide Memoire* which would include a sketch map, and be written in English and French would include such instructions as:

1. The convoy commander's instructions must be obeyed.
2. Maintain 100 metres distance from the vehicle in front of you to allow safe braking distance and to allow emergency vehicles to overtake safely, unless otherwise directed.
3. Keep your headlights on so that in dusty, wet or snowy conditions you can be seen more easily.
4. Avoid bunching on hills - anticipate delays and slow down early.
5. Do not overtake.
6. Do not stop except in emergency, or where directed to stop.
7. Fill your gas tank before joining the convoy. (The next filling station is at Mile X).
8. Ensure you have adequate food and drink for two days.
9. In case of accident or breakdown remain with your vehicle as the rear vehicle in the convoy will be able to communicate with the convoy commander about any emergency.
10. Do not throw litter out of your vehicle.
11. Keep to convoy timings.

* It might be considered desirable to prepare this in pictographic form and in local Indian and Eskimo languages.

APPENDIX 2

RAPTOR SURVEY

D. Mossop, Ornithologist of the Yukon Wildlife Branch has prepared an interim report Birds of Prey and the Dempster Highway Transportation Corridor.

From Page 31 - 35 the following extract has been taken:

"Tourists and Eagles

When tourists can drive through to Ft. McPherson, the number of people using the highway will jump greatly. The impact of the tourists upon the raptors may be insignificant if illegal shooting of raptors can be prevented and accidental and deliberate harassment of nests can be avoided. In view of both the impossibility of effectively patrolling such an area, and the low mentality of some users of the area (indicated by bullet-peppered highway signs), it may be unwise to point out to the general tourist the presence, abundance, or significance of the eagle population along the highway. Tasteful signs should be posted at the campgrounds noting that eagles, hawks, falcons, and owls, their nests, eggs and young, are protected by law and there are fines and/or imprisonment for those who molest them. A general interpretive sign aimed at identification of eagles (Golden and Bald, adult and immature), with brief notes on what they eat, where they nest, their protected status, and the fact that they should not be disturbed at their nests, might be a useful addition in the campgrounds."

"Poaching of Falcons

The completion of the Dempster Highway will allow travel to and from the Northwest Territories and will make available to unscrupulous people a substantial number of falcon nests from which eggs or nestlings might be taken. Several Peregrine and Gyrfalcon nests are within 1/2 mile of the highway, others are within an easy day's return walk from the highway, and a number are accessible from the highway on the Blackstone and the Peel. From near Ft. McPherson the Peel is accessible to power boats almost to Aberdeen Falls. There appears to be no reasonable way to directly protect these nests from poachers, unauthorized photographers, shooters, or others who might deliberately or accidentally harass them.

The matters of poaching, illegal shooting or photographing, captive breeding of raptors, and falconry all present difficult enforcement and administrative problems . . . Permanent marking of captive birds should be required at least for the large falcons . . . The best deterrents to poaching and shooting of raptors appear to be stiff fines and imprisonment. The resident and visitor must know about the deterrents and the general reasons for them. And, obviously, the deterrents must be stiffly enforced. A fine of \$500 and the confiscation of four Gyrfalcons is not a reasonable deterrent to someone who intended to sell the birds at several thousand dollars each. Confiscation of the person's vehicle and equipment, plus a week or two in jail, might deter him and others from poaching in the next year. The odds against catching poachers/shooters are extremely great in such a large area as Yukon. The poacher who is caught either must be simply foolish or just unlucky, because to enter and leave Yukon and capture Peregrine or Gyrfalcon

nestlings can easily be accomplished without leaving suspicious "tracks". Therefore, when someone is caught, the successfully prosecuted case should be used and advertised as a deterrent to others. Word spreads quickly about foolishly insignificant fines, and about very stiff penalties.

"Official" rumors about poachers who got away may serve to advertise to the public that poaching is illegal. Such rumors also point out the incredible difficulties of apprehending a poacher or shooter of raptors. Such rumors also advertise the fact that there are vulnerable, poachable falcon populations in Yukon."

"Special Status Area for Raptors

Consideration should be given to the possibility of establishing a special status to that area straddling the Dempster Highway between Mile 33 and Mile 73. It is a spectacular area with broad valleys and steep mountains, with a transition from forest to mountain tundra and a transition from mountain tundra to plains tundra. The area contains Dall Sheep which sometimes are visible from the highway. At least twelve pairs of Golden Eagles nest within five miles of the highway, along with at least three pairs of Gyrfalcons. Six of the eagle nests were within 1.5 miles of the highway, separated by an average of 3.2 miles; four of these nests can be observed from the highway."

A report prepared in March 1978 for the Yukon Wildlife Branch, The Prey Utilized by Nesting Peregrine Falcons, Gyrfalcons and Golden Eagles near the Dempster Highway Corridor makes a few recommendations related to the Dempster Highway.

"Habitat Requirements

Ptarmigan heavily utilize lowland vegetation for food searching during the winter months. The destruction of important riparian vegetation by pipeline-related activities could cause localized reductions in ptarmigan numbers, especially between Mile 100 and 160, where the Dempster Highway parallels important waterways. A depletion in ptarmigan numbers could adversely affect gyrfalcon and golden eagle productivities, especially during low ptarmigan years. It is suggested that the removal of riparian vegetation be kept to a minimum to ensure that the habitat remains viable to ptarmigan use.

Upland Game Hunting Regulations

The dense raptor population in the Ogilvie Mountains should not be required to compete with a large population of transient upland game hunters, working on the pipeline development. Ptarmigan are notoriously easy quarry for hunters. Any hunting should be restricted to 2-year residents of the Yukon Territory, and a five-mile corridor should apply to upland game hunting. During low ptarmigan years a hunting ban may be required to ensure adequate prey for gyrfalcons and eagles.

"Sport" hunting of the important ground squirrel prey-base should not be tolerated for similar ecological reasons."

