

Environmental Impact Statement and Comprehensive Study Report Supplementary Addendum

Cartwright Junction to Happy Valley - Goose Bay Trans Labrador Highway



**JACQUES WHITFORD ENVIRONMENT LIMITED
AND
MINASKUAT LIMITED PARTNERSHIP**

**JW Project No.: NFS09308-0010
Minaskuat Project No.: M6-0010**

March 2004

**JACQUES WHITFORD PROJECT NO. 9308-0010
MINASKUAT PROJECT NO. M6-0010**

**ENVIRONMENTAL IMPACT STATEMENT
AND COMPREHENSIVE STUDY REPORT
SUPPLEMENTARY ADDENDUM
CARTWRIGHT JUNCTION TO
HAPPY VALLEY-GOOSE BAY
TRANS LABRADOR HIGHWAY**

MARCH 2004



**JACQUES WHITFORD PROJECT NO. 9308-0010
MINASKUAT PROJECT NO. M6-0010**

**ENVIRONMENTAL IMPACT STATEMENT
AND COMPREHENSIVE STUDY REPORT
SUPPLEMENTARY ADDENDUM
CARTWRIGHT JUNCTION TO
HAPPY VALLEY-GOOSE BAY
TRANS LABRADOR HIGHWAY**

PREPARED FOR:

**DEPARTMENT OF TRANSPORTATION AND WORKS
5TH FLOOR, CONFEDERATION BUILDING WEST
P.O. BOX 8700
ST. JOHN'S, NL A1B 4J6**

PREPARED BY:

**JACQUES WHITFORD ENVIRONMENT LIMITED
607 TORBAY ROAD
ST. JOHN'S, NL A1A 4Y6
Tel: 709-576-1458
Fax: 709-576-2126**

**MINASKUAT LIMITED PARTNERSHIP
BUILDING 412, LAHR BOULEVARD
HAPPY VALLEY-GOOSE BAY, NL A0P 1C0
TEL: (709) 896-5860
FAX: (709) 896-5863**

MARCH 26, 2004



EXECUTIVE SUMMARY

The Department of Transportation and Works (DTW) is proposing to construct a two-lane, all-season gravel surface highway between Cartwright Junction and Happy Valley-Goose Bay. This highway is Phase III of the Trans Labrador Highway (TLH) and will link the existing TLH highway sections to the east (Phase II) and west (Phase I).

The TLH - Phase III is currently undergoing an environmental assessment under both the Newfoundland and Labrador *Environmental Protection Act* and *Canadian Environmental Assessment Act* (CEAA). An environmental impact statement (EIS) and comprehensive study report (CSR) were prepared and submitted to the provincial Minister of Environment in January 2003. An addendum to the EIS/CSR was prepared to address items outlined in a deficiency statement issued by the Minister of Environment in April 2003. This addendum was submitted to the Minister of Environment in October 2003.

This report provides follow-up information and clarification on items in the EIS/CSR and addendum prepared for the environmental assessment of the TLH-Phase III. The items addressed were identified in the supplementary deficiency statement issued by the Minister of Environment and Conservation in March 2004 and comments provided by the federal Responsible Authority for the federal environmental assessment under CEAA.

Aspects of the EIS/CSR for which clarification and/or additional information are provided in this report are:

- Akamiuapishku/Mealy Mountains National Park;
- Mealy Mountains Caribou Herd;
- waterfowl;
- fish and fish habitat;
- watercourse crossing structures;
- greenhouse gas emissions;
- tourism and recreation;
- Innu land and resource use;
- resource management and enforcement capability; and
- a regional resource or land use planning approach for managing cumulative environmental effects.



Throughout this supplementary addendum, reference to the two proposed routes for the TLH - Phase III now acknowledges a northern and southern route. The northern route is the route previously referenced as the preferred route, while the southern route is the route previously referenced as the alternative (outfitter) or A13 route. The southern route is now the route preferred by DTW for the TLH between Cartwright Junction and Happy Valley-Goose Bay.



TAKUAPEKISHTAKANSHU MISHINAIKAN

TO BE SUBMITTED UNDER SEPARATE COVER



TABLE OF CONTENTS

Page No.

| | |
|---|-----------|
| 1.0 INTRODUCTION | 1 |
| 1.1 Background..... | 1 |
| 1.2 Request for Supplementary Information..... | 2 |
| 1.3 Change in Route Selection | 3 |
| 1.4 Document Organization..... | 7 |
| 2.0 RESPONSE TO PROVINCIAL COMMENTS..... | 8 |
| 2.1 Comment No. 1 - Akamiupishk/Mealy Mountains National Park VEC | 8 |
| 2.2 Comment No. 2 - Caribou VEC | 9 |
| 2.3 Comment No. 3 - Caribou VEC | 10 |
| 2.4 Comment No. 4 - No Fishing Policy | 11 |
| 2.5 Comment No. 5 - Crossing Structures..... | 11 |
| 2.6 Comment No. 6 - Tourism and Recreation VEC..... | 12 |
| 2.7 Comment No. 7 - Resource Management and Enforcement | 13 |
| 2.8 Comment No. 8 – Tourism and Recreation VEC..... | 16 |
| 2.9 Comment No. 9 – Tourism Recreation VEC..... | 25 |
| 2.10 Comment No. 10 – Tourism and Recreation VEC..... | 28 |
| 2.11 Comment No. 11 - Suggested Resource Management Approach | 30 |
| 2.12 Comment No. 12 - Labrador Innu Land Use | 31 |
| 2.13 Comment No. 13 – Proposed Southern Route..... | 34 |
| 2.14 Comment No. 14 – Innu Land and Resource Use | 36 |
| 2.15 Comment No. 15 – Aboriginal Knowledge..... | 38 |
| 3.0 RESPONSE TO FEDERAL COMMENTS | 39 |
| 3.1 Response to Department of Fisheries and Oceans Comments | 39 |
| 3.1.1 Department of Fisheries and Oceans Position Statement on EIS/CSR..... | 39 |
| 3.1.2 DFO General Comments..... | 40 |
| 3.1.2.1 Comment No. 16 - Labrador Innu Land Use | 40 |
| 3.1.2.2 Comment No. 17 - Change in Route Selection..... | 40 |
| 3.1.2.3 Comment No. 18 - Additional Waterfowl Information | 41 |
| 3.1.3 DFO Specific Comments - Adequacy..... | 41 |
| 3.1.3.1 Comment No. 19 – Churchill River Crossing..... | 41 |
| 3.1.3.2 Comment No. 20 – Selection Criteria for Crossing Structures..... | 45 |
| 3.1.3.3 Comment No. 21 – Precautionary Principle | 49 |
| 3.1.3.4 Comment No. 22 – Suggested Resource Management Approach | 50 |
| 3.1.3.5 Comment No. 23 – Watercourse Crossing Locations..... | 50 |



| | | |
|------------|--|-----------|
| 3.1.3.6 | Comment No. 24 – Selection Criteria for Crossing Structures..... | 51 |
| 3.1.3.7 | Comment No. 25 – Selection Criteria for Crossing Structures..... | 51 |
| 3.1.3.8 | Comment No. 26 – Resource Management and Enforcement..... | 51 |
| 3.1.3.9 | Comment No. 27 – Fish Species..... | 52 |
| 3.1.3.10 | Comment No. 28 – Fish Species..... | 54 |
| 3.1.3.11 | Comment No. 29 – Crossing Structures | 54 |
| 3.1.3.12 | Comment No. 30 – No Fishing Policy..... | 55 |
| 3.1.4 | DFO Specific Comments - Technical Issues | 55 |
| 3.1.4.1 | Comment No. 31 – Proposed Southern Route..... | 55 |
| 3.1.4.2 | Comment No. 32 – Crossing Structures | 56 |
| 3.1.4.3 | Comment No. 33 – Fish and Fish Habitat..... | 56 |
| 3.1.4.4 | Comment No. 34 – Fish and Fish Habitat..... | 57 |
| 3.1.4.5 | Comment No. 35 – Outfitting Operations..... | 57 |
| 3.1.4.6 | Comment No. 36 – Paradise River Location on Mapping..... | 58 |
| 3.1.4.7 | Comment No. 37 – Crossing Structures | 58 |
| 3.1.4.8 | Comment No. 38 – Environmental Protection Measures | 60 |
| 3.1.4.9 | Comment No. 39 – Fish and Fish Habitat..... | 60 |
| 3.1.4.10 | Comment No. 40 – Fish and Fish Habitat..... | 60 |
| 3.1.4.11 | Comment No. 41 – Fish and Fish Habitat..... | 61 |
| 3.1.4.12 | Comment No. 42 – Fish and Fish Habitat..... | 62 |
| 3.1.4.13 | Comment No. 43 – Fish and Fish Habitat..... | 62 |
| 3.1.4.14 | Comment No. 44 – Fish and Fish Habitat..... | 63 |
| 3.2 | Response To Environment Canada Comments | 63 |
| 3.2.1 | Comment No. 45 - Appropriate Standard of Environmental Assessment..... | 63 |
| 3.2.2 | Comment No. 46 - Mealy Mountains Caribou Herd | 64 |
| 3.2.3 | Comment No. 47 – Mealy Mountains Caribou Herd..... | 64 |
| 3.2.4 | Waterfowl | 65 |
| 3.2.4.1 | Environment Canada Position Statement on Waterfowl | 65 |
| 3.2.4.2 | Comment No. 48 - Waterfowl Monitoring | 66 |
| 3.2.5 | Comment No. 49 - Greenhouse Gas Emissions..... | 66 |
| 3.2.6 | Comment No. 50 – Suggested Resource Management Approach..... | 69 |
| 3.2.7 | Comment No. 51 – Conclusion (Suggested Resource Management Approach) | 70 |
| 3.3 | Response To Parks Canada Comments | 70 |
| 3.3.1 | Comment No. 52 – Resource Management and Enforcement..... | 70 |
| 4.0 | REFERENCES | 71 |
| 4.1 | Personal Communication..... | 71 |
| 4.2 | Literature Cited..... | 72 |



LIST OF APPENDICES

| | |
|------------|---|
| Appendix A | Environmental Impact Statement Supplementary Deficiency Statement |
| Appendix B | Federal Position on the EIS/CSR Addendum, Phase III Trans Labrador Highway |
| Appendix C | A Suggested Approach for Managing Cumulative Environmental Effects Associated with the TLH – Phase III |
| Appendix D | Recommendations from Armitage and Stopp (2003) with Department of Transportation and Works Responses |
| Appendix E | Additional Information on the Waterfowl Component Study Provided to Canadian Wildlife Service |
| Appendix F | Environmental Approval Applications for Culvert Installation and Bridges, Water Resources Management Division, Department of Environment and Conservation |

LIST OF FIGURES

| | Page No. |
|------------|---|
| Figure 1.1 | Cartwright Junction to Happy Valley-Goose Bay Trans Labrador Highway Alternative Routes4 |
| Figure 1.2 | Cartwright Junction to Happy Valley-Goose Bay Trans Labrador Highway Routes Subjected to Further Assessment5 |
| Figure 1.3 | Proposed Route for the Cartwright Junction to Happy Valley-Goose Bay Trans Labrador Highway.6 |
| Figure 2.1 | Outfitting Camp Locations in Central and Southern Labrador19 |

LIST OF TABLES

| | |
|-----------|---|
| Table 2.1 | Outfitting Camps in Central and Southern Labrador17 |
|-----------|---|



1.0 INTRODUCTION

The Department of Transportation and Works (DTW) is proposing to construct a two-lane, all-season gravel surface highway between Cartwright Junction and Happy Valley-Goose Bay. This highway is Phase III of the Trans Labrador Highway (TLH) and will link the existing TLH highway sections to the east (Phase II) and west (Phase I).

1.1 Background

The TLH - Phase III project was registered under provincial environmental assessment legislation on April 3, 2002. Following both government and public review, the Minister of Environment determined on June 19, 2002, that an environmental impact statement (EIS) was required for the project. The TLH - Phase III is also subject to the *Canadian Environmental Assessment Act (CEAA)*. The Department of Fisheries and Oceans (DFO), the lead Responsible Authority for the federal assessment, determined that a comprehensive study report (CSR) would have to be prepared for the project. At the provincial level, the environmental assessment is also subject to a Memorandum of Understanding between Innu Nation and the Departments of Environment and Conservation, and Labrador and Aboriginal Affairs. The TLH - Phase III project will also be subject to federal, provincial and municipal approvals, permits and authorizations prior to project initiation.

The EIS/CSR prepared by JW/IELP (2003) focused on the northern route identified for the TLH - Phase III. The report presented information about the project and the results of the environmental assessment conducted for the project. Work on the EIS/CSR was conducted between August 2002 and January 2003, with the final report being submitted to the Department of Environment on January 31, 2003.

As part of the environmental assessment, DTW was requested to provide further information and clarification on aspects of the EIS/CSR. The Minister of Environment issued a deficiency statement in April 2003. An addendum report was prepared by JW/MLP (2003a) to address items outlined in the deficiency statement and was submitted to the Minister of Environment in October 2003. Additional information or clarification was provided on the following:

- alternative methods of carrying out the project;
- alternatives to the project;
- regulatory approval requirements;
- project construction;
- environmental effects analysis;
- mitigation measures;
- effects evaluation and selection of preferred alternative;
- watercourse crossings and design criteria for crossing structures;



- site rehabilitation and monitoring;
- effects of the environment on the project;
- environmental management planning and protection measures;
- environmental effects monitoring;
- raptors and waterfowl;
- caribou;
- furbearers;
- fish and fish habitat;
- species at risk;
- geomorphology
- water resources and wetlands;
- resource use and users;
- Akamiuapishku/Mealy Mountains National Park; and
- tourism and recreation.

As part of the addendum for the EIS/CSR, an EIS/CSR was prepared for the route identified in discussions with some members of the Newfoundland and Labrador Outfitters Association (now referred to as the southern route). The EIS/CSR for the southern route provided information on each Valued Environmental Component (VEC), as collected from existing literature and field studies, project-VEC interactions, environmental effects and mitigation measures. The EIS/CSR fulfilled both the provincial and federal environmental assessment requirements, as well as the requirements outlined in the EIS/CSR guidelines issued in December 2002 and comments presented in the April 2003 deficiency statement. This EIS/CSR for the southern route was presented as Appendix C of the addendum.

1.2 Request for Supplementary Information

This supplementary addendum report provides follow-up information and clarification on items in the EIS/CSR and addendum prepared for the environmental assessment of the TLH - Phase III. The items addressed were identified in the supplementary deficiency statement issued by the Minister of Environment and Conservation in March 2004 and comments provided by DFO, the federal Responsible Authority, for the federal environmental assessment under CEAA.

Aspects of the EIS/CSR for which clarification and/or additional information are provided in this report are:

- Akamiuapishku/Mealy Mountains National Park;
- Mealy Mountains Caribou Herd (MMCH);
- waterfowl;
- fish and fish habitat;



- watercourse crossing structures;
- greenhouse gas emissions;
- tourism and recreation;
- Innu land and resource use;
- resource management and enforcement capability; and
- regional resource or land use planning approach.

1.3 Change in Route Selection

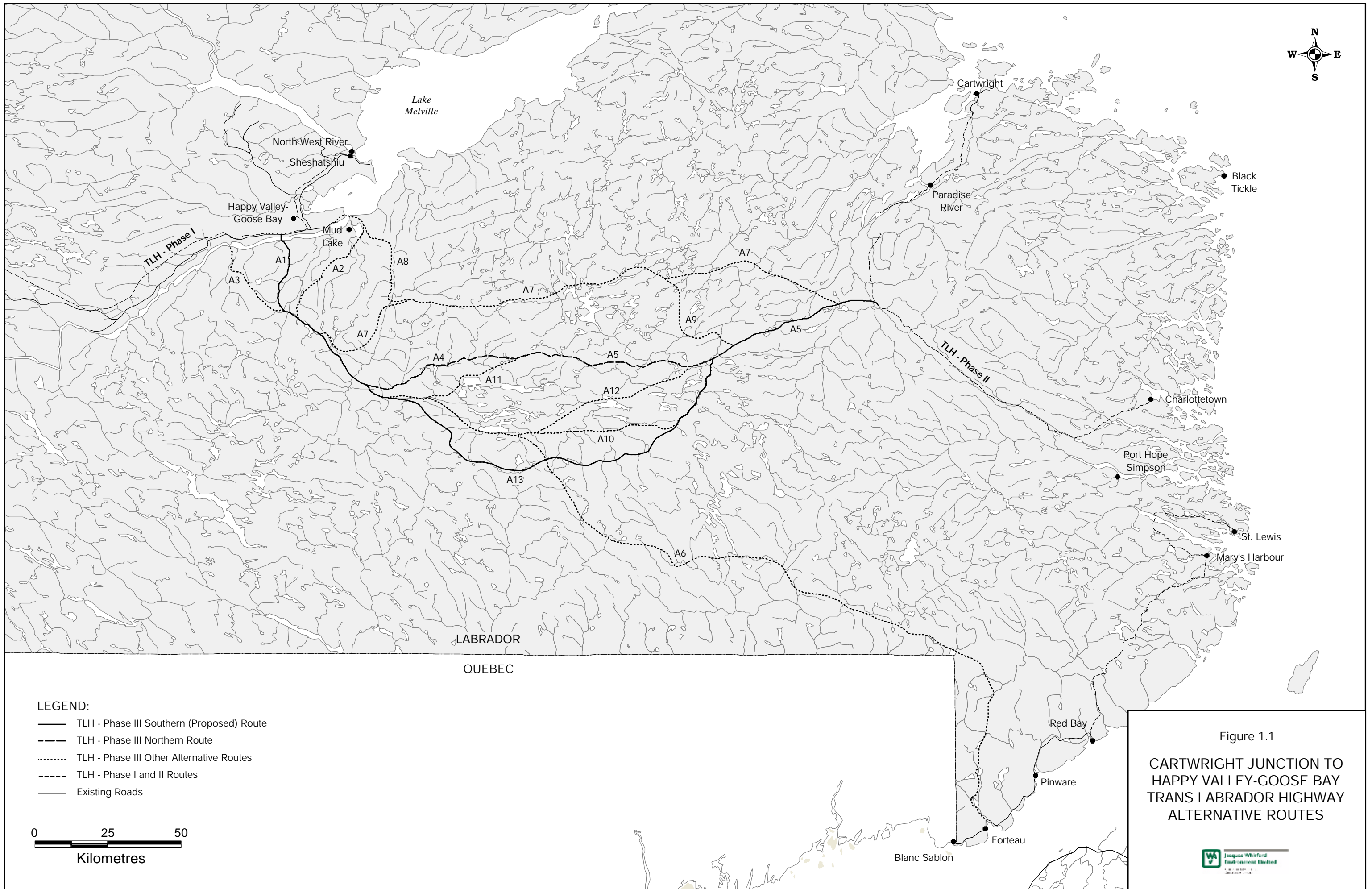
Thirteen route alternatives were considered for the TLH – Phase III. Each of these alternatives were described in the EIS/CSR for the northern route (JW/IELP 2003) and the EIS/CSR for the southern route (Appendix C of JW/MLP (2003a)). For information purposes, the location of the alternative routes are shown in Figure 1.1 (note that this figure provides the same information as Figure 2.4 in JW/IELP (2003) and Figure 2.1 in JW/MLP (2003a)). Eleven of the 13 route alternatives were screened out based on criteria described in Section 2.2 of JW/MLP (2003a). The two remaining routes are: the route comprised of route segments A1, A4 and A5 (originally referred to as the preferred route, but now called the northern route), and the route comprised of the A13 route segment and portions of A1 and A5 (originally referred to as the outfitter route, but now called the southern route). These two routes were subjected to further assessment.

The two routes considered for the TLH – Phase III that were assessed in the environmental assessment are shown in Figure 1.2. The environmental assessment for the northern route (i.e., the route previously referenced as the preferred route) was presented in JW/IELP (2003), while the environmental assessment for the southern route (i.e., the route previously referenced as the outfitter route) was presented in Appendix C of JW/MLP (2003a).

Throughout this supplementary addendum, reference to the two proposed routes for the TLH - Phase III now acknowledges a northern and southern route. This change in terminology also reflects an amendment to all previous environmental assessment documentation for the TLH – Phase III. All reference to the preferred route is amended to northern route and all reference to the alternative (outfitter) or A13 route is now amended to southern route.

The southern route is now the route preferred by DTW for the TLH between Cartwright Junction and Happy Valley-Goose Bay (Figure 1.3). This change was made following public comments received during the public review of the EIS/CSR for the southern route. Comments received from a number of organizations, including Innu Nation, indicated a preference for the southern route. In addition, a second set of interviews with outfitting lodge operators also indicated a strong preference for the southern route (JW/MLP 2004a).





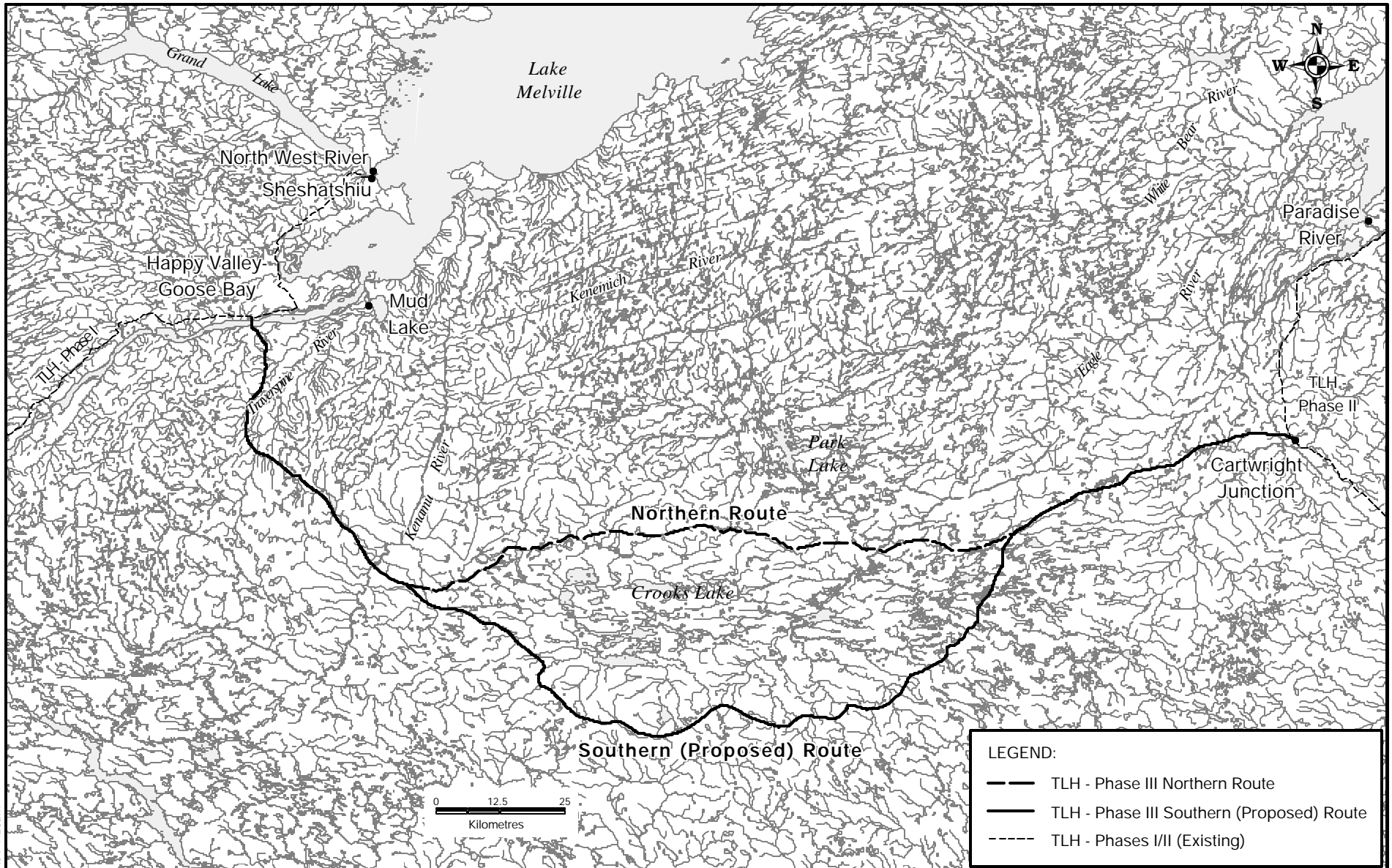
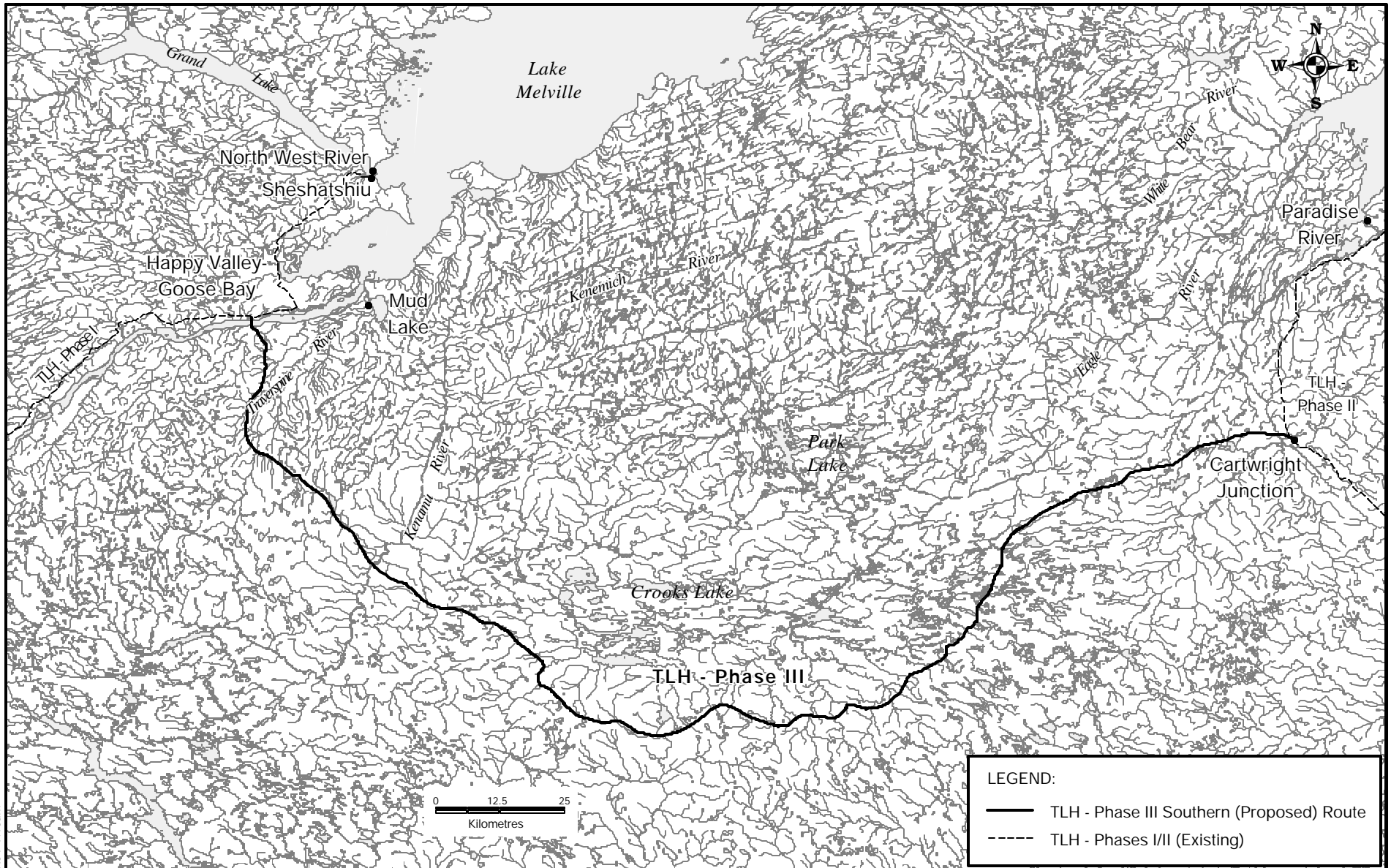


Figure 1.2
 Cartwright Junction to Happy Valley-Goose Bay Trans Labrador Highway
 Routes Subjected to Further Assessment



NFS09308-ES-82.WOR 26/MAR/04 9:15am

Figure 1.3

Proposed Route for the Cartwright Junction to Happy Valley-Goose Bay Trans Labrador Highway

1.4 Document Organization

This report contains responses to comments in the supplementary deficiency statement issued by the Minister of Environment and Conservation in March 2004 and comments provided by the federal Responsible Authority for the federal environmental assessment under CEAA (see Appendices A and B, respectively). The two sets of comments are addressed in separate sections: Section 2.0 (Response to Provincial Comments); and Section 3.0 (Response to Federal Comments). Comments are numbered 1 through 52, with the comments from the provincial Minister of Environment and Conservation labeled as Comments No. 1 to 15 and the comments from federal agencies labeled comments No. 16 to 52.



2.0 RESPONSE TO PROVINCIAL COMMENTS

2.1 Comment No. 1 - Akamiupishk/Mealy Mountains National Park VEC

Comment 1:

The Guidelines required discussion of the Akamiupishk/ Mealy Mountain National Park Study Area and the Feasibility Study for potential establishment of a national park, including size, geographic area, ecological integrity and wilderness character. The Guidelines further required consideration of cumulative effects of the highway on the Feasibility Study and potential establishment of a National Park. The Deficiency Statement reiterates those requirements and a response has been provided that the presence of a road is not considered to result in significant effect if the road were within the boundaries of the national park, and that a national park can be considered a mitigative measure. Description provided for four of the five ecoregions and Natural Region 21 has been cursory. Park boundaries have not yet been finalized and consultations may indicate that a highway through the National Park is not advisable or desirable. The possibility exists that any future boundaries of a national park may be designed to avoid a highway. Given that possibility, provide a more comprehensive discussion of the potential cumulative effects to ecological integrity of the five ecoregions and Natural Region 21 if the preferred route is constructed and a Mealy Mountains National Park boundary was designed to exclude the highway from the National Park. In the discussion use the description of the ecological characteristics of the five ecoregions and Natural Region and use each of the two route scenarios to describe a potential Mealy Mountains National Park that excludes a highway. Compare the ecological integrity of a potential national park that excludes the preferred route and the ecological integrity of a potential national park that excludes the alternative route and compare each of the potential parks' size, geographic area and conservation targets, wilderness character, wilderness core and wilderness values.

Response 1:

DTW has identified the southern route as the preferred route for the TLH - Phase III. This southern route will likely form the boundary or will be south of the boundary of the proposed Mealy Mountains National Park, should a park be established in this area. Parks Canada has concluded that with appropriate mitigation, permitting and monitoring initiatives identified by DFO and Environment Canada, significant adverse effects or uncertainty related to the park establishment process would be eliminated. Refer to Parks Canada's statement in Comment No. 52 in Section 3.3.



2.2 Comment No. 2 - Caribou VEC

Comment 2:

The Guidelines require an analysis of environmental effects for each Valued Ecosystem Component (VEC) with one of the criteria for evaluation to be level of certainty. The Deficiency Statement indicates that the level of confidence contained in Table 6.9 for the environmental effects summary for caribou from the preferred route is High for a Not Significant (Minor) environmental effect and a response is provided that habitat use by radio-collared animals is consistent with historic patterns, considerable literature exists on reaction of caribou to linear development, and the experience of the study team allows for a high level of confidence. The information provided in the Caribou Component Study Addendum is still limited in scope (few caribou were observed). The available literature on caribou reaction to linear development provides conflicting conclusions. Describe the conflict within the available literature and apply the conclusions of each type of the literature to caribou species at risk, such as the Mealy Mountains Caribou Herd, for which information is still limited. Describe whether a Not Significant (Minor) environmental effect can be predicted with a High level of confidence for caribou species at risk for which information available is still limited, under each conflicting conclusion presented in literature.

Response 2:

While it is agreed that the information provided by the Caribou Component Study (Otto 2002) and the Caribou Component Study Addendum (Otto 2003) is limited, the recent radio-collar data do indicate that habitat use is consistent with historical patterns, the sources of which extend back to the 1960s (i.e., Bergerud 1967; Hearn and Luttich 1987, 1990; Schaefer 1997). The EIS/CSR for the northern route and the EIS/CSR for the southern route (Appendix C of the addendum to the EIS/CSR) states that the effects of highway construction and operation on the MMCH will be not significant (minor).

There is generally no conflict in literature related to linear structures in that caribou tend to habituate to linear structures. However, road density and the level of accompanying traffic and human activity appear to be the factors that determine the magnitude of effects. For example, Dyer et al. (2001) observed that avoidance of roads by woodland caribou was highest when traffic volumes were highest (600 to 800 vehicles per day) and lowest at less than 100 vehicles per day. Nelleman and Cameron (1998) found that in Alaska, caribou density declined by 63 percent at road densities up to 0.3 km road/km² and by 86 percent at road densities of 0.6 to 0.9 km road/km². Road density in Labrador is extremely low (e.g., there will be 0.005 km roads/km² when the TLH - Phase III is complete) and the anticipated traffic levels will also be relatively low and sporadic in nature. During construction, disturbance will be intense within a localized area and of relatively short duration.



Based on the existing knowledge related to linear developments and caribou, the nature of the proposed project, and what is known about the distribution and abundance of the MMCH, this prediction is made with a high level of confidence. However, as was noted in the cumulative effects assessment for the MMCH (p. 212, Appendix C of the EIS/CSR addendum), without appropriate planning and control of hunting, all-terrain vehicle (ATV) use and development activities, a significant (major) effect to the MMCH could result from induced activities that follow highway construction.

2.3 Comment No. 3 - Caribou VEC

Comment 3:

The Guidelines required a description of environmental compliance and monitoring programs. The EIS indicates that collared caribou will continue to be monitored during construction. The Deficiency Statement advises that a monitoring program must be developed to evaluate the effects predictions generated in the EIS and that, at a minimum, evaluation of habitat use must be made during caribou calving and postcalving for both construction and post-construction. In addition, caribou should be monitored to assess the ability of animals to cross the highway once constructed. A response has been provided that no environmental effects monitoring is proposed and that additional work was conducted to provide information on calving and post-calving periods in 2003. The additional work conducted is useful information for preconstruction but does not contribute to the testing of effects predictions during construction and for post-construction. A monitoring program will still be required for this caribou population for which available information is currently limited and which is listed as a species at risk. Describe this monitoring program.

Response 3:

DTW supports establishment of a caribou monitoring program. Based on preliminary information received from the Inland Fish and Wildlife Division, a caribou monitoring program would focus on the calving/post calving and winter periods over at least a six-year period (two years each prior to construction, during construction and post-construction). Data collected would include range use, movement patterns, habitat characteristics, productivity, recruitment, and mortality rates and causes. The data would be collected using a combination of methodologies, including telemetry monitoring, habitat mapping, and population and classification surveys.



2.4 Comment No. 4 - No Fishing Policy

Comment 4:

The Guidelines required that technically and economically feasible mitigative measures shall be described and discussed. The EIS indicates that no unique or extraordinary mitigation measures apply with regard to protecting fish and fish habitat. The Deficiency Statement advises that construction personnel must not fish while on site since fish survey work by Inland Fish and Wildlife is ongoing to determine pre-access fish population inventory. The response provided questions the authority under which a no fishing policy can be enforced and advises that the proponent is not able to commit to a no fishing policy for construction personnel. Access to waterways along the highway route is currently limited and difficult. The purpose of Inland Fish and Wildlife's ongoing fish survey is to determine a characterization of fish population prior to construction and increased access. The baseline information to be collected will form the basis of discussions with Fisheries and Oceans Canada on management options to mitigate effects of increased access on fish populations. The fish survey being conducted is based on the assumption that pre-construction fishing activity provides the baseline information necessary for effects prediction and that there will be limited access and fishing as each section is constructed, particularly in more remote areas. Fishing by construction personnel will therefore affect the results of the fish survey. The proponent is required to develop and implement a no fishing policy for construction personnel and contract workers. Describe the no fishing policy, which is to form part of the Environmental Protection Plans and to be used as part of the environmental awareness training for such personnel and workers.

Response 4:

DTW will implement a no fishing, no hunting and no trapping policy for on-site workers during construction. This policy will be included in the contract documents for the companies that construct the highway, and it will be included in the environmental protection plan (EPP) that will apply to DTW, contractor and any sub-contractor personnel.

2.5 Comment No. 5 - Crossing Structures

Comment 5:

Table 2.7 of the EIS Addendum compares the factors associated with each of the possible routes. Table 2.2 provides the proposed crossing structure type for each route. It is unclear whether the savings associated with reduced sizes and types of crossing structures is reflected in the construction costs for the outfitter route. The Outfitter Route requires two fewer bridges and nine fewer pipe arches but 31 additional culverts. Information should be provided on the relative cost of each bridge structure and the



relative cost for pipe arches and culverts. The relative total cost should then be provided to compare the relative cost increase or savings attributed to crossing structures for each alternative route.

Response 5:

The cost of manufacturing culverts and pipe arches does not differ significantly as size of the structure changes. Increased costs are incurred as a result of excavation and installation and these costs are site-specific. The cost savings realized is offset by the increased number of crossings where, as noted above, excavation and installation costs are increased (i.e., more sites).

The estimated costs for constructing and operating both the northern and southern route were indicated in Table 2.7 of Appendix C in the EIS/CSR Addendum. Construction costs were estimated to be \$300,000/km for both routes, totalling \$100 million with bridges for the northern route and \$107.5 million with bridges for the southern route. Annual operating costs of \$5,000/km total \$1.25 million annually for the northern route and \$1.4 million annually for the southern route, which is approximately 30 km longer.

2.6 Comment No. 6 - Tourism and Recreation VEC

Comment 6:

Additional information to be supplied for compliance with the Supplementary Deficiency Statements for the Tourism and Recreation and Fish and Fish Habitat Component Study Addenda will enable the proponent to provide more baseline information with respect to fish population and characteristics, the outfitting industry and the fishery upon which the industry has been established, after the proponent has undertaken the necessary consultation with the outfitting industry. Provide a renewed perspective of the effects of the highway upon the fishery, upon the fish resource for the outfitting industry and upon the outfitting industry as each of those might be affected by both the preferred and alternate routes.

Response 6:

With completion of the highway, access to south-central Labrador will be greatly modified. At present, access to this area is by a relatively small number of people who fly in during summer season and an equally small or smaller number that access the area by snowmobile in the winter. Both of these numbers are growing, albeit slowly at present. Interviews with area outfitters indicated that the outfitters are for the most part optimistic that their business is gradually expanding (JW/MLP 2004a; 2004b). They also report increased winter access in recent years. The increase in summer population will result in an increase in angling activity, although most will be hook and release. The increase in winter activity may lead to increase angling (on a retention basis); however, there is little information on the amount of



winter angling. Some level of fish harvesting is also practised as a gillnet fishery by the Innu. Interviews with the outfitters indicate that aboriginal harvesting usually occurs from April to June in select areas and the intensity of this harvest is felt to be less than in the past.

The operation of TLH - Phase III will provide access for many more anglers (primarily resident) and aboriginal people. The previously non-existent harvest will be initiated along the highway route. If the intensity of this activity is great and fish are retained, there will be a local depletion of stock. The effect of this will probably extend for some distance from the road but, except for one or two cases, will not affect the brook trout stocks that are targeted by the outfitters. An exception to this may be anadromous salmon or sea trout if they are intercepted before getting to the few places where they are fished by clients of the outfitters.

If provision is made, or taken, to access areas more removed from the road, then the effects of intensive angling may be more widespread. If this occurs close to outfitting operations, then the catch rates for the outfitters may decline. Close proximity to outfitters will also reduce the 'isolation' of these operations and the attractiveness will certainly decline.

The scenario described above will apply to both proposed routes (northern and southern). Most outfitters believe that, due to the terrain and proximity to the main stem of the Eagle River, access from the northern route is much more threatening than that from the southern route (JW/MLP 2004a; 2004b). Direct access to the Eagle River is predicted by the outfitters to put too much pressure on the salmon stock and thereby threaten the viability of the salmon lodges on the lower river and on Park Lake. Outfitters that are located approximately equidistant from the two routes almost unanimously feel less threatened by the southern route.

2.7 Comment No. 7 - Resource Management and Enforcement

Comment 7:

The proponent's contention that enforcement agencies have adequate resources in place to monitor fishing activities has not been corroborated with enforcement agencies as the proponent has claimed. Provide the references necessary to confirm the proposition that resources are adequate to enforce fisheries management and enforcement, or indicate whether Appendix E of the EIS Addendum should be considered to constitute the predicted environmental effects of the undertaking.

Response 7:

The information presented in Appendix E of the EIS/CSR addendum and also in Section 8.5 of Appendix C of the addendum (i.e., the EIS/CSR for the southern route) provides details on the aspects



considered in the cumulative environmental effects analysis for the northern and southern routes, respectively. The predicted residual environmental effects of the undertaking are described in the respective VEC sections of each document, and summarized in Section 7.4 of JW/IELP (2003), the EIS/CSR for the northern route, and in Section 8.4 of JW/MLP (2003a), the EIS/CSR for the southern route.

As indicated in the cumulative effects discussion for both routes, several agencies were contacted in regard to the proposed TLH – Phase III and asked about staffing levels and the TLH – Phase III. Some agencies recognized their limited capability and the need to reassign or redistribute available resources. In addition, actions by some agencies indicate that they are taking steps to identify and respond to potential concerns that may result in relation to highway development.

J. Holwell (pers. comm.) at DFO indicated that DFO has two full-time fisheries officers based in Happy Valley-Goose Bay, two in Cartwright and two in St. Lewis. As well, one river guardian is hired seasonally in Goose Bay and an additional two river guardians are hired in both Cartwright and St. Lewis. It was noted that possibilities for mitigation of increased access related to the highway would include increased enforcement officers and increased public participation (T. Bieger, pers. comm.).

In addition, DFO has commenced program modifications to regulate and mitigate the potential for depletion of the brook trout resource. The deficiency statement issued by the Minister of Environment in April 2003 included the following information provided by DFO: *Regarding the need for increase management measures to address potential effects on fish resources, DFO recognizes that new management approaches will be required to address the issues arising from Phase III of the Trans Labrador Highway. A regulatory amendment which will allow individual species management (in contrast to the current multi-species approach) is anticipated to be in place this year, and this will be a key component of DFO's management strategy for this area. In the fall of 2003, DFO will begin consultations with user groups, including aboriginal groups, in the development of its new five year management plan. DFO commits to the maintenance of aboriginal access to the resource for food, social and ceremonial purposes. The department has already had preliminary discussions in Goose Bay with the Labrador Salmonid Advisory Committee, which represents all major user groups. Key items discussed included the need for the development of a long-term management plan prior to the completion of the highway, monitoring and enforcement capacity, and the importance of education and public awareness in reducing the potential for detrimental effects on the fishery.*

This approach is consistent with action taken by DFO with respect to the TLH – Phase II. Due to the expected influx of anglers as a result of the TLH - Phase II, nine previously unscheduled rivers (including the Paradise River) in Southern Labrador were scheduled and given Class III designations in 2001 for salmon conservation purposes (DFO 2002). In addition, special trout management plans (i.e., reduced daily bag limit and possession limit) were put in place for Gilbert's Lake and Chateau Pond in



Southern Labrador to protect brook trout. These plans were put in place in response to the anticipated increase in angling pressure that may result from the completion of the Phase II portion of the TLH (B. Slade, pers. comm.).

There is a similar recognition by representatives of the Department of Natural Resources as to potential changes in resource use activities and level of activity that may result due to the TLH – Phase III. D. LeBoubon (pers. comm.) and K. Deering (pers. comm.) indicated that the Department of Natural Resources has two conservation officers at its regional office in Happy Valley-Goose Bay, and four officers at its district office in North West River and three at the district office in Cartwright. There are also four conservation officers at the North West River office that handle forest management matters. The district office in Port Hope Simpson currently has two conservation officers, with one vacant position. The creation of the third conservation officer position in Port Hope Simpson coincided with the opening of the Phase II portion of the TLH. This officer focuses on forest management matters.

D. LeBoubon (pers. comm.) and K. Deering (pers. comm.) noted that there was a potential for more resource use activity in the area following completion of the TLH – Phase III, and that there may be a need for additional resources or reassignment of existing resources to address concerns. However, they noted that any determination about resource levels and assignments would be made as requirements were identified.

It is also noted that construction of the TLH – Phase III will not be completed until 2010. With a planned construction start in 2004, this provides a six-year period for resource management agencies to review staffing levels and requirements to meet the demands of the current situation. Also, during construction, DTW has committed to a no fishing, no hunting and no trapping policy that will apply to all on-site construction personnel.

The *Forest Process Agreement*, signed by Innu Nation and the Government of Newfoundland and Labrador, facilitates Innu involvement in the forest management process, in the absence of a settled land claim (JW 2003). Labrador Métis Nation participation in forest management in Labrador is facilitated by a Memorandum of Understanding, between the Labrador Métis Nation and the Government of Newfoundland and Labrador. The forestry management planning process involves various user groups in the planning process, including industry representatives, the general public, government resource managers and non-governmental organizations. In addition, forestry management plans are also required to be registered under the *Environmental Protection Act* and, as a result, are subject to government and public review under this process. The deficiency statement issued by the Minister of Environment in April 2003 noted that the forest management plan for District 19A outlined forest management objectives for the district and that: *the harvesting guidelines specific to District 19 offer significantly more habitat protection than is seen [in] other jurisdictions.*



Similarly, P. Aylward (pers. comm.) at the Labrador Regional Lands Office indicated that there was a potential for more activity, such as cabin development, in the area following completion of the TLH – Phase III, but any determination about resource levels and assignments would be made as requirements were identified.

Canadian Wildlife Service (CWS) does not currently have any enforcement personnel in Labrador. Canadian Wildlife Service feels that issues related to migratory bird hunting and enforcement of regulations will become more problematic with construction of the TLH - Phase III (W. Turpin, pers. comm.; B. Turner, pers. comm.).

The outcome of the Innu land claim and the feasibility study for the national park may change the current regulatory structure for the area through which the TLH – Phase III will pass. While it is known that comprehensive land claim settlements in other areas of northern Canada have established frameworks for managing land and resources in the settlement area, no information is available on the types of structures that may result from a future land claim settlement in central Labrador. Similarly, no information has been provided on the administrative structure and enforcement provisions associated with any future national park.

2.8 Comment No. 8 – Tourism and Recreation VEC

Comment 8:

The proponent has still not acknowledged that there is a distinction between resident and non-resident angling and the fly in lodge based outfitting industry. Additional information to be supplied for compliance with the Supplementary Deficiency Statements for the Tourism and Recreation and Fish and Fish Habitat Component Studies will assist the proponent in illustrating the differences between the two fishing experiences. With that additional information, and in consideration of proximity of the highway to the existing outfitting industry and the documented tripling of angling in Labrador, provide a renewed perspective on the predicted potential effects of each highway routing based on proximity of fly in fishing lodges to the highway, the predicted potential effects of improved access afforded by the highway to the fishery upon which the outfitting lodges are based and upon the sustainability of the fishery upon which the outfitting industry relies. As part of that discussion provide an assessment comparing the effects that might be localized to an area of high fishing potential with how stocks throughout a watershed might be affected by overutilization of a resource in a localized area.

Response 8:

The following information is added to Section 7.14.3 (Existing Environment) of the tourism and recreation VEC as presented in Appendix C of the EIS/CSR for the southern route. The information



consolidates information on various aspects of fishing in central and southern Labrador that was presented in previous documentation submitted for the TLH – Phase III environmental assessment, as well as incorporates information gathered during interviews with outfitting lodge operators that were conducted in February and March 2004.

Section 7.14.3 Existing Environment (Additional Information)

Outfitting Lodges

There are 23 outfitting lodges located in south-central Labrador, 19 are commercial lodges and 4 are operated as private cooperative camps. An update on lodge locations is provided in Table 2.1 and Figure 2.1.

Table 2.1 Outfitting Camps in Central and Southern Labrador

| No.* | Operator | Lodge | Location | Approximate Distance from Northern Route (km) | Approximate Distance from Southern Route (km) |
|------|-----------------------------------|---------------------------------------|---------------------------------------|---|---|
| 1 | Adventure North Ltd. | Crooks Lake | Crooks Lake | 8.1 | 26.4 |
| 2 | Camp 1155 Ltd. | Camp 1155 | Upper Eagle River | 11.9 | 19.9 |
| 3 | Coopers' Minipi Camps | Anne Marie Lake Lodge | Upper Minipi River | 53.1 | 53.06 |
| 4 | Coopers' Minipi Camps | Minipi Lake Lodge | Upper Minipi River | 66.9 | 66.91 |
| 5 | Coopers' Minipi Camps | Minonipi Lodge | Upper Minipi River | 44.5 | 44.41 |
| 6 | Department of National Defence | No Name Lake (Family Wilderness Camp) | No Name Lake | 23.3 | 13 |
| 7 | Eagle Lake Sport Fishing Ltd. | Eagle Lake Lodge | Eagle Lake | 19.1 | 15.5 |
| 8 | Goose Bay Outfitters Ltd. | Lower Eagle River Lodge | Lower Eagle River | 52.7 | 49.11 |
| 9 | Igloo Lake Lodge Ltd. | Igloo Lake Lodge | Igloo Lake | 18.5 | 32.1 |
| 10 | Labrador Angling Adventures Ltd. | Awesome Lake Lodge | Awesome Lake (English River) | 93 | 93 |
| 11 | Labrador Interior Outfitters Ltd. | St. Paul's Lodge | St. Paul's River (Headwaters) | 58.8 | 24.3 |
| 12 | Labrador Outdoors Inc. | Little Minipi Lake Lodge | Little Minipi River | 49.2 | 49.2 |
| 13 | Labrador Sportsfish Ltd. | Eagle's Nest | Eagle River | 36.4 | 66.5 |
| 14 | Labrador Venture Ltd. | Birchy Lake Lodge | Birchy Lake, Upper St. Paul River | 43.4 | 26.3 |
| 15 | Osprey Lake Lodge | Osprey Lake Lodge | Osprey Lake (Eagle River watershed) | 13.7 | 5.3 |
| 16 | Park Lake Lodge Inc. | Park Lake Lodge | Park Lake | 19.6 | 49.2 |
| 17 | Rifflin' Hitch Lodge Limited | Rifflin' Hitch Lodge | Eagle River | 39 | 39 |
| 18 | Six North Fishing Lodge | Lac Mercier Lodge | Lac Mercier (Kenanu River headwaters) | 21 | 21 |



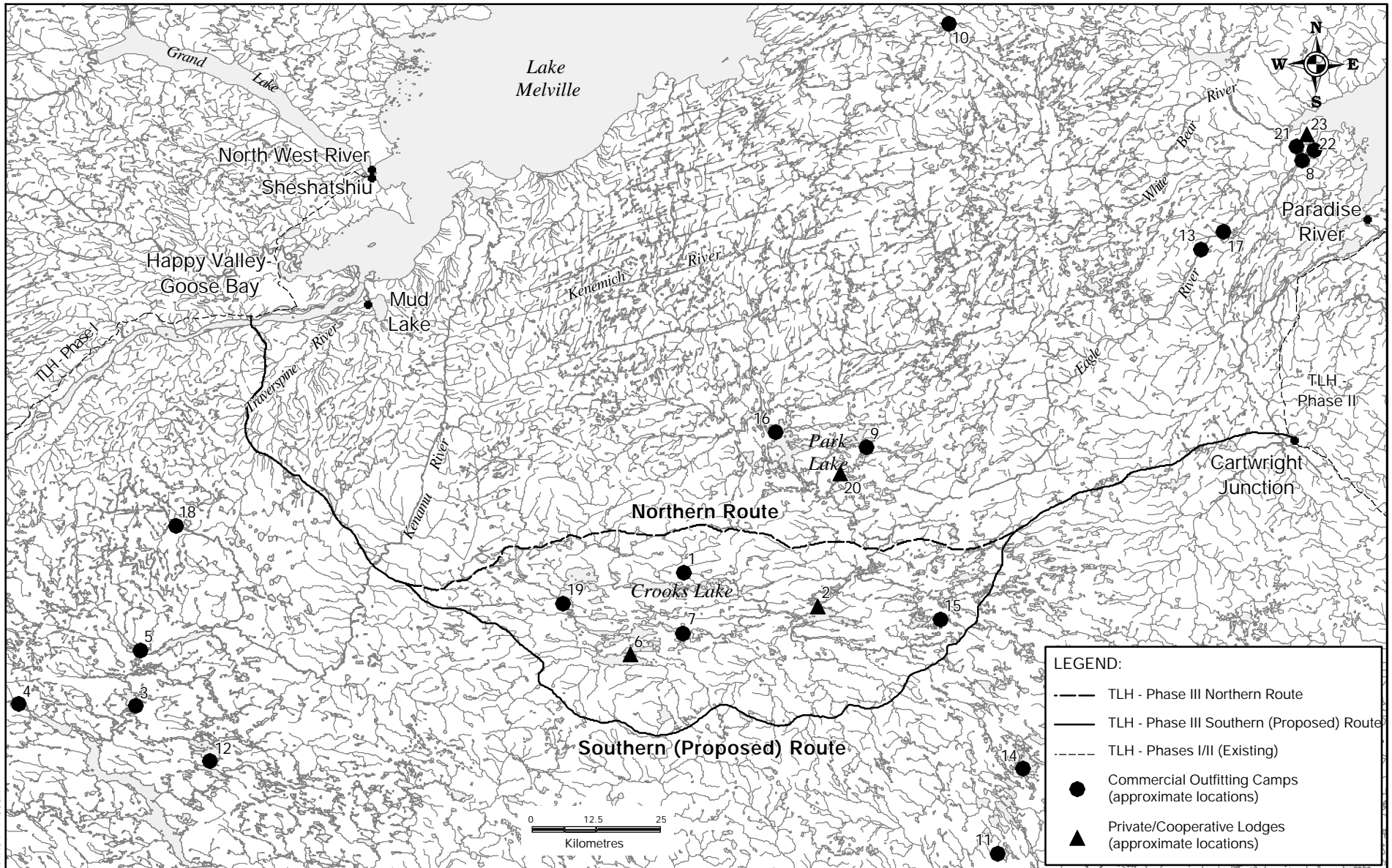
| No.* | Operator | Lodge | Location | Approximate Distance from Northern Route (km) | Approximate Distance from Southern Route (km) |
|------|--------------------------------|-------------------------|---------------------------------------|---|---|
| 19 | Warrick Pike | Tamalik Lodge | Whitey's Pond (Eagle River Watershed) | 11.1 | 11.1 |
| 20 | Joe Smith | Byrne Lake Lodge | Byrne Lake (Eagle River Watershed) | 13.1 | 34.6 |
| 21 | Cloud Nine Salmon Lodge | Cloud Nine Salmon Lodge | Lower Eagle River | 55.0 | 55.0 |
| 22 | Eagle River Outfitters Limited | Spirit Wind Lodge | Lower Eagle River | 58.0 | 58.0 |
| 23 | Eagle River Salmon Club | | Lower Eagle River | 56.0 | 56.0 |

* See Figure 2.1 for approximate camp locations.

Sources: DTCR 2002; T. Kent, pers. comm.; P. Dawe, pers. comm.; personal communications and interviews with outfitters in September-October 2002 and February-March 2004.

This figure and table update Figure 2.2 and Table 2.6 as provided in Chapter 2 of the EIS/CSR for the southern route (i.e., Appendix C of JW/MLP (2003a)).





NFS09308-ES-81.WOR 26MAR04 9:00am

Figure 2.1

Outfitting Camp Locations in Central and Southern Labrador

Comparison of Fishing Experience in Central and Southern Labrador

A summary comparing different aspects of the resident/non-resident angling experience with the lodge-based angling experience is presented as Table 7.54. Descriptors are used to illustrate the magnitude of some factors, as there is little or no statistical data available.

Table 7.54 Comparison of Fishing Experiences in Central and Southern Labrador

| Factor | Resident/Non-Resident Fishing Experience (Not Involving Lodges) | Lodge-based Fishing Experience |
|--------------|--|--|
| Participants | <ul style="list-style-type: none"> Primarily residents There were approximately 23,000 resident and 1,200 non-resident, freshwater, anglers in Labrador in 2000 (not known what proportion of the non-residents stayed at lodges) Number of resident participants reported to be increasing, approximately tripling between 1990 (7,700 anglers) and 2000 (23,000 anglers) | <ul style="list-style-type: none"> Primarily non-residents Few residents, mainly at salmon lodges Estimated annual number of participants in lodge-based fishing in south-central Labrador is 1,475 Lodge operators indicated guest numbers were increasing slightly Current occupancy rate at 60%, maximum occupancy is estimated at 2,500 guests |
| Location | <ul style="list-style-type: none"> Main access by road, near communities Some fly-in access River and lakes <ul style="list-style-type: none"> various lakes accessible from communities in central and southern Labrador Churchill River up to Muskrat Falls lower portion of Traverspine River up to 3 km from river mouth Kenamu River use concentrated near mouth due to river shallowness, number of cabins in this area lower portion of Eagle River, boat access from Cartwright White Bear River and North River, near Paradise River Paradise River use concentrated around mouth up to 30 km upstream | <ul style="list-style-type: none"> Fly-in lodges Some at fly-in cooperative camps Rivers and lakes throughout area <ul style="list-style-type: none"> upper portion of Kenamu River (Lac Mercier) upper Minipi River, including Anne Marie, Minipi and Minonipi lakes Little Minipi River various lakes of the upper Eagle River watershed, including Park Lake, Crooks Lake, No Name Lake, Byrne Lake, Whitey's Pond, Osprey Lake, Igloo Lake Awesome Lake on English River lower portion of Eagle River, boat access from Cartwright White Bear River St. Paul's River Most locations currently inaccessible by road Only area of overlap is lower Eagle River, which is accessible by boat from Cartwright, and there may be fly-in anglers at some point on any of the lakes or rivers (numbers low) |
| Regulation | <ul style="list-style-type: none"> Angling season Non-residents require a guide, in most cases | <ul style="list-style-type: none"> Angling season Non-residents require a guide |
| Season | <ul style="list-style-type: none"> Mainly summer season Some winter ice fishing Lake Melville is key area for ice fishing (smelt, brook trout and rock cod) | <ul style="list-style-type: none"> All summer season No winter activity |
| Fish | <ul style="list-style-type: none"> Primarily brook trout Atlantic salmon where available Some northern pike Some Arctic charr (Minipi) Some ouananiche | <ul style="list-style-type: none"> Primarily brook trout Atlantic salmon where available Some northern pike Some Arctic charr (Minipi) |



| Factor | Resident/Non-Resident Fishing Experience (Not Involving Lodges) | Lodge-based Fishing Experience |
|---|---|---|
| Fishery | <ul style="list-style-type: none"> • Some catch and release • Some bag limit • Trophy and food fishery | <ul style="list-style-type: none"> • Primarily catch and release • Few retained • Primarily trophy fishery |
| Fishing Method | <ul style="list-style-type: none"> • Angling (fly and lure) | <ul style="list-style-type: none"> • Angling (primarily fly) |
| <p>Note: Descriptors are based on interviews, no numeric data are available. Source: JW 2003; JW/IELP 2003; JW/MLP 2003a; interviews with outfitters September-October 2002 and February-March 2004.</p> | | |

Details on the regulatory frameworks governing these fisheries are provided by JW (2003) in the Land and Resource Use Component Study and also in Appendix C of the supplementary addendum prepared by JW/MLP (2004a) for the Tourism and Recreation Component Study.

Both the resident/non-resident and lodge-based fisheries are limited to open seasons, bag limits and retention limits. Non-residents must use a guide under most conditions. It is this aspect that the outfitting industry caters to at the fishing lodges identified in the EIS/CSR (JW/IELP 2003; JW/MLP 2003a) and in JW/MLP (2004a) and JW (2003). Eight of these lodges are located in watersheds that are on the proposed TLH - Phase III routes. Lodge packages provide transportation to isolated locations that provide excellent fishing opportunities, accommodation, amenities, guide services, and other services necessary for a medium- to high-end tourism package. Except where Atlantic salmon are numerous, trophy brook trout are the draw to the lodges. The preservation (i.e., perpetuation) of resident brook trout populations is critical to the continued success of the lodges and all follow a practice of catch and release to minimize removals and mortalities. The lodge clientele is a combination of resident and non-resident anglers, usually with non-resident being the majority. There are four non-commercial lodges or cooperatives located in the Eagle River watershed. These operate mainly for resident anglers and practice mainly catch and release for trophy brook trout.

Section 7.14.8 Environmental Effects Assessment (Additional Information)

The following information is added to Section 7.14.8 (Environmental Effects Assessment - Tourism and Recreation) as presented in Appendix C of the EIS/CSR for the southern route. The information incorporates discussion from the analysis of effects of the highway on outfitting lodges and activity that was presented in Section 7.12.8 (Environmental Effects Assessment – Resource Use and Users). The analysis of effects on tourism and recreation (both construction and operation phases) are amended with the addition of the following discussion:

Section 7.14.8.1 Construction

Potential effects from highway construction on outfitting operations are likely to be similar to those predicted for the northern route, as only five of the outfitting lodges are more distant from the southern route than they were from the northern route. The remainder are either the same distance from the



southern route as they were from the northern route or actually closer to the route. As a result, commercial outfitting operations in the immediate vicinity of the project area may have to adjust their operations during project construction in order to minimize the effects of any disturbance from construction activities (e.g., by having their guests fish in alternate areas during the construction of some highway segments). With the closest outfitting operation being approximately 5 km from the southern route, outfitting lodges in the area will be outside the zone of influence for noise (estimated to be approximately 4 km) and will likely not experience any noise effects from construction. However, fishing activity undertaken at these lodges is usually within 5 to 10 km from the lodge. Therefore, there is potential that construction noise may be heard at fishing locations. DTW will inform tourism operators and other relevant organizations and individuals about the location and timing of construction activities to ensure that any potential conflicts are identified and addressed through appropriate planning.

Section 7.14.8.2 Operation

The sub-section entitled *Recreational Fishing and Outfitters* in Section 7.14.8.2 of the EIS/CSR for the southern route is revised, by the creation of two sub-sections entitled *Recreational Fishing* and *Outfitting Operations*, and separating the discussion. Much of this discussion of the environmental effects of the project on recreational fishing and outfitting operations was previously presented in Section 7.12.8.2 (Environmental Effects Assessment – Resource Use and Users) of the EIS/CSR for the southern route (i.e., Appendix C of JW/MLP (2003a)).

Recreational Fishing

Angling activity will likely increase considerably when the highway is operational, due to improved access to previously remote rivers and waterbodies (Section 7.12.7). This will be a positive effect for the recreational fishery in general, at least in the short-term, as it will provide better angling opportunities throughout the region. The highway will result in an increase in human presence and resource exploitation throughout the area, including lakes and streams along and directly adjacent to the highway route, as well as those further inland through snowmobile and ATV use.

As the watercourses crossed by the southern route, except for the Churchill River, are likely to only be navigable by vessels of the size of canoes or kayaks, the use of many of these waterways to access areas distant from the highway pose limitations on access. The Churchill River is already immediately accessible from the Happy Valley-Goose Bay area and its use is expected to continue. The Eagle River and its tributaries currently receive a high level of use and this is likely to continue, and possibly increase after the highway is operational. However, the southern route crosses the Eagle River watershed far enough upstream to limit access to most of the larger lakes of the area. Similarly, given that the Kenamu, Traverspine and Paradise rivers are currently being used for various resource activities, it is expected that resource use will likely also increase in these watersheds. However, resource users would



likely rely on foot or vehicles, such as ATVs or snowmobiles, to gain access from the highway. In addition, there are a number of lakes in the vicinity of the highway that will become accessible to watercraft users and may facilitate access throughout the watershed.

Recreational fishing on area rivers and lakes is the most likely activity to be subjected to increased participation following completion of the TLH - Phase III regardless of whether the northern or southern route is developed. Current angling activity is concentrated near Happy Valley-Goose Bay and Cartwright. However, improved access to watercourses and bodies that is provided by the highway will provide increased opportunity for recreational fishing activity throughout central and southern Labrador. While this may be viewed as an improvement for the recreational fishing industry, any overfishing (whether legal or illegal) may adversely affect fish resources and, subsequently, the recreational fishing industry. Likewise, any increase in fishing activity that results in overcrowding and congestion on area rivers and lakes, will affect the perceptions that resource users have of the wilderness character of the area and overall quality of the recreational fishing experience. However, the size of the area and potential fishing locations will act to minimize any congestion and help maintain the overall quality of the fishing experience. In addition, the fact that the A13 segment of the southern route is located further south into the headwater areas of the region's major rivers may act to reduce the increase in fishing activity and any associated effects.

The highway will reduce the perceived aesthetic quality of the area through the presence of the highway itself, as well as any noise, dust and litter associated with its use.

The likely increase in fishing effort will necessitate increased enforcement and management. This may include changes to existing regulations and policies, and more fisheries officers (see Section 6.12.8 of the TLH - Phase III EIS/CSR (JW/IELP 2003) for a detailed discussion).

Outfitting Operations

The southern route differs from the northern route only along the central portion of the route, and therefore does not affect the proximity to camps along the lower portion of the Eagle River and in the southwestern portion of the region (i.e., in the Minipi River area). Although the southern route increases the distance from the highway and four camps (Parke Lake, Igloo Lake, Crooks Lake and Upper Eagle River) it increases the proximity to within 15 km for four others, including coming within approximately 5 km of one camp. The proposed southern route comes within approximately 5 km of the closest camp (at Osprey Lake), and within approximately 10 to 15 km of three others (Figure 2.1, Table 2.1). In contrast, the northern route is approximately 8 km from the closest outfitting camp (Crooks Lake), and comes within approximately 10 to 15 km of three others.



Potential effects from highway construction on outfitting operations are likely to be similar to those predicted for the northern route, as only five of the outfitting camps are more distant from the southern route than they were from the northern route. The remainder are either the same distance from the highway route or closer to the route. The potential effects of the highway on outfitting operations relate primarily to the access provided by the highway, and the associated increase in human presence and angling activity in this previously remote area.

As with the northern route, noise, dust, increased human presence and other disturbances can be expected to result from regular maintenance activities and highway use. However, disturbances associated with highway use will be of a short duration, as traffic levels for the highway are expected to be low, and will be concentrated in a localized area. With an estimated 4-km zone of influence for noise, it is not likely that noise associated with regular highway use will be heard at any of the outfitting lodges. However, the fishing locations associated with the operations maybe up to 5 to 10 kms away from the lodges. Therefore, there is potential for noise from highway use to be heard at fishing areas depending on the location of these fishing areas in relation to the highway. The highway itself will not likely be visible from any of the lodges, but its presence may affect the perception of wilderness and aesthetic character of the area and, subsequently, cause lodge guests to reduce their use of the area or to choose other destinations.

The improved access to the area provided by the highway, and associated increase in human presence and fishing activity in this previously remote area, will have implications for the outfitting industry. ATV and snowmobile use will mean that any increase in human presence and resource exploitation will likely not be confined to the immediate vicinity of the highway. A decrease in fish stocks due to overfishing would adversely affect these operators. However, as discussed with respect to fishing activity, the fact that the southern route crosses the upper portion of the watershed rather than the lower portion of the rivers may act to limit effects on salmon populations. Increased human access will also increase the potential for vandalism at these camps.

With the eastern portion of the southern route located further to the south in the Eagle River headwaters and no bridges being required on this section, this may act to limit the amount of increased resource use that may occur on the Eagle River. The fact that navigability of area waterways is possibly limited to travel by small vessels such as canoes and/or kayaks, will also act to limit access from the highway. These factors in turn would limit the amount of competition for the fish resources used by the outfitting operations and reduce the potential for disruption of the wilderness experience and isolation sought by many lodge guests. However, despite the fact that there are regulations and policies governing resource use in the area, illegal harvesting and other activities may occur, which may in turn affect outfitting operations.



In addition, the presence of a provincial highway through the area will reduce the need for non-resident anglers to retain the services of a licenced guide, as non-residents are permitted to fish unaccompanied on unscheduled waters within 800 m of any provincial highway. Highway access will also increase the potential for developing new lodges along the TLH - Phase III route, similar to that which has occurred along the Phase I portion of the TLH between Happy Valley-Goose Bay and Western Labrador, and in the Labrador Straits. An increase in lodge development may cause further crowding on area rivers, resource depletion and competition. While the current freeze on the development of new lodges on Labrador rivers would act to limit the development of new outfitting operations, it would not preclude unlicenced and unregistered operations being established or carried out in the area after the highway is operational.

As noted in the EIS/CSR for the northern route (JW/IELP 2003), for resource management measures to be effective in protecting area resources and limiting activity, increased enforcement resources or new management initiatives may be necessary. The department responsible for managing fish resources will need to review existing policies. Outfitting lodge owners have also noted the importance of ensuring that policies and regulations related to outfitting operations in Labrador (e.g., buffer areas between camps, and outfitter licencing and regulation) are strictly enforced. A national park and/or designation of any of the area rivers as heritage rivers would also bring with it restrictions on resources use activities. The planning processes for both national parks and heritage rivers include opportunities for public input, and both processes would provide further controls on resource use activity in the area. In the absence of a national park, establishing a Special Management Area under the provincial *Lands Act* would be a means implementing controls on resource use and development in the area.

2.9 Comment No. 9 – Tourism Recreation VEC

Comment 9:

Big Game Hunter Surveys and Auto Exit Surveys demonstrate that there are differences by orders of magnitude in tourism expenditures between the two markets. Use the additional information to be supplied for compliance with the Supplementary Deficiency Statements for the Tourism and Recreation and Fish and Fish Habitat Component Study Addenda to provide comparisons of the tourism potential of existing fly in based outfitting operations with the tourism potential of automotive visitors who might displace clients of outfitting operations if those operations are jeopardized by construction and operation of the highway. Also use the additional information to provide an assessment of effects on fish stocks resulting from displacement of the outfitting fishery with a fishery based upon automotive anglers. In addition, use the additional information to compare the employment associated with fly in based fishing lodges and the employment associated with automotive visitors.



Response 9:

The following information is added to Section 7.14.3 (Existing Environment) of the tourism and recreation VEC as presented in Appendix C of the EIS/CSR for the southern route. Also, refer to the response provided for Comment No. 6 in this report for a discussion on the effects of the highway on fish stocks and fishing activity.

Section 7.14.3 Existing Environment (Additional Information)

A summary comparing different aspects of fly-in outfitting lodge and automotive tourism is presented as Table 7.55.

Table 7.55 Comparison of Outfitting Lodge and Automotive Tourism Potential in South-Central Labrador

| Factor | Fly-in Outfitting Lodge Tourism | Automotive Tourism |
|---|---|--|
| Markets | <ul style="list-style-type: none"> • Anglers, primarily non-residents and a few residents • Possibly a few business travelers | <ul style="list-style-type: none"> • Anglers • Adventure tourists (e.g., canoeists, kayakers, hikers, etc.) • Recreational vehicle (RV) tourists • Vacation/pleasure travelers • Visiting friends and relatives • Business travelers |
| Important Factors in Choosing a Destination | <ul style="list-style-type: none"> • Good fishing opportunities • Isolation • Wilderness experience • Lack of angler crowding • Water quality • Lack of pollutants in fish • Natural beauty of area • Size of fish • Catch rates • Quality of service and amenities | <ul style="list-style-type: none"> • Total trip costs • Things to see and do • Cost of travel to destination • Good value for dollar • Affordability of food services • Low crime/safety • Affordability of accommodations • Anglers would also consider the same factors as fly-in lodge guests |
| Activity Participation | <ul style="list-style-type: none"> • Fishing • Not much interest in other activities | <ul style="list-style-type: none"> • Scenic touring • Whale watching and boat tours • Coastal and iceberg viewing • Exploring wilderness areas • Nature viewing • Hiking • Visiting historic sites and museums • Visiting friends and relatives |
| Typical Characteristics of Participants | <ul style="list-style-type: none"> • Male • Few couples • Average guest is 50 years of age or more | <ul style="list-style-type: none"> • Approximately 67% are couples • Approximately 70% are 40 years or older • Majority are university educated • Over 60% have annual household incomes greater than \$50,000, with more than one-third having household incomes of \$70,000 or more |



| Factor | Fly-in Outfitting Lodge Tourism | Automotive Tourism |
|---|---|--|
| Numbers of Participants | <ul style="list-style-type: none"> Estimated annual number of guests at lodges in south-central Labrador is 1,475 Estimated maximum capacity for lodges in south-central Labrador is 2,500 | <ul style="list-style-type: none"> Number of tourists to province in 2003 approximately 400,000 Approximately 140,000 visitors entering province by automobile in 2003, a decrease of 13% over 2002 Proportion of tourists visiting central and southern Labrador is small |
| Origin of Participants in These Sectors | <ul style="list-style-type: none"> Mainly non-residents primarily from northeastern United States Few residents from the island | <ul style="list-style-type: none"> Over 75% from Canada, primarily Ontario and Maritimes Approximately 20% from United States and 3% from other foreign locations Province has large regional tourism market with residents travelling within the province |
| Expenditures | <ul style="list-style-type: none"> Average price for a lodge package is CDN\$3,600, with prices ranging from CDN\$1,400 to CDN\$5,700 Based on a seven-day lodge package, average expenditures per day are CDN\$514 per person (not including air travel and overnighting expenses) Lodge package typically includes airfare from Happy Valley-Goose Bay to lodge and return Air travel to Happy Valley-Goose Bay is an additional expenditure Lodge guests typically spend at least one overnight in Happy Valley-Goose Bay, with an estimated expenditure of \$250 per guest per night | <ul style="list-style-type: none"> Average length of stay for non-resident is 11 nights Average expenditure per person is \$42 per night for non-resident tourists Main expenditures by non-residents are for transportation, accommodations and restaurants Most stay with relatives (approximately 50%), followed by roofed accommodation (approximately 25%) and the remainder in camping or other types of accommodations Expenditures by Newfoundland and Labrador residents on nature-related activities: <ul style="list-style-type: none"> \$120.0 million on outdoor activities in natural areas (daily average \$31) \$21.4 million on wildlife viewing (daily average \$13) \$31.7 million on recreational fishing (daily average \$9) \$41.5 million on wildlife hunting (daily average \$26) \$6.0 million on other nature-related activities \$193.7 million on all nature-related activities combined Main expenditures by Newfoundland and Labrador residents on nature-related activities were for transportation, equipment, food and accommodation Total tourism expenditures in Newfoundland and Labrador in 1996 were \$570 million, with \$319 million from regional tourism (i.e., residents travelling within the province), and \$251 from visitors from Canadian and foreign origins |
| Revenue Generated | <ul style="list-style-type: none"> Estimated \$5 million in combined revenue (from lodge packages) for all lodges in south-central Labrador Estimated maximum annual revenue, based on an estimated maximum capacity of 2,500 guests, is \$8.3 million for all lodges in the area combined | <ul style="list-style-type: none"> Estimated revenue from automotive tourists (assuming 140,000 tourists spending \$42 per day) is \$5.9 million annually for the province Estimated revenue from all 400,000 tourists, based on an average stay of 11 nights and average expenditure of \$42 per night is \$185 million annually |



| Factor | Fly-in Outfitting Lodge Tourism | Automotive Tourism |
|--|--|---|
| | <ul style="list-style-type: none"> Estimated annual contribution of lodges in south-central Labrador to the local economy is \$15 million Estimated maximum contribution of lodges in south-central Labrador to the local economy is \$21 million annually | <ul style="list-style-type: none"> Overall value of tourism industry to the province is \$206 million annually |
| Employment | <ul style="list-style-type: none"> Estimated 130 seasonal employees at lodges in south-central Labrador, with employees coming from various parts of the province Estimated \$1.3 million in salaries and benefits paid to employees annually | <ul style="list-style-type: none"> Overall employment in tourism in province is 68,000, approximately 4% of total employment in province Employment in accommodations sector (hotels, motels, and bed and breakfasts); restaurants; services (e.g., gas stations); interpretation, cultural and heritage facilities and tours; tour companies; transportation services (e.g., air, ground and marine) |
| Source: JW/MLP 2004a; Government of Newfoundland and Labrador 2003; DTCR 2004; 1997; Environment Canada 2000; Barber-Dueck and Kotsovas 2002; interviews with outfitters September-October 2002 and February-March 2004. | | |

2.10 Comment No. 10 – Tourism and Recreation VEC

Comment 10:

While the proponent has encountered no studies on lodge closures as a result of improved access to resources upon which a lodge was based there exists ample anecdotal information about the relationship between improved access and sustainability of resources. The lack of scientific study should not be used to discount that a possible relationship exists. Anecdotal information can provide a logical link, admittedly not scientifically documented, which can be used to form the basis of a professional judgement. The proponent is required to investigate past experience with the effects of improved access on resources which, though perhaps not scientifically defensible as cause and effect, may contribute to making an informed decision as to a relationship between the two. Once this relationship is projected measures should then be proposed to suggest appropriate planning and enforcement, so that the necessary agencies can be alerted to the need for any additional planning initiatives and the need for any additional resources.

Response 10:

The outfitters that were interviewed, without exception, ranked isolation as a critical aspect to the appeal of their particular operations. This was the case even when two or more outfitters were operating at almost the same location (i.e., the mouth of Eagle River). They are convinced that the high value that the clients place on isolation means this attribute is paramount. Any addition to the angling activity on the various lakes must be carefully considered. Some operators feel that the number of guests at the



same lodge may have a limit beyond which the appeal of the location will be diminished. This is all independent of potential effects on the fish resource.

Increased access may result in increased exploitation of the fish resource and result in reduced catch rates or reduced mean size of fish taken. This will also detract from the appeal of the fishing experience for the existing clientele. Either way, a decrease in appeal may quickly translate into a decrease in business. To avoid closure under these circumstances, the current character of the operation must be preserved or the business must be realigned to appeal to a less demanding clientele. The second option may not be viable considering the limitations on diversification of the business (i.e., short angling season, no hunting, low prospects of winter operation).

To maintain the high-end market value of the outfitting operations, the regulatory framework must be enforced and amended to a stricter standard than would otherwise apply. Lodge owners/operators provided a number of suggestions for managing the issues regarding resource use and improved access provided by the TLH – Phase III (see also Appendix C in JW/MLP (2004a)). Suggestions include:

- implement land use zoning that would define areas where development and activities were permitted (e.g., areas for cabin development, fishing activity, canoeing and wilderness camping);
- develop watershed management plans that define management measures, permitted development, and acceptable practices and activities;
- create a watershed management or co-management board;
- establish the national park and include all of the Eagle River watershed in the park; this would protect the area on the north side of the highway;
- designate the Eagle River a heritage river;
- develop conservation measures to protect the area;
- keep the highway to the south, stay away from the Eagle River;
- route the highway even further south than the route proposed.
- design/install watercourse crossing structures to ensure that they do not constrict the water flow;
- enforce existing laws and regulations, and any new measures put in place;
- increase number of enforcement staff;
- create a physical barrier between the resource and the highway;
- control of vehicle access from the new highway;
- develop a policy on cabins that prohibits cabin development along the highway;
- prohibit roadside and gravel pit camping;
- ban the use of ATVs in the area;
- restrict or limit snowmobile use in the area;
- revise the fishing regulations for the area to include catch limits for the rivers and lakes, a ban on ice-fishing, restrictions on lake fishing, prohibit the killing of large fish, restrict fishing to catch and



release only in the area, and restrict the number of rod days on various sections of the river to protect stocks;

- review and update regulations on catch and release practices;
- establish a no fishing policy during construction;
- maintain the freeze on new lodge development on the rivers;
- maintain the 8-km protective zone around the outfitting lodges;
- only permit new outfitting lodges in new areas and ensure that they adhere to the same high standards as those of existing lodges;
- revise the guiding regulations; and
- government needs to support protection of outfitters.

New angling regulations are under consideration by DFO, as they have indicated that individual species management may be implemented. Additional rivers may be scheduled for salmon angling. Special trout management plans were instituted on the Phase II portion of the TLH that included reduced bag and possession limits and a reduced open season. Public education about appropriate resource use practices may also be considered.

Any regulatory changes and associated enforcement can be phased in over the next few years as the TLH - Phase III is not projected to be completed before 2010.

2.11 Comment No. 11 - Suggested Resource Management Approach

Comment 11:

The EIS Addendum contains a proposition that resource management agencies should consider a cooperative management or regional land use planning approach. Provide past experience on how such an approach might be developed, what might be included in the approach, who would be responsible for management and planning, what role the proponent would be expected to assume if such an approach were to be implemented and how the success of the approach could be evaluated.

Response 11:

Details on a suggested approach for managing cumulative environmental effects associated with the TLH - Phase III are provided in Appendix C.



2.12 Comment No. 12 - Labrador Innu Land Use

Comment 12:

The Deficiency Statement required conclusions and recommendations of the Labrador Innu Land Use Component Study to be incorporated into the effects assessment to provide an integrated and comprehensive evaluation of effects and allow further incorporation of conclusions and findings into the Environmental Protection Plans. This has not been done and as a result there are exclusions of discussion or consideration of mitigation of impacts on Innu land use within the proponent's proposed mitigation. This is also the case in the proponent's monitoring and follow-up commitments and the conclusions with respect to residual environmental effects. Review the effects assessment and incorporate the conclusions and recommendation of the Labrador Innu Land Use Component Study to provide an integrated environmental effects assessment.

Response 12:

As was noted by JW/MLP (2003a) in the addendum prepared for the EIS/CSR for the proposed TLH – Phase III northern route, Armitage and Stopp (2003) conducted the study on Innu land and resource use in the vicinity of the TLH - Phase III. This component study also included an analysis of potential environmental effects on Innu land and resource use due to the project. The study was accepted as satisfactory with no further requirements for follow-up work or study. The material presented in the study was noted as being applicable to both the northern and southern routes proposed for the TLH – Phase III.

The addendum to the EIS/CSR for the northern route was amended to incorporate the discussion of environmental effects on Innu land and resource use into a separate VEC section of Chapter 6. The incorporation of the Armitage and Stopp (2003) effects analysis into the EIS/CSR also meant that the summary of residual environmental effects as presented in Section 7.3 of the EIS/CSR for the northern route was also amended. The conclusions and recommendations presented in Chapter 6 of the Armitage and Stopp (2003) report were provided in Appendix D of the addendum to the EIS/CSR to the northern route.

The Armitage and Stopp (2003) conclusions and recommendations indicate that the overall finding with respect to Innu land and resource use patterns is that there will be significant changes due to increased access and land use. The final results of the EIS/CSR for the northern route were changed to indicate that, if the northern route were used, the effects of highway construction on Innu land and resource use would be minor and operation would have a significant effect on Innu land and resource use. However, it is noted that the significance of effects for operation is reduced when considered in the context of a future land claim agreement for the area and further reduced when considered in light of a future national



park in the area. As well, in correspondence dated March 26, 2003 from Innu Nation to the Minister of Environment, Innu Nation indicated a preference for the proposed southern route citing a number of concerns with the northern route (Innu Nation 2003).

The EIS/CSR for the southern route (as presented in Appendix C of the addendum) is also amended to incorporate the discussion of environmental effects on Innu land and resource use into a separate VEC section (i.e., Section 7.12, with the current VEC Sections 7.12 to 7.16 being renumbered to Sections 7.13 to 7.17). The incorporation of the Armitage and Stopp (2003) effects analysis into the EIS/CSR for the southern route also means that the summary of residual environmental effects as presented in Table 8.3 of Section 8.4 of the EIS/CSR is also amended.

Table 8.3 of the EIS/CSR for the southern route (in Appendix C of JW/MLP 2003a) is amended by adding the following row after the row summarizing the residual effects on *Historic Resources*:

Table 8.3 Summary of Residual Environmental Effects

| VEC | Construction | Operation | Accidental Events |
|----------------------------|-------------------------|---|---------------------------------------|
| Innu Land and Resource Use | Not Significant (Minor) | Not Significant to Significant (Minor to Major) | Not Significant (Negligible to Minor) |

The following paragraph is added after Paragraph No. 3 on Page 419 in Section 8.4 of the southern route EIS/CSR:

The residual effects of highway construction on Innu land and resource use are assessed as minor. Armitage and Stopp (Page iv, 2003) rated: *the effects of the actual construction of the highway as minor because the level of hunting and fishing by construction personnel is not likely to affect the numbers of wildlife and fish harvested by the Innu. Existing government laws and regulations, and an environmental protection plan, should keep any construction-related effects to a minimum.* During highway operation, the residual effects are assessed as being minor to major for Innu land and resource use. Armitage and Stopp (Page iv, 2003) indicate that this range in the significance rating is due to: *the uncertainty concerning the extent to which the federal and provincial governments would implement all of the legislative mechanisms in their areas of jurisdiction to prevent over-harvesting and reduce or eliminate other potential effects on Innu land use.* Armitage and Stopp (2003) note that if legislative mechanisms are applied consistently by the appropriate government parties then the residual effects for highway operation could tend towards being minor. They also note that the significance of residual effects during operation would also be reduced if the project area was included in an Innu land claim agreement and/or a national park was established for the area. Without consistent application of legislative mechanisms, an Innu land claim or a



national park, the effects could be moderate to major. The residual effects for accidental events were rated not significant (negligible to minor).

Corresponding to the preceding amendments, Table 8.1 of Section 8.1 of the EIS/CSR for the southern route (in Appendix C of JW/MLP 2003a) is also amended by adding the following row after the row outlining the VEC-specific mitigation measures for *Historic Resources*. The mitigative measures listed incorporate the recommendations from Armitage and Stopp (2003). Appendix D provides the actual list of recommendations from Armitage and Stopp (2003), with DTW’s corresponding responses noted.

Table 8.1 VEC-Specific Mitigation Measures

| VEC | Mitigative Measures |
|----------------------------|--|
| Innu Land and Resource Use | <ul style="list-style-type: none"> • DTW has considered route realignments and has adopted the southern route as the preferred routing for the TLH – Phase III. • DTW will meet with Innu Nation representatives in advance of each construction season to facilitate a suitable liaison and develop appropriate mitigation measures. • DTW will include in the EPP a requirement for education about respecting Innu presence on the Eagle River plateau and their privacy, as well as direction to not interfere with Innu fishing and hunting activities. • DTW recognizes the need for proper implementation of the existing regulatory framework and adequate enforcement, and encourages the following agencies to adopt a similar position: DFO; Environment Canada (including Environmental Protection and CWS); Parks Canada; Department of Environment and Conservation (including Inland Fish and Wildlife Division, Parks and Natural Areas Division, Lands Division and Water Resources Management Division); Department of Natural Resources; Department of Municipal and Provincial Affairs; and Department of Government Services. • DTW acknowledges the recommendation that the entire Kenamu River should be a scheduled salmon river and that a monitoring program should be developed to assess harvesting effort and population levels, and encourages DFO to adopt a similar position that involves a partnership with Innu Nation. • DTW acknowledges the recommendation that lakes in the Eagle River watershed should be given serious consideration to reduce pressure on fish stocks due to ice-fishing, and encourages DFO to adopt a similar position. • DTW acknowledges the recommendation that a comprehensive monitoring and enforcement presence for migratory waterfowl populations and habitat in the Eagle River watershed should be established, and encourages CWS, relevant provincial resource management agencies to adopt a similar position and involve Innu Nation. • DTW acknowledges the recommendation that a good monitoring program involving Innu Nation and government departments and agencies responsible for managing natural resources should be established, and encourages DFO, Inland Fish and Wildlife Division and CWS to adopt a similar position. • DTW acknowledges the recommendation that government departments and agencies responsible for managing wildlife and fish resources should review their monitoring and enforcement capabilities and take the necessary steps to address any deficiencies, and encourages DFO, CWS, Inland Fish and Wildlife Division and Department of Natural Resources to adopt a similar position. • DTW acknowledges the recommendation for use of Innu place names on the Eagle River plateau and consideration of giving the Phase III portion of the TLH an Innu name. • Note that the mitigative measures identified for the Resource Use and Users VEC also apply to the Innu Land and Resource Use VEC. |



Corresponding to the preceding amendments, Table 8.2 of Section 8.2 of the EIS/CSR for the southern route (in Appendix C of JW/MLP 2003a) is also amended by adding the following row after the row outlining the VEC-specific monitoring for *Historic Resources*. The mitigative measures listed incorporate the recommendations from Armitage and Stopp (2003).

Table 8.2 VEC-Specific Monitoring and Follow-up

| VEC | Monitoring |
|----------------------------|--|
| Innu Land and Resource Use | <ul style="list-style-type: none"> • DTW acknowledges the recommendation that the entire Kenamu River should be a scheduled salmon river and that a monitoring program should be developed to assess harvesting effort and population levels, and encourages DFO to adopt a similar position that involves a partnership with Innu Nation. • DTW acknowledges the recommendation that a comprehensive monitoring and enforcement presence for migratory waterfowl populations and habitat in the Eagle River watershed should be established, and encourages CWS, relevant provincial resource management agencies to adopt a similar position and involve Innu Nation. • DTW acknowledges the recommendation that a good monitoring program involving Innu Nation and government departments and agencies responsible for managing natural resources should be established, and encourages DFO, Inland Fish and Wildlife Division and CWS to adopt a similar position. • Note that the monitoring and follow-up identified for the Resource Use and Users VEC also apply to the Innu Land and Resource Use VEC. |

2.13 Comment No. 13 – Proposed Southern Route

Comment 13:

The proponent’s discussion of Innu concerns with the alternative route is described as incomplete and inaccurate. The Addendum acknowledges the (outfitter’s) alternative route was not part of the consultations conducted by Innu Nation in 1992 as a consequence of the Process Agreement between Innu Nation and the Department of Works, Services and Transportation. The EIS does not acknowledge that Innu Nation has subsequently expressed support for the alternate route indicating that, of the alternatives presented to the community during the 2002 consultations, the community members identified what became the preferred route as the route believed to have the least impact on Innu land use. It is suggested, however, that the proponent revised the routing of the highway from that previously agreed during Innu consultations and the alignment now proposed in the vicinity of Uinikush lake would not meet the objective of ensuring the highway does not provide access to major lake systems used by Innu. Innu Nation has made representation that the preferred route is not acceptable and that the alternative route appears to offer significant advantages for protecting Innu land use. They also suggested that the proponent has misconstrued Innu concerns with “headwaters” and that Innu Nation’s concern is for the road to be designed from the outset to maximize opportunities for protection of ecological and cultural integrity of the region. Consult with Innu Nation to confirm their views on the preferred route as described in the EIS and the alternate route described in the EIS Addendum. Clarify how the EIS and its Addendum’s discussion of Innu concerns with the alternate route could be described



as incomplete and inaccurate. Clarify Innu concerns with “headwaters” as those concerns may affect routing of the alternative route.

Response 13:

Section 2.2.4.6 of the EIS/CSR for the southern route is renamed *Route Proposed by Outfitters (Southern Route)* and the text in the sub-section is replaced with the following:

This alternative route extends south of A10 as shown on Figure 2.1 in JW/MLP (2003a). The southern route incorporates western and eastern portions of the northern route (previously referenced as the preferred route) and the southern most alternative route segment labeled A13 on Figure 2.2. This route was identified following discussions with members of the Newfoundland and Labrador Outfitters Association.

At approximately 280 km in length, this proposed route is approximately 30 km longer than the northern route (A1, A4 and A5). This translates into approximately \$9.0 million (\$300,000 per km) in additional construction costs and additional annual maintenance costs of approximately \$137,500 (\$5,000 per km annually). However, a cost savings of approximately \$1.5 million would be realized through the elimination of the bridge on the South Branch of the Eagle River. This would reduce the additional construction costs for this route to approximately \$7.5 million, but an additional year would be added to the construction schedule. Additional costs would apply for maintaining the marine ferry service for an additional year (currently estimated at \$4.5 million annually). There will also be additional costs for users of the highway.

Innu Nation, in correspondence dated March 26, 2003 to the Minister of Environment, indicated support for this southern route and cited a number of concerns with the northern route as defined by the A1, A4 and A5 segments (Innu Nation 2003).

Following direction from the Minister of Environment in April 2003, the southern route as a possible routing for the TLH - Phase III was subjected to more detailed study. This EIS/CSR presents the results of the environmental assessment on the southern route.

The southern route is now the route preferred by DTW for the TLH between Cartwright Junction and Happy Valley-Goose Bay.



2.14 Comment No. 14 – Innu Land and Resource Use

Comment 14:

The EIS assessment of impacts on resource use and users is described as minor (not significant) and appears to display some inconsistency with the Labrador Innu Land Use Component Study which assesses those impacts as significant (minor to major) depending on the adequacy of mitigation measures. Review the effects assessment and incorporate the conclusions and recommendations of the Labrador Innu Land Use Component Study to provide an integrated environmental effects assessment on resource use and users.

Response 14:

The response to Comment No. 12 elaborates on the incorporation of the details, of the results of the environmental effects assessment of the proposed TLH - Phase III on Innu land and resource use, into the EIS/CSR for the southern route that was prepared by JW/MLP (2003a). As indicated, the environmental assessment of the effects of the TLH – Phase III on Innu land and resource use are incorporated into a separate VEC section (i.e., what is now Section 7.12 of the document). The same approach was used for the presentation of the two VECs in the EIS/CSR for the northern route, as presented in JW/IELP (2003) and amended by JW/MLP (2003a).

While the two VECs deal with aspects of land and resource use, both have addressed specific components of the subject. The Innu land and resource use VEC, as prepared by Armitage and Stopp (2003), deals specifically with Innu land and resource use activities and is based on a substantial amount of detailed information that was not available for consideration in the general VEC on resource use and users. In addition, the general VEC on resource use and users included consideration of a large number of resource user groups and their activities, including: Settler or Métis land use; municipal/community land use; waterway use; hunting, trapping and fishing; outfitting operations; parks and special areas; cabins, trails and recreational areas; forestry operations; mineral exploration and quarries; hydro power development; and military activities. For many of these resource interests, the proposed highway development was considered to be a positive factor in any future resource use.

With respect to the significance ratings, the effects of the proposed TLH – Phase III were determined to be minor (not significant) during construction for both VECs (Armitage and Stopp 2003; JW/MLP 2003a). See the response to Comment No. 12 for details on the Armitage and Stopp (2003) decision on this matter.

During highway operation, the residual effects of the proposed highway development on Innu land and resource use were assessed as being minor (not significant) to major (significant). Armitage and Stopp



(2003) indicated that the range in the significance rating was due to uncertainty about the extent of implementation of legislative measures that would be undertaken by government departments and agencies. Armitage and Stopp (2003) also note that if legislative mechanisms are applied consistently by the appropriate government parties, then the residual effects for highway operation could tend towards being minor. They also note that the significance of residual effects during operation would also be reduced if the project area was included in an Innu land claim agreement and/or a national park was established for the area. Without consistent application of legislative mechanisms, an Innu land claim or a national park, the effects could tend toward the moderate to major side of the spectrum.

In contrast, the environmental effects assessment of resource use and users conducted by JW/MLP (2003a) determined that operation of the proposed highway development would have a minor (not significant) residual effect on resource use and users. However, it appears that there was a difference in the methodology used for the two assessments conducted by Armitage and Stopp (2003) and JW/MLP (2003a). As a result, the differences in approach to analyzing the two VECs does not permit the provision of one consolidated significance rating for the operation phase.

In the effects assessment of resource use and users, JW/MLP (2003a) conducted the analysis based on the existing regulatory framework that is currently in place at both the provincial and federal government levels. This approach contrasts with that followed by Armitage and Stopp (2003). Details on the aspects of this regulatory framework as it applies to various land and resource use activities are provided in the Land and Resource Use Component Study prepared by JW (2003). As noted previously, the analysis of general resource use and users by JW/MLP (2003a) addressed a variety of resource users within the one category, rather than focusing on one resource user group as was done by Armitage and Stopp (2003).

JW/MLP (2003a) considered the interactions between induced activities within the cumulative effects assessment, while the effects assessment for the same VEC focused on interactions between the proposed highway and the activities. In contrast, Armitage and Stopp (2003) considered induced resource use activities within the environmental effects assessment for the VEC (i.e., Innu land and resource within the use), rather in the cumulative effects assessment.

The cumulative effects analysis conducted by JW/MLP (2003a) considered the effects of the various resource use activities when carried out in combination with each other and the highway development. JW/MLP (2003a) determined that there would not likely be significant adverse cumulative environmental effects, provided that management and planning processes and related enforcement measures were properly applied. Consideration was also given to the fact that resource management, planning and enforcement measures may not be properly applied. In this event, it was noted that uncontrolled activities may result and that additional action may be required on the part of relevant departments and agencies.



Armitage and Stopp (2003) determined that the residual effects on Innu land and resource use due to any accidental events associated with the proposed development would be negligible to minor (not significant). In contrast, JW/MLP (2003a) in the environmental effects assessment for the general resource use and users VEC determined that residual effects associated with any accidental events would be minor (not significant) to major (significant). The minor to major rating was based on the fact that the magnitude and geographic extent of an accidental event was unknown and it could take several generations for established activities to return to pre-project levels. Again, the differences in approach to analyzing the two VECs does not permit the provision of one consolidated significance rating for any accidental events.

2.15 Comment No. 15 – Aboriginal Knowledge

Comment 15:

Tallyman observations are based on extensive observation and expertise and the proponent's characterization of those observations as anecdotal information and opinion is disrespectful and dismissive of aboriginal knowledge.

Response 15:

The reference to observations by tallymen is noted as being an error in understanding of information gathered during the environmental assessment. There was never an intent to disrespect or disregard aboriginal knowledge, only to consider it equivalently with other information sources.



3.0 RESPONSE TO FEDERAL COMMENTS

3.1 Response to Department of Fisheries and Oceans Comments

3.1.1 Department of Fisheries and Oceans Position Statement on EIS/CSR

The following statement was provided by DFO:

DFO has previously indicated that habitat information, basic hydrologic and hydraulic information, watercourse crossing structural design parameters, as well as precise crossing locations must be provided to DFO as soon as the information becomes available, such that DFO can adequately determine the potential for harmful alteration, disruption or destruction of fish habitat (HADD) at crossing locations, on a case-by-case basis. It is essential that this information be provided well in advance of construction to allow DFO adequate time for review and for DTW to satisfactorily address any concerns the Department may have. If DFO determines that a HADD will likely result, DTW must provide a precise quantification of the habitat; DFO will determine whether the HADD should be authorized and if so, specify conditions under which it may proceed (i.e., appropriate mitigations, fish habitat compensation, etc.). It is important to note that issuance of a Section 35(2) Fisheries Act authorization cannot occur until a fish habitat compensation agreement between the proponent and DFO is finalized.

Given the time needed for these steps to take place, it is strongly recommended, that in order to avoid unnecessary project delays, DTW should provide site-specific details for each crossing location as soon as possible, to allow DFO adequate opportunity to determine the potential for a HADD of fish habitat and the requirement for the issuance of a Fisheries Act Authorization, identify areas of potential concern, address possibilities of re-design or re-location of crossings, if warranted and initiate discussions regarding mitigations. DFO and DTW staff should meet to clarify exactly what information is required by DFO, prior to any site specific details being submitted.

Under the EIS/CSR Guidelines, watersheds with an area of less than 2 km² were exempt from survey. It is important to note however that some of these areas could come from groundwater sources, which can be very important for seasonal temperature refugia and as spawning sites, especially for Canadian Shield brook trout populations. It is recommended that basic water quality measurements (conductivity and temperature) be conducted at 20% of the crossings considered to have a watershed drainage area less than 2 km² above the crossing, to determine groundwater presence/absence. This 20% sample should be representative of all habitat types and watersheds within the project area. This is particularly important given that the watercourse crossings for the southern route lie further upstream, and are therefore comparatively smaller in upstream basin areas and flows than those for the northern route.



Regarding the need for increased management measures to address potential effects on fishery resources, DFO recognizes that new management approaches will be required to address the issues arising from Phase III of the TLH. A regulatory amendment allowing individual species management (in contrast to the current multi-species approach) is anticipated to be in place in 2005, and will be a key component of DFO's management strategy for this area. DFO will soon begin consultation with user groups, including aboriginal groups, in the development of its new 5 year management plan.

3.1.2 DFO General Comments

3.1.2.1 Comment No. 16 - Labrador Innu Land Use

Comment 16:

The federal EA must consider changes or effects that the project may cause in respect to the current use of lands and resources for traditional purposes by aboriginal groups. This information has been captured in the Innu Land Use Component Study. The EIS/CSR Addendum however, fails to integrate its findings and it remains unclear whether DTW plans to adopt the recommendations provided. The EIS/CSR Addendum must fully integrate the findings of the Innu Land Use Component Study, and similarly, all other component studies into the conclusions of the EIS/CSR Addendum.

Response 16

Refer to the response provided for Comment No. 12 in Section 2.12 of this report.

3.1.2.2 Comment No. 17 - Change in Route Selection

Comment 17:

The EIS/CSR Addendum must clearly reflect the change in route selection. It is suggested that the EIS/CSR Addendum include: an overarching statement documenting the Outfitter's (southern) route as the selected route; justification for this choice (i.e., summary of public comments brought forward throughout the EA process); a map of the southern route; and clarification correcting all reference to the northern route as being the proponent's 'preferred' route.

Response 17:

A statement addressing this comment was provided in Section 1.3 of this report. The southern route is now the route preferred by DTW for the TLH between Cartwright Junction and Happy Valley-Goose Bay.



3.1.2.3 Comment No. 18 - Additional Waterfowl Information

Comment 18:

For the purposes of the federal review, additional information was required in determining the adequacy of the Waterfowl Component Study Addendum. Two submissions were provided to Environment Canada for review, and these two new submissions should be included within the EIS/CSR Addendum.

Response 18:

Three separate requests for additional manipulation of survey data were received from Environment Canada. Refer to Appendix E for the three additional submissions provided to Environment Canada.

3.1.3 DFO Specific Comments - Adequacy

3.1.3.1 Comment No. 19 – Churchill River Crossing

Comment 19:

Response 2 (Part I Comments) is inadequate. The proponent's decision to revise the classification of the main stem Churchill River crossing location to Type IV habitat does not preclude DFO's requirement for quantitative site-specific habitat information. Type IV habitat can be critical for many non-salmonid species, including northern pike, longnose sucker, white sucker, burbot and American eel resident in the study area. As such, Type IV habitat that is harmfully altered, disrupted or destroyed will be considered in DFO's HADD decision making process. See also DFO's comments on the Churchill River crossing in DFO's December 31, 2003 letter (Kuehnemund to Kaufhold) regarding the Fish and Fish Habitat Component Study Addendum (Attachment, Comment 8, p.2).

Response 19:

The following is stated in the environmental assessment of construction of the TLH – Phase III:

The permanent instream structures will include all culverts and bridges structures, where abutments are in the stream or pilings are placed for the three multi-span structures. These are not anticipated to cause destruction of productive fish habitat. In addition to these structures, there will be a partial causeway on the Churchill River, which will have a footprint of 25,000 m². The existing foundation at the location of the proposed causeway is predominantly sand substrate. This substrate is not the most suitable habitat for spawning or rearing for any of the 20 species of fish reported in the lower Churchill



River by Anderson (1985), particularly as most of the footprint area extends out into the river. The causeway will be constructed of clean rockfill with armour stone to protect the slopes from erosion. This texture will provide habitat and protection for some fish species (Section 7.5.8.1 JW/MLP 2003a).

The habitat at the crossing location was described by JW/MLP (2003b) as: *...the geotechnical evaluations of the proposed crossing location determined that the substrate is sand across the entire wetted width of the Churchill River (P. Deering, pers. comm.). Based on the substrate, the area at the crossing is Type IV habitat, with depths varying from one to nearly four metres.*

With regard to the partial causeway in the Churchill River, the following additional information is provided to assist in evaluating fish habitat at the crossing location. Unconsolidated sand extends from shore to shore at the location of the proposed bridge/causeway (i.e., Black Rock). There is no bedrock, boulder, cobble, gravel, no visible mud or fines, and no aquatic vegetation (B. Power, pers. comm.). Except for the occasional flotsam (i.e., large woody debris), there is no instream cover. There is also no overhang vegetation or canopy cover for this wide section of the Churchill River (Figure 3.1).



Figure 3.1 View of Churchill River in the area of the Proposed Causeway

The species that are reported in this broad region of the Churchill River include Atlantic salmon, brook trout, Arctic charr, northern pike, longnose sucker, white sucker, burbot, and American eel. The habitat preferences of these species are summarized in Table 3.1.



Table 3.1 Summary of Fish Species, Life History Preferences in Churchill River

| Species, Life Stage and Preferences | Suitability of Habitat at Causeway Location |
|--|--|
| <p>American eel</p> <ul style="list-style-type: none"> • Spawning: marine • Young-of-the-year: marine • Juvenile: marine, migrating to freshwater, great distances upstream • Habitat: active at night, prefer muddy bottom, hibernate in mud • Migration: some migrate in and out of estuaries • Distribution: reported in Churchill River, no recorded catches | <p>None None Migratory Poor to none Unobstructed Rare</p> |
| <p>Atlantic salmon</p> <ul style="list-style-type: none"> • Spawning: in gravel and cobble in flowing water – Fall spawners, eggs overwinter, fry emerge in spring • Young-of-the-year: emerge to stay in substrate • Juvenile: textured substrate, prefer cover • Habitat: textured substrate, overhang banks, prefer cover • Migration: major migrations upstream and downstream • Distribution: anadromous only to Muskrat Falls | <p>None None None None Unobstructed Seasonally common</p> |
| <p>Brook trout</p> <ul style="list-style-type: none"> • Spawning: in gravel and cobble in flowing water – Fall spawners, eggs overwinter, fry emerge in spring • Young-of-the-year: emerge to stay in substrate • Juvenile: textured substrate, prefer cover • Habitat: textured substrate, overhang banks, prefer cover • Migration: major migrations upstream and downstream • Distribution: anadromous only to Muskrat Falls – Common in streams and tributaries | <p>None None None None Unobstructed Seasonal in main stem Common in tributaries</p> |
| <p>Burbot</p> <ul style="list-style-type: none"> • Spawning: on clean sand, gravel, cobble, rubble – lakes and rivers – Spawn January to March, incubate 3-4 months • Eggs broadcast above bottom, demersal and settle into textured substrate • Young-of-the-year: larvae pelagic, benthic in early summer • Prefer littoral regions with gravel, cobble, rubble, mainly active at night • Juvenile: same as young-of-the-year • Habitat: prefer cover (logs, vegetation, undercut banks, overhead cover) • Distribution: deeper areas of lakes and streams, throughout watershed | <p>Poor Poor None None None Uncommon</p> |
| <p>Longnose sucker</p> <ul style="list-style-type: none"> • Spawning: riffle areas over gravel and cobble mainly in streams (and lakes) – Spawn after ice-out, eggs adhesive, incubation 1-2 weeks, • Young-of-the-year: remain in gravel, emerge and drift downstream to lakes – Seek cover in vegetation • Juvenile: similar to young-of-the-year • Habitat: lake bottoms and tributary streams • Migration: lake dwelling adults to streams for spawning • Distribution: common in lakes and streams throughout watershed | <p>None None None Seasonally common</p> |
| <p>Northern pike</p> <ul style="list-style-type: none"> • Spawning: on vegetation in heavily vegetated, slow moving water – Prefer live or decaying vegetation, shallowness, no current, no wind – Spawn in April-May, eggs adhesive, emerge in 2 weeks • Young-of-the-year: in vegetation for several weeks • Juvenile: in vegetation, increase depth range as they grow • Habitat: slow moving water with vegetation present • Migration: seasonal depth preferences • Distribution: widespread in suitable habitat – In vegetated areas of river and tributaries | <p>None None None None None Uncommon in main stem Common in tributaries</p> |



| Species, Life Stage and Preferences | Suitability of Habitat at Causeway Location |
|--|--|
| White sucker <ul style="list-style-type: none"> • Spawning: in gravel riffle areas as well as margins of rapids and lakes <ul style="list-style-type: none"> – Spawn in June, eggs adhesive, • Young-of-the-year: begin lake-ward migration at 1 month <ul style="list-style-type: none"> – Move to deep water in lakes • Juvenile: seek cover under logs, in shade • Habitat: mainly lake except for spawning • Migration: in and out of lakes • Distribution: common throughout watershed | <p style="text-align: center;">None</p> <p style="text-align: center;">None</p> <p style="text-align: center;">None</p> <p style="text-align: center;">Poor</p> <p style="text-align: center;">Seasonally common</p> |
| Sources: Anderson 1985; Bradbury et al. 1999; Beak 1980; L. LeDrew, pers. comm. | |

It can be seen from the habitat preferences of the various species that the area of the proposed causeway represents very poorly favoured habitat or habitat that is totally unsuitable. While the lacustrine habitat preference tables in Bradbury et al. (1999) indicate a suitability of this habitat for some species, the suitability is reduced when considering the lack of cover (instream and overhead). Should there be some poorly understood preference and potential use of the habitat in this area, the available conditions are certainly not limiting. The sand substrate is a vast, rather homogeneous expanse with uniform character. The removal of 2.5 ha of sandy substrate is unlikely to affect any fish populations based on available habitat.

The construction of the causeway will create approximately 1,000 m of new shoreline that will be covered with armour stone (and possibly smaller material). This coarse substrate will provide potential habitat for fish spawning, rearing and feeding. The use of this habitat will depend on what species are present to exploit the opportunity. The downstream side of the causeway will be protected from ice scour, which may provide additional habitat opportunities for the species present in the area.

Over the years, fish sampling programs in the main stem of Churchill River have mainly relied on gillnets, which take larger/adult fish rather than smaller species or juvenile fish. Surveys in this area have been reported by Anderson (1985) and more recently baseline work for the Churchill River Power Project (L. LeDrew, pers. comm). Species that were taken in the main stem of the river, between Happy Valley-Goose Bay and Muskrat Falls included Atlantic salmon, brook trout, lake whitefish, round whitefish, burbot, longnose sucker, and white sucker. Other species are present but mainly distributed in the tributaries and smaller streams, which function as nursery areas.

Local fishing activity in the area of the proposed causeway targets the spring salmon run, a few sea trout, whitefish, longnose sucker and white sucker (R. Kemuksigak, pers. comm.; J. Goudie, pers. comm.). American eel have not been seen on the river, one sighting (carcass) has been reported in the Goose Bay Stillwater area (J. Goudie, pers. comm.). Burbot are not fished, and northern pike occur further



upstream in the area of Mackenzie River and in the tributary streams (R. Kemuksigak, pers. comm.; J. Goudie, pers. comm.).

Several of the species in the lower Churchill River exhibit pronounced seasonal migrations that are critical to their life history. Atlantic salmon, brook trout, Arctic charr, and American eel all migrate within the river in fulfilment of their anadromous and catadromous lifestyles. Less pronounced migrations are demonstrated by longnose sucker and white sucker, as described in Table 3.1. Whitefish from Lake Melville also migrate into Churchill River (R. Kemuksigak, pers. comm.). In the past, smelt have been seen to run to the intake of a pumping station that used to operate upstream of Happy Valley-Goose Bay (J. Goudie, pers. comm.).

To facilitate continued river migrations, the hydraulic character of the flow under the bridge span must not be an obstruction to migration. The span will total 320 m in width and will be located over the deeper portion of Churchill River. This will channel river flows and may result in scour action on the sandy substrate. Scour will deepen (i.e., enlarge) the channel, which will result in a lower mean velocity. The resulting flows are not anticipated to impede fish migration, particularly since the upstream migration is by adults.

3.1.3.2 Comment No. 20 – Selection Criteria for Crossing Structures

Comment 20:

Response 3 (Part I Comments) is inadequate. It is stated that Section 2.4.4 provided a detailed discussion of the “design criteria and methodologies” for determining appropriate crossing structures - it does not. There is no discussion re the criteria as to when arch culverts, circular culverts, box culverts, bridges etc. will be used. The only criteria presented, is for culverts less or greater than 25 m in length. Also, it is not clear how the information presented on pp.56-58 of Appendix C was used to determine the appropriate type of stream crossing structure. The methods and procedures by which hydrological information (i.e., flow and watercourse data) was factored into the selection of appropriate stream crossing structures should be presented in the EIS/CSR Addendum.

Response 20:

The following information provides additional detail on the criteria for selecting appropriate watercourse crossing structures. Crossing structure selection for highway construction is influenced by the following factors.



Hydrology

As the hydrology of Newfoundland and Labrador can be variable and highly affected by snow melt and spring runoff, round culverts have been used, especially for multiple culvert installations, to allow for conditions of deep snow and the increased surface runoff from snow melt. With the runoff factored higher in the 50- or 100-year events by as much as 25 percent for snow melt, the efficiency of round culverts are relied upon heavily to pass the storm flow. Higher headwater depth-to-diameter ratios have been contended with in this more variable environment by using round culverts extending much higher in elevation than the low rise alternatives, such as arches, that would be more prone to blockage in seasons of higher than normal snowfall. Errant rainstorms causing increased runoff in winter with reduced culvert capacity due to snow and ice blockage has been an historic problem. Water running over frozen layers of snow have been frequently observed in certain areas and the design of the culvert crossing has had to take this factor into account.

Fish Passage and Habitat Considerations

Culverts that are installed in fish habitat are designed with habitat considerations in mind. Where fish passage is required, the culvert must be properly installed to maintain a water flow that does not pose a sustained velocity barrier, and which provides enough depth of water to facilitate passage during low flow conditions. Baffles can be installed to enhance fish passage capabilities, as described under Hydraulics, above. Countersunk and stacked multiple culverts also enhance fish passage by providing a wider range of velocities, while maintaining water depth in the lowest pipe. Additional installation guidelines with respect to fish passage are provided by Gosse et al. (1998).

Consideration is given for the type of culvert and installation when the crossing location is on or near sensitive fish habitat. There are measures to reduce the impacts on fish habitat including:

- The road may be re-aligned to avoid a crossing over spawning habitat.
- Open bottomed culverts are preferred by DFO, but they can only be installed where there are suitable foundation conditions (see Installation and Construction Considerations, below).
- Culverts can be countersunk and substrate placed within the pipe or pipe arch to simulate natural stream bottom conditions.

Gosse et al. (1998) provides additional details on fish habitat considerations that are appropriate for the design (type and size) of culverts.



Hydraulics

The round culvert is very efficient at carrying storm runoff from the 50- and 100-year events which are the normal design return periods for estimating runoff. During times of low flow the round culvert naturally concentrates flow into a talweg or concentrated low flow point. Slotted weir fish baffles are also quite adaptable to the round culvert design. Fish baffles provide a concentration of flow into a talweg for low flows and pools for resting locations. The fish pass between the slot or weir then use burst energy to move up the culvert from pool to pool. This may be advantageous in some cases over the natural stream bed situations, where a natural talweg combined with resting pools is not present when spawning migration occurs during low flow periods of drought. Pipe arch culvert structures are adaptable to the slotted weir baffle design but generally end up being more costly due to the greater loss of the effective area of the culvert at the culvert invert for passing the flow. A wide streambed with low road cover may be an acceptable location where a pipe arch culvert could be used effectively, if the cover requirements of the pipe arch are acceptable and the hydrology and hydraulics permit its use.

Structural Considerations

A round culvert is naturally strong in ring compression. It is not limited as much as pipe arches, standard arches, and low, medium, or high profile arches with respect to minimum or maximum cover situations, therefore making them cheaper on fill requirements and steel thicknesses. Arches are more limiting on design conditions and sometimes require special design features, such as reinforced concrete thrust beams, concrete reinforcement slabs or steel reinforcement ribs (sometimes aluminium). Large steel arches and box culverts often require special designs that limit change or varying conditions, which sometimes occur during construction due to unanticipated installation conditions.

Installation and Construction Considerations

Round pipe is very versatile when it comes to construction and installation. Special foundation conditions are more associated with arch and pipe arch structures, where the arch shape is less forgiving and has more conditions on bearing capacity and corner bearing pressure. The necessity for concrete footings is rarely encountered on round pipes, which in the more northern environments, require deeper footing elevations to protect against heave and scour. Deeper footings generally require wider footprints of construction to allow for working space and prevent trench failure. The encroachment on the streambed becomes more pronounced with the wider footprint of construction, or escalates the span of the structure to the point where the cost can be imperative. Loss of effective area of the pipe opening for burial adds extra cost to the installation.

Deep excavation of areas adjacent to stream beds often encounter silty pugs, which can be less stable than the overlying cobbly, or land washed materials. Often, deeper excavation is required to get a



sufficient bearing material and an engineered fill, or a deeper footing is required to re-establish the invert grade for pipe arch construction. This is a more costly venture than placing a round culvert on the higher elevated, more stable material. The risk of exposing underlying puggy (clay and silt) material and the transport and removal of this material may become a liability. Round culverts are recommended to be countersunk a depth of 300 mm below the streambed elevation for culverts up to 2,000 mm in diameter and a minimum of 15 percent of the diameter below streambed elevation for culvert diameters exceeding 2,000 mm, as noted in *Guidelines for Protection of Freshwater Fish Habitat* (Gosse et al. 1998).

Rip-rap protection of the footings is required after concrete footing placement, which can be a source of stream loss. Erodible stream beds have led to the washout, undermining and failure of footings in the past, which has warranted the artificial re-establishment of the streambed with concrete or other materials. The use of arch culverts on footings should be limited to streams with rocky or semi-resistant channels. Several known problems or failures of pipe arch structures due to footing erosion include: Cape Roger River, Burin Peninsula; Bartlett's Brook, Northern Peninsula; and Seal Cove Brook, Witless Bay Line.

Backfilling procedures for arch type structures are generally more labour intensive and time consuming, which adds to the cost of the installation procedure. Pipe barrel distortion problems during backfilling can occur in both round and arch type structures but, generally speaking, the stronger round pipe shape tends to be less problematic than the arch shape in the backfilling process. Distortion above acceptable limits requires backfill removal and reinstallation and compaction. Larger span arch structures generally require more attention on this aspect than other pipes.

Maintenance Considerations

Round steel culverts have been used with great success for over 50 years. Maintenance and replacement of these structures have become routine. Sections of pipe generally 6 m in length are easily handled by maintenance equipment in most inventories. End sections of pipe have been easily replaced and reconnected with pipe couplers. Larger bolted plate structures in both the round and arch shapes are maintainable but can be more problematic than the simple connected sections of pipes with steel bands or couplers. Salvage of sections of pipe coupled together has been more successful than bolted structures.

Cost

Historically the round pipe culvert has been the most cost effective solution to drainage applications in highway construction in the province. The cost is closely related and influenced by most of the other factors that contribute to the design selection process as well, including hydraulics, structural considerations, installation and construction considerations, and maintenance considerations.



Hydraulically the round culvert is very efficient, thus cost-effective. Structurally, the round shape maximizes opening size (effective area) and is stronger, thus is adaptable to low fill situations, reducing fill cost, and can withstand high fill situations without added structural reinforcing (design, material and labour savings). Installation and construction costs are lower than alternatives because of its ease of handling, good transportation characteristics (stackable or nestable), and low assembly cost. Lighter and smaller equipment can be used for installation compared with other solutions. The round culvert requires little maintenance and is easy to maintain and repair compared to some other alternatives.

Refer also to Appendix F for a copy of the Department of Environment and Conservation's applications for Environmental Approval for Culvert Installation and Environmental Approval for Bridges. Both applications require that detailed information, including drainage basin, channel description, hydraulic description, hydrologic design, culvert/bridge dimensions and design, construction details, erosion control, and site restoration, be provided before the appropriate authorization can be issued. Appendix F also contains Section 4.3.3 (Culverts) from Gosse et al (1998), which outlines guidelines for culvert installation that will be followed during construction.

3.1.3.3 Comment No. 21 – Precautionary Principle

Comment 21:

Response 6 (Part I Comments) – With regards to consideration of the precautionary principle, the proponent's reference to a 'common sense' approach to get the most accomplished during the short construction season is inappropriate. A short construction season in Labrador should not be portrayed as justification for failing to take the necessary measures to mitigate potential adverse environmental effects. Please revise accordingly.

Response 21:

The second paragraph in Response 6 (Part 1 Comments) of the addendum to the EIS/CSR will be revised as follows:

Ideally, scheduling of construction activities would avoid migration times for wildlife, avifauna and fish. Similarly, breeding and hatching/calving/emergence times should be protected from disturbance. The precautionary principle would recognize the potential for adverse effects and go further to respond to the unknowns that might have the same result. Consideration of the precautionary principle should be applied wherever possible to mitigate potential adverse environmental effects.



3.1.3.4 Comment No. 22 – Suggested Resource Management Approach

Comment 22:

Response 7 (Part I Comments) - The EIS/CSR Addendum makes several references to a cooperative management or regional land use planning approach to managing the land and resources along the highway and surrounding area (Response 7 and 44, sections 7 and 8 of Appendix C, and Appendix E). While DFO agrees with this recommendation, no details are provided as to how this will happen. The proponent should expand upon the details of this concept and clarify how it intends to implement this approach.

Response 22:

Details on a suggested approach for managing cumulative environmental effects associated with the TLH – Phase III are provided in Appendix C.

3.1.3.5 Comment No. 23 – Watercourse Crossing Locations

Comment 23:

Response 4 (Part II Comments) indicates that for both the “preferred” and Outfitter’s routes, proximity to major inflows or outflows of ponds or lakes was considered when determining proposed crossing locations. However, Tables 7.14-7.18 reveals that the Outfitter’s route has a preponderance of crossings located near to ponds and lakes. Pond and lake inflows and outflows are areas of high productivity and frequently spawning sites for salmonids. They are therefore sensitive to sediment from run-off from roads, and should be avoided as preferred crossing locations. At a minimum, the watercourse crossings should be located 100 m away from inlets and outlets. The EIS/CSR Addendum should reflect this point.

Response 23:

Part of DWT’s route selection criteria was to avoid putting the road near lakes and ponds, in part to reduce the access for angling in areas where traditional resource harvesting is practised by the aboriginal people. Based on 1:50,000 topographic mapping, the distances from the road to the nearest pond, lake or standing water are listed in Tables 7.14 to 7.18 as noted in the comment above. Five crossing locations are listed as being 0.1 km from the road to the lake. These are crossings numbered 88, 89, 95-O, 96-O and 99-O (not including crossing located on the northern route). No crossings are indicated to be less than 0.1 km from a lake.



3.1.3.6 Comment No. 24 – Selection Criteria for Crossing Structures

Comment 24:

Response 9 is inadequate. This comment reflected the absence of any rationale for culvert type selection and the hydrological information upon which this rationale is partially based. Again, the methods and procedures by which hydrological information (i.e., flow and watercourse data) was factored into the selection of appropriate stream crossing structures should be presented in the EIS/CSR Addendum (see Response 3).

Response 24:

Refer to the response provided to Comment No. 20 in Section 3.1.3.2 of this report.

3.1.3.7 Comment No. 25 – Selection Criteria for Crossing Structures

Comment 25:

Response 47 is inadequate as no culvert selection criterion is presented in the EIS/CSR Addendum. It is stated, "...preliminary structure design is based on hydrologic analysis, hydraulic analysis, and details from topographic mapping." Please present the methods and procedures by which hydrological information (i.e., flow and watercourse data) was factored into the selection of appropriate stream crossing structures (See Response 3 and 9).

Response 25:

Refer to the response provided to Comment No. 20 in Section 3.1.3.2 of this report.

3.1.3.8 Comment No. 26 – Resource Management and Enforcement

Comment 26:

Response 79 – Please remove reference to discussion with DFO representatives on the topic of adequate resources. It appears to be taken out of context.

Response 26:

Refer to the response provided to Comment No. 7 in Section 2.7 of this report.



3.1.3.9 Comment No. 27 – Fish Species

Comment 27:

Response 90 – Please provide species summaries for longnose sucker and white sucker. Also for the Arctic charr summary, the statement that ‘anadromous charr move out of the rivers and downstream to sea when 152-203 mm in length’ is overly precise. Studies at Ikarut River, Labrador, show juvenile charr of much smaller lengths than 152 mm moving downstream to the sea. Also, Arctic charr and sea run brook trout return to freshwater as juveniles at very small sizes, i.e. about 120 mm and above which should be added to the description. This is important because smaller juvenile fish have slower swimming speeds than adults of the same species due to their shorter lengths. The design criteria for crossing structures on streams with charr resident in them would have to consider juveniles re-entering the system while still small in size. Anadromous salmon return to freshwater and spawn first after one year at sea; whereas, sea trout and charr return to freshwater and may or may not spawn after only a couple of months or less at sea. Therefore, they are still of relatively small size compared to an adult salmon which must be considered in culvert design.

Response 27:

The following summaries are largely derived from Anderson (1985), Bradbury et al. (1999), and Scott and Crossman (1973).

Longnose Sucker

Longnose sucker are distributed throughout southern Labrador. These fish inhabit deeper colder areas of lakes and are therefore more abundant and faster growing in the upper Churchill River, which has numerous large lakes. As the waters warm to 5°C (June in Labrador), longnose sucker move in large numbers to spawning areas in shallow rocky areas of lakes or riffle areas of tributary streams. In streams, gravel and cobble substrates are preferred. The eggs are adhesive and are broadcast over the substrate. Incubation lasts for approximately two weeks and the hatchlings remain in the gravel substrate for another two weeks before emerging. Young-of-the-year move to quiet protected water, and are often associated with vegetation, cobble and boulder cover. This habitat also serves the rearing requirements of the juveniles. The young feed on plankton, shifting to benthic invertebrates as they grow and become more closely associated with deep lake habitat. Maturity is reached by age five to seven years in the Churchill River.



White Sucker

White sucker, in contrast to the longnose sucker, inhabit shallow, warmer lakes and tributary streams. White sucker typically spawn a little later than longnose sucker, but the selected stream spawning areas are similar for the two species. Habitat suitability is broader for white sucker and they use a wider range of habitat types. Spawning is similar with regard to broadcasting adhesive eggs, over suitable substrate. Incubation (two weeks) is similar for the two species but white sucker fry begin migrating towards lake habitat approximately two weeks after hatch. Young-of-the-year initially inhabit shallow lake areas before migrating to deeper water. The feeding strategies of fry and juvenile of the two sucker species is similar. Maturity is reached at five to six years age in the lower Churchill River.

Longnose sucker and white sucker, both primarily lake resident, move into tributaries to spawn, thus exhibiting two pronounced migrations. Some of the outfitters have noted that these stream migrations last approximately 10 days. There is no literature on any studies of these species in the TLH – Phase III study area. Most of the work in Labrador is on the Churchill River watershed, particularly the large reservoir lakes in the upper sections.

Arctic Charr

The statement concerning anadromous charr of 152 to 203 mm length was derived from a conversion of six to eight inches and should be revised to read 15 to 20 cm. This information was provided for downstream migration of charr, which may be less relevant for a discussion of stream crossings, as properly installed culverts and other structures will not impede downstream movement at any time.

Upstream movement of charr can involve fish as small as the 10-cm-size range, although most are larger than 15 cm (Dempson 1995). The smallest of these fish, when returning from the sea, will have slow swimming speeds and be more susceptible to velocity barriers. However, it should be noted that the nearest culvert to the sea would be over 50 km distance on the Paradise River. That distance increase to 200 km on the Eagle River. Based on this, it is highly unlikely that if Arctic charr occur in these rivers, the smallest ones will be challenged by culverts as they return from the sea.

Generally, the design criteria of culverts will address the needs for migration of brook trout in accordance with DFO guidelines. Functionally, the swimming capabilities of brook trout and Arctic charr are similar in that both are actually charr (i.e., *Salvelinus*). Therefore, if charr are present in Paradise and Eagle rivers, their presence should place no more stringent requirements for culvert design than is already committed to for brook trout.



3.1.3.10 Comment No. 28 – Fish Species

Comment 28:

Response 92 is inadequate. It should include the fact that that migration of adults, earlier and later than specified does occur albeit in low numbers. In addition, what about salmon smolts, juvenile trout and charr as well as the kelts that spawned the previous fall? Please revise accordingly.

Response 28:

Fish migrations are highly influenced by environmental conditions such as, ice out, water temperatures, water flow, and day-length among other potential factors. When providing dates for migrations, the dates often indicate a normal or usual range within which most fish migrate. There will inevitably be some fish moving outside of the range and there are instances when other ranges may apply to a specific area or river.

Salmon smolt migrate downstream May 15 to June 15, as indicated in the table provided in the EIS/CSR addendum (and revised as indicated in Table 7.30 in the response to Comment No. 40 in Section 3.1.4.10 of this report). Spawned out salmon, or kelts, may migrate downstream in the fall, or overwinter in freshwater and return to the sea with the spring migration. The downstream charr migration is from May 15 to June 30. Anadromous brook trout migrate as indicated in the table. Resident brook trout move within lakes and streams in response to the same timing but over more limited distances.

3.1.3.11 Comment No. 29 – Crossing Structures

Comment 29:

Response 94 is inadequate. Drainage culverts should be separate from fish habitat culverts. Further, for areas where bedrock or other factors do not permit adequate countersinking to the established parameters, an open bottom structure should be considered. Countersinking is required for all culverts in fish bearing waters as described in the DFO Guidelines – the proponent's commitment in this regard should be reflected in the EIS/CSR Addendum.

Response 29:

The ability to use open bottom structures will depend on site-specific considerations such as soil conditions and fish passage criteria. DTW will consult with DFO on a case-by-case basis to determine the suitability of using a culvert or an open bottom structure. DTW will continue to follow DFO



guidelines with respect to construction at watercourse crossings, including appropriate countersinking of culverts. Countersinking will be factored into determining the appropriate opening size (effective area) during culvert design. For example, the required diameter of the culvert must be adjusted for countersinking to ensure that the culvert will:

- minimize impacts on fish habitat by maintaining or emulating natural stream conditions (i.e., widths), where possible;
- adequately pass peak flows; and
- provide sufficient depth of flow and appropriate water velocities for fish passage.

3.1.3.12 Comment No. 30 – No Fishing Policy

Comment 30:

Response 116 is inadequate. Exploitation of fishery resources during construction is a significant issue which must be addressed. If the proponent does not intend to implement a no hunting/fishing policy, what alternative means of mitigation will be proposed?

Response 30:

DTW will have a policy of no hunting, fishing or trapping by on-site workers during construction. Refer to response provided to Comment No. 4 in Section 2.4 of this report.

3.1.4 DFO Specific Comments - Technical Issues

3.1.4.1 Comment No. 31 – Proposed Southern Route

Comment 31:

S2.2.4.6 Route Proposed by Outfitters (A13) – This section needs to be revised to accurately represent the Innu Nation's position of supporting the Outfitter's route.

Response 31:

Refer to the response provided to Comment No. 13 in Section 2.13 of this report.



3.1.4.2 Comment No. 32 – Crossing Structures

Comment 32:

S2.3.2.5 Watercourse Crossings - The Outfitter's route will result in more watercourse crossings than the "preferred" route. Many of the crossings within the Outfitter's route study area are small in size and thus would utilize cylindrical culverts, while those within the "preferred" route study area would be more apt to use bottomless arch culverts and bridges simply due to the size of the crossing. To mitigate potential effects to fish and fish habitat, closed bottom culverts should be countersunk according to Gosse et al., 1998, or to 40% of the culvert diameter; where possible, culverts should be sized to encompass the entire natural stream channel width; and to retain the functionality of the streambed, substrate should be placed within the culvert to emulate the natural stream substrate and natural stream flow characteristics.

Response 32:

The type of structure used at each watercourse crossing will be evaluated on a case-by-case basis in consultation with DFO. DTW will continue to follow DFO guidelines for construction at watercourse crossings. Placement of substrate within culverts will be considered where hydrologic and/or biological conditions suggest it would be appropriate. Again, DFO will be consulted on a case-by-case basis.

3.1.4.3 Comment No. 33 – Fish and Fish Habitat

Comment 33:

S2.3.4 Fish and Fish Habitat - The limited fish data collected indicates the fish communities along the outfitter's route are dominated by brook trout. It is important to note that these headwater areas are brook trout nursery areas and very important to the overall production of these populations.

Response 33:

It is reasonable to assume that most crossing locations on the southern route are brook trout habitat unless fish are precluded from the site for some reason. Brook trout spawn mainly in tributary streams to lakes and stream-resident trout will spawn in suitable areas within their native streams. These nursery streams are important to the local trout populations, although the influence of any single area may be limited by the range of movement of the resident brook trout. In other words, these streams may not provide recruitment to more distant lakes that are several kilometres away.\



3.1.4.4 Comment No. 34 – Fish and Fish Habitat

Comment 34:

S2.3.4 Fish and Fish Habitat - Both routes have potential to place added angling pressure on fish stocks. However, the Outfitter's route will place less angling pressure on speckled trout and Atlantic salmon than the "preferred" route, based on distance from the Eagle River watershed (speckled trout are common in a number of lakes on the Eagle River plateau: i.e., Parke, Igloo and No Name; large Atlantic Salmon are common on the upper Eagle River: areas of Parke Lake and Indian House Lake).

Response 34:

Agreed. Based on interviews with outfitters on the Eagle River Plateau, all of the businesses are based on fly-fishing for brook trout – particularly trophy trout which are variously considered to be trout, in the 1.4 to 1.8 kg (3 to 4 pound) range up to trout in excess of 4.5 kg (10 pounds). Atlantic salmon are taken by guests at the lodge on Park Lake.

The southern (formerly referred to as outfitter) route is more remote to the central Eagle River Plateau areas and will represent less new pressure on Park Lake, Igloo Lake and other lakes in this area. Most outfitters expressed a preference for the southern route. Overall, the average distance to the two routes is the same for all lodges combined and the southern route is actually quite a bit closer to the lodge on Osprey Lake.

3.1.4.5 Comment No. 35 – Outfitting Operations

Comment 35:

Table 2.6 requires updating. It is understood that two new camps are licensed near camp 8 on Eagle River. Also, the Eagle River Salmon Club is not listed.

Response 35:

Refer to Table 2.1 in the response to Comment No. 8 in Section 2.8 of this report for an updated version of Table 2.6.



3.1.4.6 Comment No. 36 – Paradise River Location on Mapping

Comment 36:

Figure 3.5 – This figure and others indicate the Town of Paradise River to be located at the junction of the main stem of Paradise River with Follett's Pond. In fact, the Town of Paradise River is located at the estuary approximately 6 km downstream. Please revise accordingly.

Response 36:

Refer to revised Figure 3.5. Note that all figures in the EIS/CSR and addendum showing the location of the community of Paradise River are also considered amended to reflect this change.

3.1.4.7 Comment No. 37 – Crossing Structures

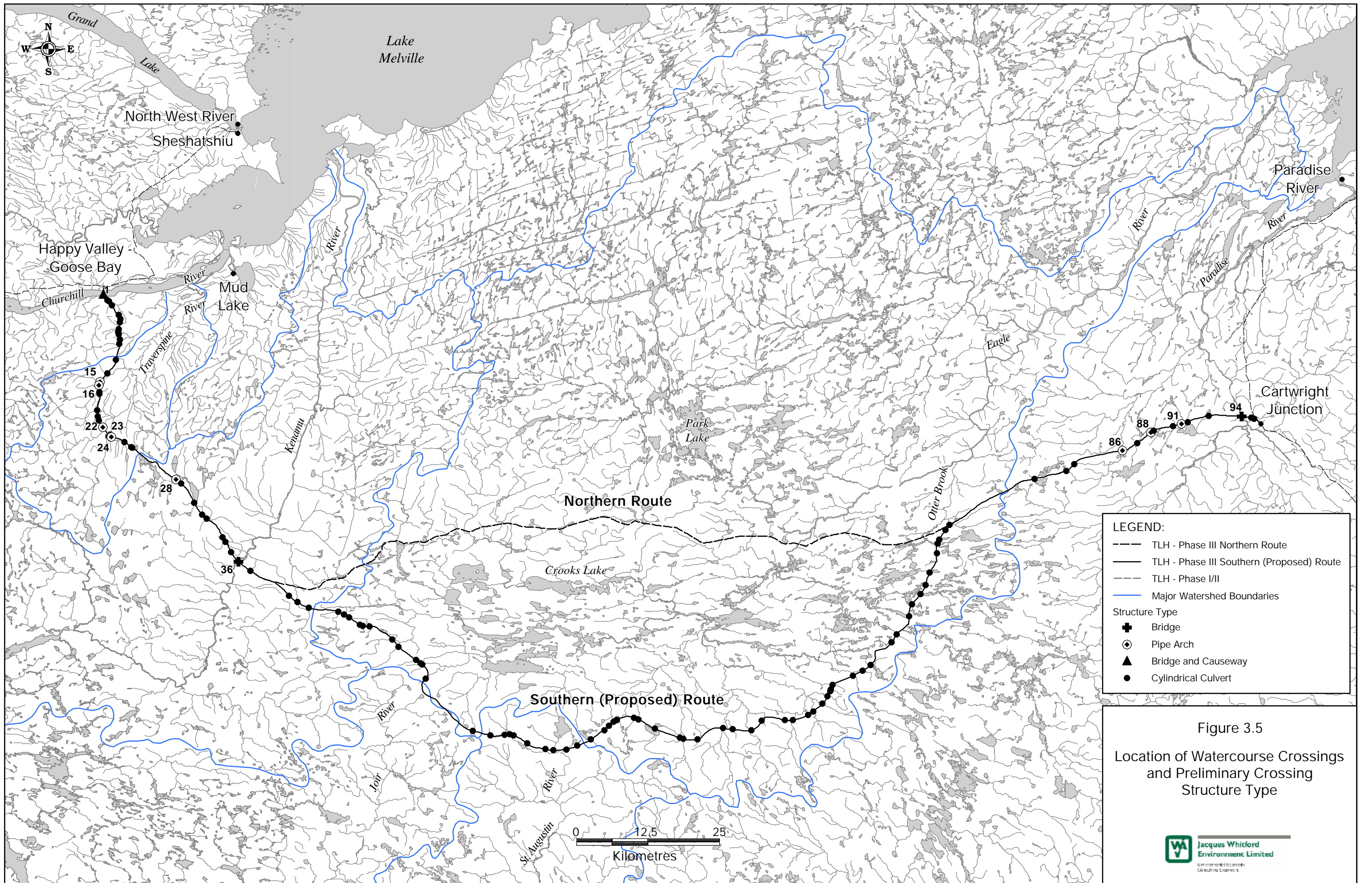
Comment 37:

S 3.3.4.4 Pipe Arch and Cylindrical Culverts – It is recognized that DTW will adhere to DFO guidelines (Gosse et al. 1998) for design and installation of watercourse crossing structures. Gosse et al (1998) has been developed to apply to a broad range of circumstances and as such, it should be made clear in EIS/CSR Addendum that for culvert installations, modifications of the DFO guidelines, in consultation with DFO staff may be required to address 1) site specific considerations and 2) the passage of fish species other than salmon, brook trout and brown trout. Further, in this section, it is stated, "Culverts longer than 25 m and at watercourse crossings where fish passage will be facilitated will have slopes no greater than 0.5 percent to ensure that water velocity through the culvert does not exceed 0.9 m/s." The 0.9 m/s velocity target is too high to ensure the passage of juvenile fish; a more appropriate design target would be 0.6 m/s. Please revise accordingly.

Response 37:

DTW will continue to follow DFO guidelines for construction at watercourse crossings. Through consultation with DFO, the type of structure used at each watercourse crossing and any required deviations from the DFO guidelines (Gosse et al. 1998) will be evaluated on a case-by-case basis. The current guidelines require that water velocity through a culvert does not exceed 0.9 m/s. In consultation with DFO, modifications to the 0.9 m/s design target velocity may be required on a site specific basis to accommodate the passage of fish species other than salmon, brook trout and brown trout, and various life stages.





LEGEND:

- TLH - Phase III Northern Route
- TLH - Phase III Southern (Proposed) Route
- TLH - Phase I/II
- Major Watershed Boundaries

Structure Type

- ⊕ Bridge
- ⊙ Pipe Arch
- ▲ Bridge and Causeway
- Cylindrical Culvert

Figure 3.5
 Location of Watercourse Crossings
 and Preliminary Crossing
 Structure Type



3.1.4.8 Comment No. 38 – Environmental Protection Measures

Comment 38:

Table 3.7 (1.4 Vegetation Clearing) – In determining the buffer zone for clearing using the formula $20\text{ m} + 1.5 \times \text{Slope} (\%)$, it should be recognized that due to the geotechnical properties of soils along the selected route within Labrador, this formula may not be applicable in all situations and may require modification on a site specific basis, to prevent potential siltation during construction and operational phases. Please incorporate these specifications in the EIS/CSR Addendum.

Response 38:

DTW will continue to follow DFO guidelines for construction at watercourse crossings. Buffer expansions will be considered on a case-by-case basis where warranted by geotechnical properties of soils.

3.1.4.9 Comment No. 39 – Fish and Fish Habitat

Comment 39:

S7.5.3.1 Fish Habitat – It is stated that “a detailed aerial assessment was not possible on all watercourse crossings due to the small size of some streams and visual obstruction created by the thick canopy”. Please note that at the regulatory approval stage, DFO will require site-specific information for all watercourse crossings as referenced earlier.

Response 39:

DTW acknowledge this requirement and will provide appropriate site-specific information to DFO.

3.1.4.10 Comment No. 40 – Fish and Fish Habitat

Comment 40:

Table 7.30 – Resident Brook Trout can spawn until mid-October; please change spawning time to Sep 1 – Oct 15. Arctic Charr can start spawning mid-September; please change spawning time to Sep 15 – Nov 15 and resultant incubation time to Sep 15 – Jun 15. Further, the spawning migration time for Atlantic Salmon should be changed to June 15 – Sept 15.



Response 40:

Based on unpublished information provided by DFO, the critical periods for fish in Labrador are amended as follows:

- the time of the spawning migration of anadromous Atlantic salmon is extended by two weeks at each end of the range that was reported in the EIS/CSR addendum;
- the start of spawning and incubation for anadromous Arctic charr is extended two weeks earlier; and
- the end of spawning of resident brook trout is extended by two weeks.

The following table replaces Table 7.30 in Appendix C of the addendum to the EIS/CSR.

Table 7.30 Critical Periods for Fish in Labrador

| Species | Life Stage or Activity | | | | |
|--|------------------------|-----------------|-----------------|-----------------|----------------------|
| | Spawning Migration | Spawning | Incubation | Hatching | Downstream Migration |
| Anadromous Species (sea-run) | | | | | |
| Brook Trout | Jun 20 - Sep 1 | Sep 1 - Sep 30 | Sep 1 - Jun 15 | May 15 - Jun 15 | Jun 15 - Jul 15 |
| Atlantic Salmon | Jun 15 – Sep 15 | Oct 1 - Nov 15 | Oct 1 - Jun 15 | Apr 15 - Jun 15 | May 15 - Jun 15 |
| Smelt | May 1 - Jun 15 | May 1 - Jun 15 | May 1 - Jul 15 | Jun 1 - Jul 15 | Jun 1 - Jul 15 |
| Arctic Charr | Jul 1 - Sep 30 | Sep 15 - Nov 15 | Sep 15 - Jun 15 | Apr 15 - Jun 15 | May 15 - Jun 30 |
| Resident Species (non-sea-run) | | | | | |
| Brook Trout | Aug 15 - Sep 30 | Sep 1 – Oct 15 | Sep 1 - Jun 15 | May 15 - Jun 15 | n/a |
| Landlocked salmon | Aug 1 - Oct 31 | Sep 15 - Oct 31 | Sep 15 - Jun 15 | May 15 - Jun 15 | n/a |
| Lake Whitefish | Sep 1 - Oct 15 | Sep 20 - Oct 30 | Sep 20 - Jun 15 | May 15 - Jun 15 | n/a |
| Northern Pike | Apr 1 - Apr 15 | Apr 15 - May 15 | 12-14 days | May 1 - May 30 | n/a |
| Lake Trout | localized in lakes | Sep 1 - Oct 30 | Oct 1 - Mar 15 | Mar 15 - Apr 30 | n/a |
| Source: Scruton et al. 1997, as adapted by B. Dempson and D. Reddin, pers. comm. | | | | | |

3.1.4.11 Comment No. 41 – Fish and Fish Habitat

Comment 41:

S7.5.6 Existing Knowledge – P.259 references water loss in culverts (also S7.5.8.1 Construction, P.263). In addition to use of coarse fill, it is important to note that improper culvert embedding, improperly



designed and placed upstream and downstream pools and culvert shifting from freeze and thaw also contribute to water loss in culverts.

Response 41:

The following sentence will be added to the end of paragraph 22 in Section 7.5.6 in Appendix C of the addendum to the EIS/CSR:

Other causes of water loss in culverts include improper culvert embedding, improperly designed and placed upstream and downstream pools, and culvert shifting during periods of freezing and thawing.

3.1.4.12 Comment No. 42 – Fish and Fish Habitat

Comment 42:

S7.5.7 Mitigation – Use of pipe arch culverts is listed as a mitigation measure to minimize adverse effects of the project. This is not considered to be a best management practice: DFO’s position is that open bottom/bottomless arch culverts are the preferred type of culvert installation to minimize potential impacts on fish and fish habitat. These culverts maintain the natural bottom substrate and hydraulic capacity of the watercourse (footings installed outside the wetted perimeter of the stream) and should be considered for sensitive areas, or areas where bedrock or other factors does not permit proper embedment of closed bottom culverts.

Response 42:

Refer to responses provided to Comments No. 20 in Section 3.1.3.2 and No. 29 in Section 3.1.3.11 of this report.

3.1.4.13 Comment No. 43 – Fish and Fish Habitat

Comment 43:

S7.5.7 Mitigation - The list of mitigations on P.260 should also include: implementation of siltation control measures (i.e., proper construction of drainage ditches leading away from streams with use of check dams).



Response 43:

The following is added to the bullet list of mitigations in Section 7.5.7 and Table 7.31 in Appendix C of the addendum to the EIS/CSR:

- implementation of siltation control measures (i.e., proper construction of drainage ditches leading away from streams with use of check dams).

3.1.4.14 Comment No. 44 – Fish and Fish Habitat

Comment 44:

S7.5.8.1 Construction – With reference to the Churchill River crossing, the habitat has been classified by the proponent as Beak Type IV. Type IV habitat is utilized for spawning and rearing of some non-salmonid species found in the Churchill River watershed, including: northern pike, burbot, and American eel.

Response 44:

Refer to response provided to Comment No. 19 in Section 3.1.3.1 of this report.

3.2 Response To Environment Canada Comments

3.2.1 Comment No. 45 - Appropriate Standard of Environmental Assessment

Comment 45:

Project-induced effects on migratory waterfowl and on the SARA-listed woodland caribou demand a high standard of care in the CSR given implications for the health, survival or recovery of these species, which are valued by Aboriginal persons and local communities. The Eagle River Plateau is one of the most important waterfowl breeding habitats in the Labrador/Ungava Peninsula, and the waterfowl population that would be affected by the project forms a substantial portion of the Atlantic Flyway. Under SARA, the woodland caribou has been listed as a threatened species because of the habitat loss and increased predation which has already been experienced by woodland caribou across its range. In the federal EA of the highway project, SARA specifically calls for the identification and assessment of adverse effects on listed species and their critical habitat. It must also be assured that appropriate measures are taken to avoid or lessen all adverse effects.



Response 45:

DTW agrees that appropriate measures must be taken to avoid or lessen all adverse effects on waterfowl and woodland caribou, resulting from highway construction and operation.

3.2.2 Comment No. 46 - Mealy Mountains Caribou Herd

Comment 46:

The safety-net provisions of SARA mandate EC to assure adequate protection of threatened or endangered species which would otherwise be under provincial jurisdiction. And again, the SARA requires any federal environmental assessment to identify and assess adverse effects on all SARA-listed species and to ensure those effects are mitigated and monitored should the project be supported. In the case of caribou, EC draws on the expertise of the Inland Fish and Wildlife Division (IFWD) of the Newfoundland and Labrador Department of Tourism, Culture and Recreation.

Response 46:

DTW understands the role of the federal government in ensuring adequate protection for threatened or endangered species through the *Species at Risk Act* (SARA). DTW supports a monitoring program for the MMCH.

3.2.3 Comment No. 47 – Mealy Mountains Caribou Herd

Comment 47:

The northern route could have significant implications for the survival and recovery of the caribou. While IFWD has indicated that the outfitter's route is preferable to the northern route, it remains important that appropriate precautions be taken to assure avoidance of significant adverse impacts on this threatened species. In terms of the outfitter's route, therefore, EC supports the IFWD recommendation that a caribou monitoring program be developed and implemented in advance of project construction. The design of such a program should be satisfactory to IFWD prior to implementation.

Response 47:

Refer to the response provided to Comment No. 3 in Section 2.3 of this report.



3.2.4 Waterfowl

3.2.4.1 Environment Canada Position Statement on Waterfowl

The following statement was provided by Environment Canada:

EC has already conveyed to DFO the limitations with the waterfowl survey approach described in the addendum, particularly with respect to randomness of coverage and repeatability of the survey. Nonetheless EC has undertaken an analysis of the raw survey data provided by the proponent with the following objectives: to compare results against the published literature; to assess the numbers of waterfowl that would be impacted by the footprint of the road; and to assess the numbers of waterfowl that would be exposed to induced impacts as a result of increased access.

In comparison to the northern route, density estimates are consistently higher for all waterfowl species along the outfitter's route, particularly for Canada Goose and Black Duck. The following observations are specific to the outfitter's route and EC's perspective on the necessary mitigation and follow-up program.

Based on the observed waterfowl, and the obvious habitat loss associated with highway construction within a 40 m corridor, it is estimated that some birds would be directly displaced. However there is little information available on the impact of highways on boreal wetlands, particularly roads that traverse large plateau bogs such as the Eagle Plateau. Also, the consideration of residual hydrological effects on wetlands proximal to the highway is only preliminary in nature in the Comprehensive Study and poorly understood generally.

When the zone of impact is extended to 10 km on either side of the highway to assess induced effects associated with increased access, much larger numbers of waterfowl could be affected. For the outfitter's route, 5660 waterfowl comprised of 1203 Canada Geese, 2099 Black Ducks, 1958 divers, and 401 dabblers (excluding Black Ducks) could be affected. On the eastern common portion of the highway, an additional 1128 birds could be affected.

The proportion of the southern Labrador waterfowl population that would potentially be affected along the outfitter's route is as follows:

- *Canada Geese - 1.6% of the population, while the eastern section common to both routes holds 0.2% of the population*
- *Black Ducks - 4.4% of the population, while the eastern 'common' section holds 0.8%.*
- *Diving duck estimates account for 0.7% of the population, while the eastern section common to both routes holds 0.2% of the population.*



- *For dabblers (excluding Black Ducks), the numbers of potentially affected birds are 1.2% of the population, while the eastern common section holds 0.2%.*

While the direct population effects of the highway footprint are likely to be minor, there is considerable uncertainty regarding residual hydrological effects on wetlands proximal to the construction corridor. If highway construction affects drainage patterns, then considerably more habitat, and the waterfowl dependent on that habitat, would be affected.

3.2.4.2 Comment No. 48 - Waterfowl Monitoring

Comment 48:

The secondary or induced effects on waterfowl resulting from increased access, though theoretically manageable, are potentially substantial. For these effects to be measured and managed so as to avoid significant adverse effects, it would be prudent to design and implement an appropriate follow-up monitoring and management program in advance of project construction. Integral to this program would be a waterfowl population monitoring program, coupled with a review of hunting activity. It is important that the design of such a program be satisfactory to EC prior to implementation.

Response 48:

DTW agrees that adverse effects on waterfowl as result of secondary or induced activities following highway construction must be adequately managed. DTW supports Environment Canada's suggestion for a waterfowl population monitoring program, coupled with a review of hunting activity. Such a program would be implemented by Environment Canada and Parks Canada, with the active participation of DTW, and would adhere to the Canadian Environmental Assessment Agency guiding principles related to follow-up.

3.2.5 Comment No. 49 - Greenhouse Gas Emissions

Comment 49:

The proponent provides an accounting of greenhouse gas (GHG) emissions and sinks associated with the Northern Route. The revised CSR should provide an updated accounting for the Outfitters Route. The following commentary on the original accounting is offered to facilitate the revised estimate for the Outfitters Route:



- *The estimated CO₂ from 200 vehicles per day, traveling a total of 80,500 vehicle kms, consuming 10 l/100km would be 7.05 kt per year, based on 2.4 kg CO₂/l of fuel (gasoline) combusted, 365 days/year. The value presented in the table is 4.31 kt/yr.*
- *The daily distance traveled by the two tractor trailer trucks was not indicated, so the calculation cannot be verified. However, for every litre of diesel combusted, approximately 2.7 kg of CO₂ is produced (Environment Canada - Greenhouse Gas Emissions 1990 - 2000 Appendix D). If it is assumed that the trucks carry out return trips daily (800 kms), 5 days a week, 52 weeks/year, annual distance traveled would be 416,000 km/yr. Assuming a fuel consumption of 38 l/100km, total fuel consumption would be 158,080 l/yr; 1 l diesel = 2.73 kg CO₂ which would produce 431558 kg CO₂/yr = 0.43 kt/yr. The value presented in the table is 0.19 kt/yr.*
- *The value estimated for the ferry was verified, using a diesel CO₂ emission value of 2.7 kg/l of fuel.*
- *The total estimated annual CO₂ production, using the assumptions presented, would be 7.57 kt/yr rather than the 4.59 kt/yr suggested.*
- *The assumptions did not indicate if the estimates included recreational/sports users, tour buses, logging trucks etc. If these were not considered, then the annual emissions will be considerably higher. The conclusion could be reasonably made that with the establishment of the Trans Labrador Highway, based on the assumptions presented, that CO₂ emissions will increase by 50%.*

Generally, the assumptions upon which estimates for future traffic were based were not articulated so it is difficult to debate the estimated emissions. However, based on what was presented, anticipated emissions were underestimated by a significant amount. The proponent should provide greater detail on assumptions and factors used in the calculations.

Response 49:

Response No. 3 in the addendum to the EIS/CSR addresses a comment on greenhouse gas (GHG) emissions. The calculations that are summarized in Table 2.2 (p. 30) are based on a one-way trip length of 250 km for the northern route. The daily total kilometres for 200 vehicles (reported in the text) should read 50,000 and not 80,500.

Appendix C of the addendum to the EIS/CSR provides the same numbers (distances) for the southern route, as shown in Table 2.1 (p. 16) and accompanying text. The one-way trip distance on the southern route is 280 km. The distance for 200 vehicles travelling in a day would be 56,000 vehicle kilometres. Table 2.1 and associated text is revised to correct this error and reflect the above review comments.



Table 2.1 Greenhouse Gas Emissions (CO₂), Regional Travel by the Southern Route

| | Estimated Level of CO₂ Generated by Current Travel (kt/yr) | Estimated Level of CO₂ Generated by Future Travel (kt/yr) |
|-----------------------------------|--|---|
| Passenger and light duty vehicles | 0 | 4.91 |
| Heavy duty trucks | 0 | 0.15 |
| Ferry | 4.3 | 0 |
| Aircraft | 0.8 | 0.09 |
| Total | 5.1 | 5.14 |

The change in transportation services in the region will also lead to changes in the GHG emissions, in particular carbon dioxide (CO₂) emissions, experienced in the region (Table 2.2). The effect of the project on transportation-related GHG emissions was calculated based on the assumption that highway construction would result in the elimination of the ferry service, a reduction in the air service to the communities, and a sustained vehicular traffic all year on the highway.

Emission factors for heavy duty diesel trucks and for passenger vehicles were used to calculate vehicle GHG emissions. Truck fuel consumption was estimated to be 38 L/100 km. Cars and light trucks were estimated to consume 10 L/100 km. These are reasonable estimates based on information taken from Faiz et al. (1996).

The future vehicle traffic on the southern route is estimated to be 200 cars per day (280 km distance), for a daily total of approximately 56,000 vehicle-kilometres. The CO₂ emissions associated with this traffic is estimated to be 13.4 tonnes of CO₂/day or 4.91 kt/yr.

The daily distance travelled by the two tractor trailers would be 560 km. Every litre of diesel combusted would produce approximately 2.7 kg of CO₂. Assuming the trucks travel five days per week, 52 weeks per year, annual distance travelled would be 145,600 km/yr. Assuming a fuel consumption of 38 L/100km, total fuel consumption would be 55,328 L/yr, which would produce 149,386 kg CO₂/yr = 0.15 kt/yr.

The fuel consumption of the ferry is estimated to be 1,584,000 L/year, based on an assumption of three ferry trips per week for 22 weeks per year, with 72,000 L of fuel being used each week (i.e., 24,000 L per round trip of 24 hours). On combustion, this is equivalent to an annual CO₂ emission level of 4.3 ktonnes.

Aircraft were assumed to be Twin Otter or other small aircraft, and fuel consumption was estimated from FAA (1994). Aircraft fuel consumption is estimated at 210 L/hr at cruising speed. The adjustment in air service to accommodate changes in demand and scheduling will be a reduction from daily flights through eight airports to a weekly flight through five airports. Assuming that this will correspond to



equivalent cruising flight time reductions from four to three hours, the CO₂ emissions reduction is calculated to be from 0.8 to 0.09 ktonnes/year; that is, approximately a factor of 10.

In summary, calculations indicate that GHG emissions will likely be similar following the completion of the TLH – Phase III, based on elimination of the associated ferry service and reduced air service. However, as noted in the comment, the assumptions did not include recreational/sports users, tour buses, logging trucks or other ancillary use of the new road. If these are considered, then the annual emissions will be higher.

3.2.6 Comment No. 50 – Suggested Resource Management Approach

Comment 50:

The CSR relies exclusively on an assumption that any cumulative effects associated with other projects and activities, including those induced by the proposed highway project, will be adequately mitigated by the administration of the applicable planning and regulatory requirements of other agencies. However, no analysis that supports such an assumption is offered. While recognition of the applicable planning and regulatory regime is important to the conduct of an EA, the mere reference to such a regime does not serve as a substitute for a careful consideration of potential adverse environmental effects, including cumulative effects, and the necessary mitigation and follow-up measures. As a consequence, potential cumulative effects are not fully understood, and in the absence of a comprehensive mitigation and follow-up strategy, it is uncertain whether impacts can be adequately managed.

The CSR recommends that the effects of induced development are best addressed through a regional land use planning process. EC supports such an approach and recommends the establishment of a Cooperative Land and Resource Use Management Committee to oversee the exercise. Integral to this program would be a waterfowl population monitoring program, coupled with assessments of hunting activity and enforcement capacity.

Response 50:

Details on a suggested approach for managing cumulative environmental effects associated with the TLH - Phase III are provided in Appendix C.



3.2.7 Comment No. 51 – Conclusion (Suggested Resource Management Approach)

Comment 51:

The principal impacts associated with this project are related to the cumulative effects of reasonably foreseeable future development and the induced effects of increased access. The CSR addendum recognizes these effects and recommends they best be dealt with through a regional land use planning exercise. Therefore, EC recommends that the establishment of a Cooperative Land and Resource Use Management Committee as discussed above be explicitly identified as a vital component of a mitigation and follow-up monitoring strategy for the applicable VECs (e.g., caribou, waterfowl). This committee could be vital to ensuring significant adverse environmental effects are successfully avoided.

Response 51:

Details on a suggested approach for managing cumulative environmental effects associated with the TLH - Phase III are provided in Appendix C.

3.3 Response To Parks Canada Comments

3.3.1 Comment No. 52 – Resource Management and Enforcement

Comment 52:

Parks Canada concludes that if DFO and EC are satisfied that their mandate can be and that the revised document commits the province to establishing and funding the Cooperative Land and Resource Use Management Committee, Parks Canada concurs that significant adverse effects or uncertainty related to the park establishment process would be eliminated.

Response 52:

DTW are confident that DFO and Environment Canada will achieve their mandate through mitigation, permitting, and monitoring initiatives along the southern route. Details on a suggested approach for managing cumulative environmental effects associated with the TLH - Phase III are provided in Appendix C.



4.0 REFERENCES

4.1 Personal Communication

- Aylward, P. Regional Lands Manager, Labrador Regional Lands Office, Crown Lands Administration Division, Department of Environment and Conservation, Happy Valley-Goose Bay, NL. Telephone conversation, September 30, 2003.
- Bieger, T. Chief, Program Planning and Analysis, Department of Fisheries and Oceans, St. John's, NL. Telephone conversation, September 30, 2003.
- Dawe, P. Outdoor Product Development, Department of Tourism, Culture and Recreation, St. John's, NL. Multiple correspondences.
- Deering, K. Regional Ecosystem Director, Forestry Branch, Department of Natural Resources, Happy Valley-Goose Bay, NL. Telephone conversation, March 17, 2004.
- Deering, P. Engineer, Newfoundland Geosciences Limited, St. John's, NL. Personal communication, September 2003.
- Dempson, B. Research Scientist, Salmonids Section, Department of Fisheries and Oceans, St. John's, NL. Telephone communication, March 2004.
- Goudie, J. Canoe Builder, resident, Happy Valley-Goose Bay, NL. Telephone communication, March 2004.
- Holwell, J. Conservation and Protection Branch, Department of Fisheries and Oceans, Happy Valley-Goose Bay, NL. Telephone communication, March 19, 2004.
- Kemuksigak, R. Churchill River outfitter, Happy Valley-Goose Bay, NL. Telephone communication, March 2004.
- Kent, T. Tourism Development Officer, Department of Tourism, Culture and Recreation, Labrador City, NL. Multiple correspondences.
- LeBoubon, D. Regional Compliance Manager, Forestry Branch, Department of Natural Resources, Happy Valley-Goose Bay, NL. Telephone conversation, March 17, 2004.



- LeDrew, L. Manager, Environment, Labrador Hydro Project, St. John's, NL. Telephone communication, March 17, 2004.
- Power, B. Technologist, Newfoundland Geosciences Limited, St. John's, NL. Personal communication, March 2004.
- Reddin, D. Research Scientist, Salmonids Section, Department of Fisheries and Oceans, St. John's, NL. Telephone communication, March 2004.
- Slade, B. Fisheries Management, Department of Fisheries and Oceans, St. John's, NL. Telephone conversation, October 2002.
- Turner, B. Manager, Newfoundland and Labrador Wildlife Conservation Section, Environment Canada, Mt. Pearl, NL. Telephone conversation, September 30, 2003.
- Turpin, W. Head, Wildlife Enforcement, Canadian Wildlife Service, Atlantic Region, Environment Canada, Mt. Pearl, NL. Telephone conversation, October 7, 2003.

4.2 Literature Cited

- Anderson, T.C. 1985. The Rivers of Labrador. *Canadian Special Publications of Fish and Aquatic Sciences*, 81.
- Armitage, P. and M. Stopp. 2003. *Labrador Innu Land Use in Relation to the Proposed Trans Labrador Highway, Cartwright Junction to Happy Valley-Goose Bay, and Assessment of Highway Effects on Innu Land Use*. Report submitted to Department of Works, Services and Transportation, Government of Newfoundland and Labrador, by Innu Environment Limited Partnership, Happy Valley-Goose Bay, NL.
- Barber-Dueck, C. and Kotsovos, D. 2002. *The Provincial and Territorial Tourism Satellite Accounts for Canada, 1996*. Catalogue No. 13F0063XIE, Statistics Canada, Ottawa, ON.
- Beak. 1980. *Fisheries Resources of Tributaries of the Lower Churchill River*. Prepared for the Lower Churchill Development Corporation, St. John's, NL.
- Bergerud, A.T. 1967. Management of Labrador Caribou. *Journal of Wildlife Management*, 31(4): 621-642.



- Bradbury, C., M.M. Roberge and C.K. Minns. 1999. Life History Characteristics of Freshwater Fishes Occurring in Newfoundland and Labrador, with Major Emphasis on Lake Habitat Requirements. *Canadian Manuscript Report on Fisheries and Aquatic Sciences*, 2485.
- Dempson, J.B. 1995. Trends in Population Characteristics of an Exploited Anadromous Arctic Charr, *Salvelinus alpinus*, Stock in northern Labrador. *Nordic Journal of Freshwater Research*, 71: 197-216.
- DFO (Department of Fisheries and Oceans). 2002. *Newfoundland and Labrador Atlantic Salmon 2002 Stock Salmon Update*. DFO Science Stock Status Update D2-01(2003).
- DTCR (Department of Tourism, Culture and Recreation). 2004. *2003 Travel/Tourism Indicator Highlights for Newfoundland and Labrador*. Department of Tourism, Culture and Recreation, St. John's, NL.
- DTCR (Department of Tourism, Culture and Recreation). 2002. *Hunting and Fishing Guide*. Department of Tourism, Culture and Recreation, St. John's, NL.
- DTCR (Department of Tourism, Culture and Recreation). 1997. *Newfoundland and Labrador 1997 Auto Exit Survey*. Department of Tourism, Culture and Recreation, St. John's, NL.
- Dyer, S.J., J.P. P'Neill, S.M. Wasel and S. Boutin. 2001. Avoidance of industrial development by woodland caribou. *Journal of Wildlife Management*, 65(3): 531-542.
- Environment Canada. 2000. *The Importance of Nature to Canadians: The Economic Significance of Nature-related Activities*. Environment Canada, Ottawa, ON.
- FAA (Federal Aviation Administration). 1994. *Impact of Weight Changes on Aircraft Fuel Consumption – Final Report*.
- Fiaz, A., C.S. Weaver and M.P. Walsh. 1996. *Air Pollution from Motor Vehicles – Standards and Technologies for Controlling Emissions*. The World Bank.
- Gosse, M.M., A.S. Power, D.E. Hyslop and S.L. Pierce. 1998. *Guidelines for Protection of Freshwater Fish Habitat in Newfoundland and Labrador*. Department of Fisheries and Oceans, St. John's, NL.
- Government of Newfoundland and Labrador. 2003. *The Economic Review 2003*. Economic Research and Analysis Division, Department of Finance, St. John's, NL.



- Hearn, B.J. and S.N. Luttich. 1990. *Population Dynamics of the Mealy Mountains Herd in Southern Labrador, 1958-1989*. Newfoundland-Labrador Wildlife Division, Unpublished Report. Happy Valley-Goose Bay, NL.
- Hearn, B.J. and S.N. Luttich. 1987. *Status and History of the Mealy Mountains Caribou Herd*. Newfoundland-Labrador Wildlife Division, Internal Field Report No. 4106. Happy Valley-Goose Bay, NL.
- Innu Nation. 2003. Letter to Honourable Robert Mercer, Minister of Environment, Government of Newfoundland and Labrador, March 26, 2003.
- JW (Jacques Whitford). 2003. *Land and Resource Use Component Study: Trans Labrador Highway - Phase III (Happy Valley-Goose Bay to Cartwright Junction)*. Prepared for the Department of Works, Services and Transportation, St. John's, NL.
- JW/IELP (Jacques Whitford and Innu Environmental Limited Partnership). 2003. *Trans Labrador Highway - Phase III (Happy Valley-Goose Bay to Cartwright Junction) Environmental Impact Statement and Comprehensive Study*. Prepared for the Department of Works, Services and Transportation, St. John's, NL.
- JWMLP (Jacques Whitford and Minaskuat Limited Partnership). 2004a. *Tourism and Recreation Component Study Supplementary Addendum: Cartwright Junction to Happy Valley-Goose Bay Trans Labrador Highway*. Prepared for the Department of Works, Services and Transportation, St. John's, NL.
- JWMLP (Jacques Whitford and Minaskuat Limited Partnership). 2004b. *Fish and Fish Habitat Component Study Supplementary Addendum: Cartwright Junction to Happy Valley-Goose Bay Trans Labrador Highway*. Prepared for the Department of Works, Services and Transportation, St. John's, NL.
- JW/MLP (Jacques Whitford and Minaskuat Limited Partnership). 2003a. *Environmental Impact Statement and Comprehensive Study Addendum: Cartwright Junction to Happy Valley-Goose Bay Trans Labrador Highway*. Prepared for the Department of Works, Services and Transportation, St. John's, NL.
- JWMLP (Jacques Whitford and Minaskuat Limited Partnership). 2003b. *Fish and Fish Habitat Component Study Addendum: Cartwright Junction to Happy Valley-Goose Bay Trans Labrador Highway*. Prepared for the Department of Works, Services and Transportation, St. John's, NL.



- Nellemann, C. and R.D. Cameron. 1998. Cumulative impacts on an evolving oil-field complex on the distribution of calving caribou. *Canadian Journal of Zoology*, 76: 1,425:1,420.
- Otto, R.D. 2002. *Density Distribution Survey and Population Estimate: Mealy Mountains Caribou Heard, 2002*. Science Division, Wildlife and Protection Areas, Department of Tourism, Culture and Recreation, Happy Valley-Goose Bay, NL.
- Otto, R.D. 2003. *Supplementary Report Trans Labrador Highway Phase III, Caribou Component Study*. Science Division, Wildlife and Protection Areas, Department of Tourism, Culture and Recreation. Prepared for the Department of Works, Services and Transportation, St. John's, NL.
- Schaefer, J.A. 1997. *Aerial Census of Mealy Mountains Caribou, March 1997*. Inland Fish and Wildlife Division internal report (Reference # 504). Happy Valley-Goose Bay, NL.
- Scott, W.B. and E.J. Crossman. 1973. Freshwater Fishes of Canada. *Bulletin of Fisheries Research Board of Canada*, No. 194.
- Scruton, D.A., D.R. Sooley, L. Moores, M.A. Barnes, R.A. Buchanan and R.N. McCubbin. 1997. *Forestry Guidelines for the Protection of Fish Habitat in Newfoundland and Labrador*. Department of Fisheries and Oceans, St. John's, NL.



APPENDIX A

Environmental Impact Statement Supplementary Deficiency Statement

**CARTWRIGHT JUNCTION TO HAPPY VALLEY-GOOSE BAY
TRANS LABRADOR HIGHWAY
ENVIRONMENTAL IMPACT STATEMENT ADDENDUM
SUPPLEMENTARY DEFICIENCY STATEMENT
Issued February 2004**

- The Guidelines required discussion of the Akamiuapishku/ Mealy Mountain National Park Study Area and the Feasibility Study for potential establishment of a national park, including size, geographic area, ecological integrity and wilderness character. The Guidelines further required consideration of cumulative effects of the highway on the Feasibility Study and potential establishment of a National Park. The Deficiency Statement reiterates those requirements and a response has been provided that the presence of a road is not considered to result in significant effect if the road were within the boundaries of the national park, and that a national park can be considered a mitigative measure. Description provided for four of the five ecoregions and Natural Region 21 has been cursory. Park boundaries have not yet been finalized and consultations may indicate that a highway through the National Park is not advisable or desirable. The possibility exists that any future boundaries of a national park may be designed to avoid a highway. Given that possibility, provide a more comprehensive discussion of the potential cumulative effects to ecological integrity of the five ecoregions and Natural Region 21 if the preferred route is constructed and a Mealy Mountains National Park boundary was designed to exclude the highway from the National Park. In the discussion use the description of the ecological characteristics of the five ecoregions and Natural Region and use each of the two route scenarios to describe a potential Mealy Mountains National Park that excludes a highway. Compare the ecological integrity of a potential national park that excludes the preferred route and the ecological integrity of a potential national park that excludes the alternative route and compare each of the potential parks' size, geographic area and conservation targets, wilderness character, wilderness core and wilderness values.
- The Guidelines require an analysis of environmental effects for each Valued Ecosystem Component (VEC) with one of the criteria for evaluation to be level of certainty. The Deficiency Statement indicates that the level of confidence contained in Table 6.9 for the environmental effects summary for caribou from the preferred route is High for a Not Significant (Minor) environmental effect and a response is provided that habitat use by radio-collared animals is consistent with historic patterns, considerable literature exists on reaction of caribou to linear development, and the experience of the study team allows for a high level of confidence. The information provided in the Caribou Component Study Addendum is still limited in scope (few caribou were observed). The available literature on caribou reaction to linear development provides conflicting conclusions. Describe the conflict within the available literature and apply the conclusions of each type of the literature to caribou species at risk, such as the Mealy Mountains Caribou Herd, for which information is still limited. Describe whether a Not Significant (Minor) environmental effect can be predicted with a High level of confidence for caribou species at risk for which information available is still limited, under each conflicting conclusion presented in literature.
- The Guidelines required a description of environmental compliance and monitoring programs. The EIS indicates that collared caribou will continue to be monitored during construction. The Deficiency Statement advises that a monitoring program must be developed to evaluate the effects predictions generated in the EIS and that, at a minimum, evaluation of habitat use must be made during caribou calving and postcalving for both construction and post-construction. In addition, caribou should be monitored to assess the ability of animals to cross the highway once constructed. A response has been provided that no environmental effects monitoring is proposed and that

additional work was conducted to provide information on calving and post-calving periods in 2003. The additional work conducted is useful information for preconstruction but does not contribute to the testing of effects predictions during construction and for post-construction. A monitoring program will still be required for this caribou population for which available information is currently limited and which is listed as a species at risk. Describe this monitoring program.

- The Guidelines required that technically and economically feasible mitigative measures shall be described and discussed. The EIS indicates that no unique or extraordinary mitigation measures apply with regard to protecting fish and fish habitat. The Deficiency Statement advises that construction personnel must not fish while on site since fish survey work by Inland Fish and Wildlife is ongoing to determine pre-access fish population inventory. The response provided questions the authority under which a no fishing policy can be enforced and advises that the proponent is not able to commit to a no fishing policy for construction personnel. Access to waterways along the highway route is currently limited and difficult. The purpose of Inland Fish and Wildlife's ongoing fish survey is to determine a characterization of fish population prior to construction and increased access. The baseline information to be collected will form the basis of discussions with Fisheries and Oceans Canada on management options to mitigate effects of increased access on fish populations. The fish survey being conducted is based on the assumption that pre-construction fishing activity provides the baseline information necessary for effects prediction and that there will be limited access and fishing as each section is constructed, particularly in more remote areas. Fishing by construction personnel will therefore affect the results of the fish survey. The proponent is required to develop and implement a no fishing policy for construction personnel and contract workers. Describe the no fishing policy, which is to form part of the Environmental Protection Plans and to be used as part of the environmental awareness training for such personnel and workers.
- Table 2.7 of the EIS Addendum compares the factors associated with each of the possible routes. Table 2.2 provides the proposed crossing structure type for each route. It is unclear whether the savings associated with reduced sizes and types of crossing structures is reflected in the construction costs for the outfitter route. The Outfitter Route requires two fewer bridges and nine fewer pipe arches but 31 additional culverts. Information should be provided on the relative cost of each bridge structure and the relative cost for pipe arches and culverts. The relative total cost should then be provided to compare the relative cost increase or savings attributed to crossing structures for each alternative route.
- Additional information to be supplied for compliance with the Supplementary Deficiency Statements for the Tourism and Recreation and Fish and Fish Habitat Component Study Addenda will enable the proponent to provide more baseline information with respect to fish population and characteristics, the outfitting industry and the fishery upon which the industry has been established, after the proponent has undertaken the necessary consultation with the outfitting industry. Provide a renewed perspective of the effects of the highway upon the fishery, upon the fish resource for the outfitting industry and upon the outfitting industry as each of those might be affected by both the preferred and alternate routes.
- The proponent's contention that enforcement agencies have adequate resources in place to monitor fishing activities has not been corroborated with enforcement agencies as the proponent has claimed. Provide the references necessary to confirm the proposition that resources are adequate to enforce fisheries management and enforcement, or indicate whether Appendix E of the EIS Addendum should be considered to constitute the predicted environmental effects of the undertaking.

- The proponent has still not acknowledged that there is a distinction between resident and non-resident angling and the fly in lodge based outfitting industry. Additional information to be supplied for compliance with the Supplementary Deficiency Statements for the Tourism and Recreation and Fish and Fish Habitat Component Studies will assist the proponent in illustrating the differences between the two fishing experiences. With that additional information, and in consideration of proximity of the highway to the existing outfitting industry and the documented tripling of angling in Labrador, provide a renewed perspective on the predicted potential effects of each highway routing based on proximity of fly in fishing lodges to the highway, the predicted potential effects of improved access afforded by the highway to the fishery upon which the outfitting lodges are based and upon the sustainability of the fishery upon which the outfitting industry relies. As part of that discussion provide an assessment comparing the effects that might be localized to an area of high fishing potential with how stocks throughout a watershed might be affected by overutilization of a resource in a localized area.
- Big Game Hunter Surveys and Auto Exit Surveys demonstrate that there are differences by orders of magnitude in tourism expenditures between the two markets. Use the additional information to be supplied for compliance with the Supplementary Deficiency Statements for the Tourism and Recreation and Fish and Fish Habitat Component Study Addenda to provide comparisons of the tourism potential of existing fly in based outfitting operations with the tourism potential of automotive visitors who might displace clients of outfitting operations if those operations are jeopardized by construction and operation of the highway. Also use the additional information to provide an assessment of effects on fish stocks resulting from displacement of the outfitting fishery with a fishery based upon automotive anglers. In addition, use the additional information to compare the employment associated with fly in based fishing lodges and the employment associated with automotive visitors.
- While the proponent has encountered no studies on lodge closures as a result of improved access to resources upon which a lodge was based there exists ample anecdotal information about the relationship between improved access and sustainability of resources. The lack of scientific study should not be used to discount that a possible relationship exists. Anecdotal information can provide a logical link, admittedly not scientifically documented, which can be used to form the basis of a professional judgement. The proponent is required to investigate past experience with the effects of improved access on resources which, though perhaps not scientifically defensible as cause and effect, may contribute to making an informed decision as to a relationship between the two. Once this relationship is projected measures should then be proposed to suggest appropriate planning and enforcement, so that the necessary agencies can be alerted to the need for any additional planning initiatives and the need for any additional resources.
- The EIS Addendum contains a proposition that resource management agencies should consider a cooperative management or regional land use planning approach. Provide past experience on how such an approach might be developed, what might be included in the approach, who would be responsible for management and planning, what role the proponent would be expected to assume if such an approach were to be implemented and how the success of the approach could be evaluated.
- The Deficiency Statement required conclusions and recommendations of the Labrador Innu Land Use Component Study to be incorporated into the effects assessment to provide an integrated and comprehensive evaluation of effects and allow further incorporation of conclusions and findings into the Environmental Protection Plans. This has not been done and as a result there are exclusions of discussion or consideration of mitigation of impacts on Innu land use within the proponent's

proposed mitigation. This is also the case in the proponent's monitoring and follow-up commitments and the conclusions with respect to residual environmental effects. Review the effects assessment and incorporate the conclusions and recommendation of the Labrador Innu Land Use Component Study to provide an integrated environmental effects assessment.

- The proponent's discussion of Innu concerns with the alternative route is described as incomplete and inaccurate. The Addendum acknowledges the (outfitter's) alternative route was not part of the consultations conducted by Innu Nation in 1992 as a consequence of the Process Agreement between Innu Nation and the Department of Works, Services and Transportation. The EIS does not acknowledge that Innu Nation has subsequently expressed support for the alternate route indicating that, of the alternatives presented to the community during the 2002 consultations, the community members identified what became the preferred route as the route believed to have the least impact on Innu land use. It is suggested, however, that the proponent revised the routeing of the highway from that previously agreed during Innu consultations and the alignment now proposed in the vicinity of Unikush lake would not meet the objective of ensuring the highway does not provide access to major lake systems used by Innu. Innu Nation has made representation that the preferred route is not acceptable and that the alternative route appears to offer significant advantages for protecting Innu land use. They also suggested that the proponent has misconstrued Innu concerns with "headwaters" and that Innu Nation's concern is for the road to be designed from the outset to maximize opportunities for protection of ecological and cultural integrity of the region. Consult with Innu Nation to confirm their views on the preferred route as described in the EIS and the alternate route described in the EIS Addendum. Clarify how the EIS and its Addendum's discussion of Innu concerns with the alternate route could be described as incomplete and inaccurate. Clarify Innu concerns with "headwaters" as those concerns may affect routeing of the alternative route.
- The EIS assessment of impacts on resource use and users is described as minor (not significant) and appears to display some inconsistency with the Labrador Innu Land Use Component Study which assesses those impacts as significant (minor to major) depending on the adequacy of mitigation measures. Review the effects assessment and incorporate the conclusions and recommendations of the Labrador Innu Land Use Component Study to provide an integrated environmental effects assessment on resource use and users.
- Tallyman observations are based on extensive observation and expertise and the proponent's characterization of those observations as anecdotal information and opinion is disrespectful and dismissive of aboriginal knowledge.

APPENDIX B

Federal Position on the EIS/CSR Addendum, Phase III Trans Labrador Highway



PO Box 5667
St. John's NL A1C 5X1

Your File Votre référence

Our File Notre référence
BAB 3970-750

March 8, 2004

Mr. Ed Kaufhold
Environmental Biologist
Environmental Assessment Division
Department of Environment and Conservation
Government of Newfoundland and Labrador
P. O. Box 8700
St. John's NL A1B 4J6

Dear Mr. Kaufhold:

RE: Federal Position on the EIS/CSR Addendum, Phase III TransLabrador Highway

DFO is in receipt of the Newfoundland and Labrador Department of Transportation and Works' (DTW) letter, dated March 08, 2004, stating its intent to proceed with the proposed Outfitter's or southern route, as the preferred route re: Phase III of the Trans Labrador Highway (TLH), linking Phase I, at Happy Valley–Goose Bay with Phase II, at Cartwright Junction.

DFO is the lead RA for the *Canadian Environmental Assessment Act* (CEAA) review due to triggers of the *Navigable Waters Protection Act* (NWPA) and the potential for authorizations under the *Fisheries Act*, with Parks Canada, Environment Canada (EC) and Health Canada as expert Federal Authorities (FAs), providing specialist advice to DFO on the proposed project. The level of CEAA review for this project is that of a Comprehensive Study and requires preparation of a Comprehensive Study Report (CSR). DFO has worked very closely with the FAs in reviewing the Environmental Impact Statement/Comprehensive Study Report (EIS/CSR) Addendum and associated component study addenda. Through this consultation, DFO has developed the federal position on the EIS/CSR Addendum, now focusing on the southern route.

It has been determined that the EIS/CSR Addendum remains deficient and further work is required. DFO and the FAs acknowledge that DTW has reconsidered its preferred routing option, due to concerns raised by the provincial environmental assessment committee and the public. However, federal deficiencies pertaining to the southern route still remain and must be addressed by the proponent before the EIS/CSR Addendum meets the environmental assessment guidelines for this project and can be considered acceptable for public review as a CSR under CEAA. Those deficiencies most worthy of note are referenced below. In addition, specific comments and deficiencies from DFO, Environment Canada and Parks Canada are provided as an attachment. No Health Canada comments are included as no further outstanding concerns were identified by that department.

Cumulative Effects Assessment

The EIS/CSR Addendum considered future projects that are likely to proceed and also future actions potentially induced by the project, including: uncontrolled development, increased motorized off-road activity, increased fishing and hunting, uncontrolled forestry, etc., in the cumulative effects assessment. The proponent recognizes that various impacts associated with this project are related to these activities and repeatedly recommends a cooperative management or regional land use planning approach to managing the land and resources along the highway corridor and surrounding area. While DFO, Parks Canada and Environment Canada agree with this recommendation, no details have been provided regarding how this will happen. The proponent should expand upon aspects of such an approach, including: framework, development, implementation, roles and responsibilities of resource agencies, proponent, etc.

Monitoring

Based upon the nature of the federal issues and public concern raised during the EA process, there is a requirement for an environmental effects monitoring component to measure the secondary or induced effects on waterfowl resulting from increased access. Integral to this program would be a waterfowl population monitoring program, coupled with reviews of hunting activity. The EIS/CSR should describe this environmental monitoring program, include a statement of objectives required and identify responsibilities regarding undertaking this follow-up. The proponent should consult with Environment Canada regarding program design. Environment Canada will ensure implementation on DFO's behalf.

For purposes of clarity, it is also recommended that all monitoring initiatives be consolidated in a roll up section dealing solely with this issue taking into account all aspects of follow-up monitoring.

Resource Use and Users

The federal EA must consider changes or effects that the project may cause in respect to the current use of lands and resources for traditional purposes by aboriginal groups. This information has been captured in the Innu Land Use Component Study. The EIS/CSR Addendum however, fails to integrate its findings and it remains unclear whether the proponent plans to adopt the recommendations provided. The EIS/CSR must fully integrate the findings of the Innu Land Use Component Study, and similarly, all other component studies into the conclusions of the EIS/CSR before it is considered acceptable.

I trust these comments will be of assistance. If you have any questions in this regard please do not hesitate to call the undersigned at (709) 772-0853.

Yours truly,

Original Signed By

Sigrid Kuehnemund
Senior Regional Habitat Biologist
Marine Environment & Habitat Management Division

Attachment

cc: Glenn Troke, Environment Canada
Gary Pittman, Parks Canada
Tom Ferris, Health Canada

DFO Comments: Trans Labrador Highway Phase III EIS/CSR Addendum

DFO has reviewed the Environmental Impact Statement/Comprehensive Study Report (EIS/CSR) Addendum, Cartwright Junction to Happy Valley-Goose Bay Trans Labrador Highway (TLH), dated October 2003, to determine compliance with the EIS/CSR Guidelines, focusing on fish, fish habitat and fisheries. It has been determined that the EIS/CSR Addendum remains deficient and further work is required by the proponent before it can be considered acceptable for public review under the *Canadian Environmental Assessment Act* (CEAA).

General Comments

Fish and Fish Habitat

- DFO has previously indicated that habitat information, basic hydrologic and hydraulic information, watercourse crossing structural design parameters, as well as precise crossing locations must be provided to DFO as soon as the information becomes available, such that DFO can adequately determine the potential for harmful alteration, disruption or destruction of fish habitat (HADD) at crossing locations, on a case-by-case basis. It is essential that this information be provided well in advance of construction to allow DFO adequate time for review and for DTW to satisfactorily address any concerns the Department may have. If DFO determines that a HADD will likely result, DTW must provide a precise quantification of the habitat; DFO will determine whether the HADD should be authorized and if so, specify conditions under which it may proceed (i.e., appropriate mitigations, fish habitat compensation, etc.). It is important to note that issuance of a Section 35(2) *Fisheries Act* authorization cannot occur until a fish habitat compensation agreement between the proponent and DFO is finalized.
- Given the time needed for these steps to take place, it is strongly recommended, that in order to avoid unnecessary project delays, DTW should provide site-specific details for each crossing location as soon as possible, to allow DFO adequate opportunity to determine the potential for a HADD of fish habitat and the requirement for the issuance of a *Fisheries Act* Authorization, identify areas of potential concern, address possibilities of re-design or re-location of crossings, if warranted and initiate discussions regarding mitigations. DFO and DTW staff should meet to clarify exactly what information is required by DFO, prior to any site specific details being submitted.
- Under the EIS/CSR Guidelines, watersheds with an area of less than 2 km² were exempt from survey. It is important to note however that some of these areas could come from groundwater sources, which can be very important for seasonal temperature refugia and as spawning sites, especially for Canadian Shield brook trout populations. It is recommended that basic water quality measurements (conductivity and temperature) be conducted at 20% of the crossings considered to have a watershed drainage area less than 2 km² above the crossing, to determine groundwater presence/absence. This 20% sample should be representative of all habitat types and watersheds within the project area. This is particularly important given that the watercourse crossings for the southern route lie further upstream, and are therefore comparatively smaller in upstream basin areas and flows than those for the northern route.

Fishery Resources

- Regarding the need for increased management measures to address potential effects on fishery resources, DFO recognizes that new management approaches will be required to address the issues arising from Phase III of the TLH. A regulatory amendment allowing individual species management (in contrast to the current multi-species approach) is anticipated to be in place in 2005, and will be a key

component of DFO's management strategy for this area. DFO will soon begin consultation with user groups, including aboriginal groups, in the development of its new 5 year management plan.

Resource Use and Users

- The federal EA must consider changes or effects that the project may cause in respect to the current use of lands and resources for traditional purposes by aboriginal groups. This information has been captured in the Innu Land Use Component Study. The EIS/CSR Addendum however, fails to integrate its findings and it remains unclear whether DTW plans to adopt the recommendations provided. The EIS/CSR Addendum must fully integrate the findings of the Innu Land Use Component Study, and similarly, all other component studies into the conclusions of the EIS/CSR Addendum.

Change in Route Selection

- The EIS/CSR Addendum must clearly reflect the change in route selection. It is suggested that the EIS/CSR Addendum include: an overarching statement documenting the Outfitter's (southern) route as the selected route; justification for this choice (i.e., summary of public comments brought forward throughout the EA process); a map of the southern route; and clarification correcting all reference to the northern route as being the proponent's 'preferred' route.

Additional Waterfowl Information

- For the purposes of the federal review, additional information was required in determining the adequacy of the Waterfowl Component Study Addendum. Two submissions were provided to Environment Canada for review, and these two new submissions should be included within the EIS/CSR Addendum.

Specific Comments

Specific comments and deficiencies are organized into two categories – adequacy of the EIS/CSR Addendum in responding to the deficiency statement, and technical issues including clarification on the information presented on the southern route (Appendix C).

Adequacy

- Response 2 (Part I Comments) is inadequate. The proponent's decision to revise the classification of the main stem Churchill River crossing location to Type IV habitat does not preclude DFO's requirement for quantitative site-specific habitat information. Type IV habitat can be critical for many non-salmonid species, including northern pike, longnose sucker, white sucker, burbot and American eel resident in the study area. As such, Type IV habitat that is harmfully altered, disrupted or destroyed will be considered in DFO's HADD decision making process. See also DFO's comments on the Churchill River crossing in DFO's December 31, 2003 letter (Kuehnemund to Kaufhold) regarding the Fish and Fish Habitat Component Study Addendum (Attachment, Comment 8, p.2).

- Response 3 (Part I Comments) is inadequate. It is stated that Section 2.4.4 provided a detailed discussion of the "design criteria and methodologies" for determining appropriate crossing structures - it does not. There is no discussion re the criteria as to when arch culverts, circular culverts, box culverts, bridges etc. will be used. The only criteria presented, is for culverts less or greater than 25 m in length. Also, it is not clear how the information presented on pp.56-58 of Appendix C was used to determine the appropriate type of stream crossing structure. The methods and procedures by which hydrological information (i.e., flow and watercourse data) was factored into the selection of appropriate stream crossing structures should be presented in the EIS/CSR Addendum.

- Response 6 (Part I Comments) – With regards to consideration of the precautionary principle, the proponent’s reference to a ‘common sense’ approach to get the most accomplished during the short construction season is inappropriate. A short construction season in Labrador should not be portrayed as justification for failing to take the necessary measures to mitigate potential adverse environmental effects. Please revise accordingly.
- Response 7 (Part I Comments) - The EIS/CSR Addendum makes several references to a cooperative management or regional land use planning approach to managing the land and resources along the highway and surrounding area (Response 7 and 44, sections 7 and 8 of Appendix C, and Appendix E). While DFO agrees with this recommendation, no details are provided as to how this will happen. The proponent should expand upon the details of this concept and clarify how it intends to implement this approach.
- Response 4 (Part II Comments) indicates that for both the “preferred” and Outfitter’s routes, proximity to major inflows or outflows of ponds or lakes was considered when determining proposed crossing locations. However, Tables 7.14-7.18 reveals that the Outfitter’s route has a preponderance of crossings located near to ponds and lakes. Pond and lake inflows and outflows are areas of high productivity and frequently spawning sites for salmonids. They are therefore sensitive to sediment from run-off from roads, and should be avoided as preferred crossing locations. At a minimum, the watercourse crossings should be located 100 m away from inlets and outlets. The EIS/CSR Addendum should reflect this point.
- Response 9 is inadequate. This comment reflected the absence of any rationale for culvert type selection and the hydrological information upon which this rationale is partially based. Again, the methods and procedures by which hydrological information (i.e., flow and watercourse data) was factored into the selection of appropriate stream crossing structures should be presented in the EIS/CSR Addendum (see Response 3).
- Response 47 is inadequate as no culvert selection criterion is presented in the EIS/CSR Addendum. It is stated, “...*preliminary structure design is based on hydrologic analysis, hydraulic analysis, and details from topographic mapping.*” Please present the methods and procedures by which hydrological information (i.e., flow and watercourse data) was factored into the selection of appropriate stream crossing structures (See Response 3 and 9).
- Response 79 – Please remove reference to discussion with DFO representatives on the topic of adequate resources. It appears to be taken out of context.
- Response 90 – Please provide species summaries for longnose sucker and white sucker. Also for the Arctic charr summary, the statement that ‘anadromous charr move out of the rivers and downstream to sea when 152-203 mm in length’ is overly precise. Studies at Ikarut River, Labrador, show juvenile charr of much smaller lengths than 152 mm moving downstream to the sea. Also, Arctic charr and sea run brook trout return to freshwater as juveniles at very small sizes, i.e. about 120 mm and above which should be added to the description. This is important because smaller juvenile fish have slower swimming speeds than adults of the same species due to their shorter lengths. The design criteria for crossing structures on streams with charr resident in them would have to consider juveniles re-entering the system while still small in size. Anadromous salmon return to freshwater and spawn first after one year at sea; whereas, sea trout and charr return to freshwater and may or may not spawn after only a couple of months or less at sea. Therefore, they are still of relatively small size compared to an adult salmon which must be considered in culvert design.

- Response 92 is inadequate. It should include the fact that that migration of adults, earlier and later than specified does occur albeit in low numbers. In addition, what about salmon smolts, juvenile trout and charr as well as the kelts that spawned the previous fall? Please revise accordingly.
- Response 94 is inadequate. Drainage culverts should be separate from fish habitat culverts. Further, for areas where bedrock or other factors do not permit adequate countersinking to the established parameters, an open bottom structure should be considered. Countersinking is required for all culverts in fish bearing waters as described in the DFO Guidelines – the proponent’s commitment in this regard should be reflected in the EIS/CSR Addendum.
- Response 116 is inadequate. Exploitation of fishery resources during construction is a significant issue which must be addressed. If the proponent does not intend to implement a no hunting/fishing policy, what alternative means of mitigation will be proposed?

Technical Issues

- S2.2.4.6 Route Proposed by Outfitters (A13) – This section needs to be revised to accurately represent the Innu Nation’s position of supporting the Outfitter’s route.
- S2.3.2.5 Watercourse Crossings - The Outfitter’s route will result in more watercourse crossings than the “preferred” route. Many of the crossings within the Outfitter’s route study area are small in size and thus would utilize cylindrical culverts, while those within the “preferred” route study area would be more apt to use bottomless arch culverts and bridges simply due to the size of the crossing. To mitigate potential effects to fish and fish habitat, closed bottom culverts should be countersunk according to Gosse et al., 1998, or to 40% of the culvert diameter; where possible, culverts should be sized to encompass the entire natural stream channel width; and to retain the functionality of the streambed, substrate should be placed within the culvert to emulate the natural stream substrate and natural stream flow characteristics.
- S2.3.4 Fish and Fish Habitat - The limited fish data collected indicates the fish communities along the outfitter’s route are dominated by brook trout. It is important to note that these headwater areas are brook trout nursery areas and very important to the overall production of these populations.
- S2.3.4 Fish and Fish Habitat - Both routes have potential to place added angling pressure on fish stocks. However, the Outfitter’s route will place less angling pressure on speckled trout and Atlantic salmon than the “preferred” route, based on distance from the Eagle River watershed (speckled trout are common in a number of lakes on the Eagle River plateau: i.e., Parke, Igloo and No Name; large Atlantic Salmon are common on the upper Eagle River: areas of Parke Lake and Indian House Lake).
- Table 2.6 requires updating. It is understood that two new camps are licensed near camp 8 on Eagle River. Also, the Eagle River Salmon Club is not listed.
- Figure 3.5 – This figure and others indicate the Town of Paradise River to be located at the junction of the main stem of Paradise River with Follett’s Pond. In fact, the Town of Paradise River is located at the estuary approximately 6 km downstream. Please revise accordingly.
- S 3.3.4.4 Pipe Arch and Cylindrical Culverts – It is recognized that DTW will adhere to DFO guidelines (Gosse et al. 1998) for design and installation of watercourse crossing structures. Gosse et al (1998) has been developed to apply to a broad range of circumstances and as such, it should be made clear in EIS/CSR Addendum that for culvert installations, modifications of the DFO guidelines, in

consultation with DFO staff may be required to address 1) site specific considerations and 2) the passage of fish species other than salmon, brook trout and brown trout. Further, in this section, it is stated, “*Culverts longer than 25 m and at watercourse crossings where fish passage will be facilitated will have slopes no greater than 0.5 percent to ensure that water velocity through the culvert does not exceed 0.9 m/s.*” The 0.9 m/s velocity target is too high to ensure the passage of juvenile fish; a more appropriate design target would be 0.6 m/s. Please revise accordingly.

- Table 3.7 (1.4 Vegetation Clearing) – In determining the buffer zone for clearing using the formula $20\text{ m} + 1.5 \times \text{Slope} (\%)$, it should be recognized that due to the geotechnical properties of soils along the selected route within Labrador, this formula may not be applicable in all situations and may require modification on a site specific basis, to prevent potential siltation during construction and operational phases. Please incorporate these specifications in the EIS/CSR Addendum.
- S7.5.3.1 Fish Habitat – It is stated that “*a detailed aerial assessment was not possible on all watercourse crossings due to the small size of some streams and visual obstruction created by the thick canopy*”. Please note that at the regulatory approval stage, DFO will require site-specific information for all watercourse crossings as referenced earlier.
- Table 7.30 – Resident Brook Trout can spawn until mid-October; please change spawning time to Sep 1 – Oct 15. Arctic Charr can start spawning mid-September; please change spawning time to Sep 15 – Nov 15 and resultant incubation time to Sep 15 – Jun 15. Further, the spawning migration time for Atlantic Salmon should be changed to June 15 – Sept 15.
- S7.5.6 Existing Knowledge – P.259 references water loss in culverts (also S7.5.8.1 Construction, P.263). In addition to use of coarse fill, it is important to note that improper culvert embedding, improperly designed and placed upstream and downstream pools and culvert shifting from freeze and thaw also contribute to water loss in culverts.
- S7.5.7 Mitigation – Use of pipe arch culverts is listed as a mitigation measure to minimize adverse effects of the project. This is not considered to be a best management practice: DFO’s position is that open bottom/bottomless arch culverts are the preferred type of culvert installation to minimize potential impacts on fish and fish habitat. These culverts maintain the natural bottom substrate and hydraulic capacity of the watercourse (footings installed outside the wetted perimeter of the stream) and should be considered for sensitive areas, or areas where bedrock or other factors does not permit proper embedment of closed bottom culverts.
- S7.5.7 Mitigation - The list of mitigations on P.260 should also include: implementation of siltation control measures (i.e., proper construction of drainage ditches leading away from streams with use of check dams).
- S7.5.8.1 Construction – With reference to the Churchill River crossing, the habitat has been classified by the proponent as Beak Type IV. Type IV habitat is utilized for spawning and rearing of some non-salmonid species found in the Churchill River watershed, including: northern pike, burbot, and American eel.

Environment Canada Comments: Trans Labrador Highway Phase III EIS/CSR Addendum

EC commentary is founded on the department's roles as an expert federal authority under the Canadian Environmental Assessment Act (CEAA) and as a competent department under the Species at Risk Act (SARA). EC commentary is also premised on an understanding that the proponent has confirmed that the 'southern', or 'outfitters' route, is the preferred route for the highway.

Important ecosystem values have been identified and described in the CSR addendum. These values include waterfowl for which the federal government has a responsibility under the Migratory Birds Convention Act (MBCA), and the Mealy Mountain woodland caribou herd for which the federal government has a responsibility under the Species at Risk Act (SARA). The department's perspective on the assessment of impacts on MBCA-listed waterfowl is informed by EC experts, while the department's perspective on the SARA-listed woodland caribou is informed by expert staff in the Government of Newfoundland and Labrador. EC commentary on the accounting of greenhouse gases (GHG) attributable to the project is also offered for consideration in finalizing the CSR.

Appropriate Standard of Environmental Assessment

Project-induced effects on migratory waterfowl and on the SARA-listed woodland caribou demand a high standard of care in the CSR given implications for the health, survival or recovery of these species, which are valued by Aboriginal persons and local communities. The Eagle River Plateau is one of the most important waterfowl breeding habitats in the Labrador/Ungava Peninsula, and the waterfowl population that would be affected by the project forms a substantial portion of the Atlantic Flyway. Under SARA, the woodland caribou has been listed as a threatened species because of the habitat loss and increased predation which has already been experienced by woodland caribou across its range. In the federal EA of the highway project, SARA specifically calls for the identification and assessment of adverse effects on listed species and their critical habitat. It must also be assured that appropriate measures are taken to avoid or lessen all adverse effects.

The Mealy Mountain Caribou Herd (MMCH)

The safety-net provisions of SARA mandate EC to assure adequate protection of threatened or endangered species which would otherwise be under provincial jurisdiction. And again, the SARA requires any federal environmental assessment to identify and assess adverse effects on all SARA-listed species and to ensure those effects are mitigated and monitored should the project be supported. In the case of caribou, EC draws on the expertise of the Inland Fish and Wildlife Division (IFWD) of the Newfoundland and Labrador Department of Tourism, Culture and Recreation.

The northern route could have significant implications for the survival and recovery of the caribou. While IFWD has indicated that the outfitter's route is preferable to the northern route, it remains important that appropriate precautions be taken to assure avoidance of significant adverse impacts on this threatened species. In terms of the outfitter's route, therefore, EC supports the IFWD recommendation that a caribou monitoring program be developed and implemented in advance of project construction. The design of such a program should be satisfactory to IFWD prior to implementation.

Waterfowl

EC has already conveyed to DFO the limitations with the waterfowl survey approach described in the addendum, particularly with respect to randomness of coverage and repeatability of the survey. Nonetheless EC has undertaken an analysis of the raw survey data provided by the proponent with the

following objectives: to compare results against the published literature; to assess the numbers of waterfowl that would be impacted by the footprint of the road; and to assess the numbers of waterfowl that would be exposed to induced impacts as a result of increased access.

In comparison to the northern route, density estimates are consistently higher for all waterfowl species along the outfitter's route, particularly for Canada Goose and Black Duck. The following observations are specific to the outfitter's route and EC's perspective on the necessary mitigation and follow-up program.

Based on the observed waterfowl, and the obvious habitat loss associated with highway construction within a 40 m corridor, it is estimated that some birds would be directly displaced. However there is little information available on the impact of highways on boreal wetlands, particularly roads that traverse large plateau bogs such as the Eagle Plateau. Also, the consideration of residual hydrological effects on wetlands proximal to the highway is only preliminary in nature in the Comprehensive Study and poorly understood generally.

When the zone of impact is extended to 10 km on either side of the highway to assess induced effects associated with increased access, much larger numbers of waterfowl could be affected. For the outfitter's route, 5660 waterfowl comprised of 1203 Canada Geese, 2099 Black Ducks, 1958 divers, and 401 dabblers (excluding Black Ducks) could be affected. On the eastern common portion of the highway, an additional 1128 birds could be affected.

The proportion of the southern Labrador waterfowl population that would potentially be affected along the outfitter's route is as follows:

- Canada Geese - 1.6% of the population, while the eastern section common to both routes holds 0.2% of the population
- Black Ducks - 4.4% of the population, while the eastern 'common' section holds 0.8%.
- Diving duck estimates account for 0.7% of the population, while the eastern section common to both routes holds 0.2% of the population.
- For dabblers (excluding Black Ducks), the numbers of potentially affected birds are 1.2% of the population, while the eastern common section holds 0.2%.

While the direct population effects of the highway footprint are likely to be minor, there is considerable uncertainty regarding residual hydrological effects on wetlands proximal to the construction corridor. If highway construction affects drainage patterns, then considerably more habitat, and the waterfowl dependent on that habitat, would be affected.

The secondary or induced effects on waterfowl resulting from increased access, though theoretically manageable, are potentially substantial. For these effects to be measured and managed so as to avoid significant adverse effects, it would be prudent to design and implement an appropriate follow-up monitoring and management program in advance of project construction. Integral to this program would be a waterfowl population monitoring program, coupled with a review of hunting activity. It is important that the design of such a program be satisfactory to EC prior to implementation.

Greenhouse Gas Emissions

The proponent provides an accounting of greenhouse gas (GHG) emissions and sinks associated with the Northern Route. The revised CSR should provide an updated accounting for the Outfitters Route. The following commentary on the original accounting is offered to facilitate the revised estimate for the Outfitters Route:

- The estimated CO₂ from 200 vehicles per day, traveling a total of 80,500 vehicle kms, consuming 10 l/100km would be 7.05 kt per year, based on 2.4 kg CO₂/l of fuel (gasoline) combusted, 365 days/year. The value presented in the table is 4.31 kt/yr.
- The daily distance traveled by the two tractor trailer trucks was not indicated, so the calculation cannot be verified. However, for every litre of diesel combusted, approximately 2.7 kg of CO₂ is produced (Environment Canada - Greenhouse Gas Emissions 1990 - 2000 Appendix D). If it is assumed that the trucks carry out return trips daily (800 kms), 5 days a week, 52 weeks/year, annual distance traveled would be 416,000 km/yr. Assuming a fuel consumption of 38 l/100km, total fuel consumption would be 158,080 l/yr; 1 l diesel = 2.73 kg CO₂ which would produce 431558 kg CO₂/yr = 0.43 kt/yr. The value presented in the table is 0.19 kt/yr.
- The value estimated for the ferry was verified, using a diesel CO₂ emission value of 2.7 kg/l of fuel.
- The total estimated annual CO₂ production, using the assumptions presented, would be 7.57 kt/yr rather than the 4.59 kt/yr suggested.
- The assumptions did not indicate if the estimates included recreational/sports users, tour buses, logging trucks etc. If these were not considered, then the annual emissions will be considerably higher. The conclusion could be reasonably made that with the establishment of the Trans Labrador Highway, based on the assumptions presented, that CO₂ emissions will increase by 50%.

Generally, the assumptions upon which estimates for future traffic were based were not articulated so it is difficult to debate the estimated emissions. However, based on what was presented, anticipated emissions were underestimated by a significant amount. The proponent should provide greater detail on assumptions and factors used in the calculations.

Cumulative Effects

The CSR relies exclusively on an assumption that any cumulative effects associated with other projects and activities, including those induced by the proposed highway project, will be adequately mitigated by the administration of the applicable planning and regulatory requirements of other agencies. However, no analysis that supports such an assumption is offered. While recognition of the applicable planning and regulatory regime is important to the conduct of an EA, the mere reference to such a regime does not serve as a substitute for a careful consideration of potential adverse environmental effects, including cumulative effects, and the necessary mitigation and follow-up measures. As a consequence, potential cumulative effects are not fully understood, and in the absence of a comprehensive mitigation and follow-up strategy, it is uncertain whether impacts can be adequately managed.

The CSR recommends that the effects of induced development are best addressed through a regional land use planning process. EC supports such an approach and recommends the establishment of a Cooperative Land and Resource Use Management Committee to oversee the exercise. Integral to this program would be a waterfowl population monitoring program, coupled with assessments of hunting activity and enforcement capacity.

Conclusion

The principal impacts associated with this project are related to the cumulative effects of reasonably foreseeable future development and the induced effects of increased access. The CSR addendum recognizes these effects and recommends they best be dealt with through a regional land use planning

exercise. Therefore, EC recommends that the establishment of a Cooperative Land and Resource Use Management Committee as discussed above be explicitly identified as a vital component of a mitigation and follow-up monitoring strategy for the applicable VECs (e.g., caribou, waterfowl). This committee could be vital to ensuring significant adverse environmental effects are successfully avoided.

Parks Canada Comments: Trans Labrador Highway Phase III EIS/CSR Addendum

Parks Canada concludes that if DFO and EC are satisfied that their mandate can be achieved through mitigation, permitting, and monitoring initiatives along the southern route and that the revised document commits the province to establishing and funding the Cooperative Land and Resource Use Management Committee, Parks Canada concurs that significant adverse effects or uncertainty related to the park establishment process would be eliminated.

APPENDIX C

A Suggested Approach for Managing Cumulative Environmental Effects Associated with the TLH – Phase III

A Suggested Approach for Managing Cumulative Environmental Effects Associated with the TLH – Phase III

Section 8.5.6 of Appendix C of JW/MLP (2003a), which presents the EIS/CSR for the southern route, is amended as described below. Note that this amendment also applies to Section 7.5.6 of the EIS/CSR for the northern route, as presented in Appendix E of JW/MLP (2003a).

8.5.6 Suggested Approach for Managing Induced Development and Activities Along the TLH – Phase III

The Canadian Environmental Assessment Agency (1997) indicated that due to the uncertainty and dispersed nature of induced activities, they are best addressed through a regional land use planning process that involves the relevant regional agencies. The environmental assessment for the TLH - Phase III could provide information that may be used by the relevant agencies to develop an appropriate framework for planning and managing induced development and activities along the TLH - Phase III and surrounding area. Agencies may also need to review and adapt existing management policies and programs to ensure that they are appropriate for the region and the type of development and activities that may occur in the region. There may also be a need for agencies to adjust resource levels to meet any changes in development and activity levels.

Tourism Company/Rodger Todhunter & Associates (1997), in their tourism impact assessment of the TLH - Phase II, suggested that the Dempster Highway provides a suitable model for capitalizing on the tourism opportunities associated with a highway development in a remote area. Development regulations were put in place to control land use within an 8-km corridor on either side of the Dempster Highway. This was followed by the establishment of a management planning process that involved the Yukon First Nations. The planning process involved: preparing an inventory of land uses and resources (natural, flora, fauna, heritage, mineral, and oil and gas); developing guidelines for managing resources within the corridor; preparing management options; public and First Nations consultation; and developing a management strategy.

Similar strategies are now being used to manage and plan for access into wilderness areas. For example, in southeastern British Columbia, a recreation management strategy is being developed as part of the Southern Rocky Mountain Management Plan. The planning process involved a stakeholder committee, which included commercial and non-commercial interests in the affected area, and public consultation (Matthews and Quinn 2003).

As there is no single government agency responsible for managing resources and access, a cooperative approach would allow all aspects to be considered within the same framework. Interagency coordination and involvement of key stakeholder groups are critical elements for any management and planning process. Department of Fisheries and Oceans (DFO), Environment Canada and Parks Canada believe that integrated land management can serve as an essential tool to verify the predicted environmental effects associated with this project. To this end, DFO, Environment Canada and Parks Canada have agreed to participate in a dialogue with the Province of Newfoundland and Labrador with the aim of establishing a regional land use planning committee as part of the proponent's follow-up program for this project.

The following describes the various elements to be considered in developing a cooperative or regional approach for managing natural resources.

8.5.6.1 Jurisdictions and Departmental Mandates

As noted previously, there are a number of federal and provincial government departments and agencies that have jurisdiction for the management of various resources within central and southern Labrador. There are also a variety of mechanisms already in place for carrying out the planning and management necessary for various development and resource use activities. Section 8.5.3.1 outlines the various regulatory mechanisms in place for managing natural resources in the province. Departments and agencies with mandates and responsibilities dealing with management and enforcement of natural resource use include:

- Inland Fish and Wildlife Division, Department of Environment and Conservation;
- Forest Resources Division, Department of Natural Resources;
- Canadian Wildlife Service, Environment Canada;
- Environmental Protection Branch, Environment Canada; and
- Department of Fisheries and Oceans.

Section 8.5.3.2 provides an overview of the structures currently in place in the province for dealing with land use planning and development control. Land management and development activity are provincial responsibilities. Departments and agencies with mandates involving land use planning and management, and control of development include:

- Department of Municipal and Provincial Affairs;
- Lands Division, Department of Environment and Conservation;
- Forest Resources Division, Department of Natural Resources; and
- Department of Tourism, Culture and Recreation.

There is also the Interdepartmental Land Use Committee (ILUC), which offers a structure in which a broad range of issues associated with the TLH – Phase III could be addressed. Many of the relevant departments already have representatives on this committee. Provision for the establishment of Special Management Areas under the *Lands Act* or provisions for regional and protected area planning under the *Urban and Rural Planning Act* also provide a starting point for setting a framework for address land and resource use issues pertaining to the TLH – Phase III. For example, the Government of the Northwest Territories has defined a special management area and related regulations for the Dempster Highway. The agencies with responsibility for these broader planning mechanisms may be better suited for the lead responsibility for such a committee.

Provincially, the Environmental Assessment Division of the Department of Environment and Conservation also plays a role through the administration of the provincial environmental assessment process.

As the responsibility for land management rests with the province, the province should take the lead in establishing any cooperative land use planning committee for the area.

It is important to note that a large area of south-central Labrador is currently subject to a land claim by Innu Nation and a feasibility study for a national park. A future land claim settlement and/or future establishment of a national park would result in a change in the regulatory structure for much, if not all, of the region in question. Innu Nation and/or Parks Canada may have jurisdictional responsibilities for this region in the future. While it is known that comprehensive land claim settlements in other areas of northern Canada have established frameworks for managing land and resources in the settlement area,

no information is available on the types of structures that may result from a future land claim settlement in central Labrador. Similarly, no information has been provided on the administrative structure and enforcement provisions and resources of a future national park.

8.5.6.2 Stakeholders and Organizational Structure

The committee structure need not be elaborate. Establishing an organizational structure for a cooperative or regional resource management committee will require considerable effort. Clearly, it is important to ensure that all of key stakeholders participate in the committee. Consideration should be given to both government and non-government stakeholders and how both will be involved in the process. Any committee that is established should include a representative from Innu Nation and any or all of the following government agencies:

- Lands Division, Department of Environment and Conservation;
- Department of Municipal and Provincial Affairs;
- Forest Resources Division, Department of Natural Resources; and
- Department of Tourism, Culture and Recreation.
- Inland Fish and Wildlife Division, Department of Environment and Conservation;
- Parks and Natural Areas Division, Department of Environment and Conservation;
- Forest Resources Division, Department of Natural Resources;
- Department of Labrador and Aboriginal Affairs;
- Parks Canada;
- Canadian Wildlife Service, Environment Canada;
- Environmental Protection Branch, Environment Canada; and
- Department of Fisheries and Oceans.

Other committee members could be drawn from external organizations, such as:

- Newfoundland and Labrador Outfitters Association;
- regional economic boards;
- regional tourism organizations; and
- Labrador Metis Nation.

Consideration should be given to committee composition, size and member roles, as well as measures for addressing performance issues and continuity of membership. It should be noted that large committees are difficult to manage. Roles and responsibilities of stakeholders need to be clearly defined. All committee members should be regarded as being equal in the process.

8.5.6.3 Possible Mandate and Objectives

The recommended mandate for the committee would be to establish, implement and maintain a framework for addressing land use, resource management and development activities in the vicinity of the TLH – Phase III. This mandate is not intended to replace those of individual departments. All departments and agencies would be expected to fulfill their mandates with respect to resource management and enforcement activities. The proposed regional or cooperative committee would provide a coordinating mechanism and set the direction for activities within the region.

Recommended objectives for the committee include:

- coordinate planning and resource management for the area;
- prepare a land use plan for the area (perhaps drawing on the concepts for the regional or protected area plans, or the protect road zone plan), including carrying out the appropriate level of public consultation;
- develop special regulations for land and resource use activities in the area, as necessary, to support the plan developed for the region;
- review any development applications for the area to ensure that they are consistent with the provisions of any plan and regulations developed for the region;
- carry out a public education and awareness program informing the public about the planning initiative and related regulations;
- collect and use aboriginal and local knowledge in the planning process and ongoing management;
- provide a coordinated reporting on planning efforts and all land and resource use activities carried out in the region, with the various members providing reports from their respective departments on studies, and management and enforcement efforts undertaken by their respective departments (e.g., the waterfowl and caribou monitoring programs identified in this report); and
- monitor and evaluate the regional or cooperative planning framework

8.5.6.4 Monitoring and Evaluation

Provisions for ongoing monitoring and evaluation of the regional framework should be built into the general operations of the committee, with adaptations to operations being made as necessary. There should be a formal review of the committee, its operations and progress after construction to ensure that it is appropriate for the operational phase of the TLH – Phase III. There should also be a regular review period set for the regional land use plan and related regulations that are established for the region, with plans and regulations being updated and modified as necessary.

APPENDIX D

Recommendations from Armitage and Stopp (2003) with Department of Transportation and Works Responses

APPENDIX D

Recommendations from Armitage and Stopp (2003) and Responses from Department of Transportation and Works

| Recommendations (Armitage and Stopp (2003)) | Department of Transportation and Works |
|--|--|
| <p>During the construction phase of the proposed TLH Phase III, the proponent should consider routing alternatives, including realignments of the preferred route at <i>Uinikush</i> as far away as practical so as to make it difficult for people to gain aquatic access to <i>Uinikush</i> and the <i>Mishtashini-Nekanakau</i> network of lakes.</p> | <ul style="list-style-type: none"> • DTW has implemented this recommendation by choosing to construct the southern route. The southern route is now the route preferred by DTW for the TLH between Cartwright Junction and Happy Valley-Goose Bay. |
| <p>In advance of construction each season, the proponent and construction managers should meet with the Innu Nation and Innu families who plan to be in the construction area to discuss specific mitigation measures related to construction (e.g. scheduling of blasting operations, the location of construction camps).</p> | <ul style="list-style-type: none"> • DTW will implement this recommendation and meet with representatives of Innu Nation to facilitate a suitable liaison and develop appropriate mitigation measures. |
| <p>Construction managers and workers should to be educated with respect to the Innu presence on the plateau, including the need to respect their privacy, and not to interfere with Innu hunting and fishing activities.</p> | <ul style="list-style-type: none"> • DTW will implement this recommendation by including appropriate mitigation measures in the environmental protection plan. |
| <p>A variety of legislative mechanisms exist (both federal and provincial) that could go a long way to mitigating the environmental effects of the proposed TLH Phase III on Innu land use. These mechanisms include provisions in the provincial <i>Forestry Act</i>, <i>Lands Act</i> (i.e. Special Management Areas), and <i>Wild Life Act</i>, and the federal <i>Fisheries Act</i> and <i>Migratory Birds Convention Act</i>. These mechanisms should be implemented fully, with all necessary enforcement and monitoring resources put into place. The timely implementation of such mechanisms is required at construction start-up pending the outcome of national park and treaty negotiations that may result in a new land use management regime for the Eagle River plateau.</p> | <ul style="list-style-type: none"> • DTW recognizes the need for proper implementation of the existing regulatory framework and adequate enforcement. DTW encourages the following agencies to adopt a similar position: <ul style="list-style-type: none"> • Department of Fisheries and Oceans (DFO) • Environment Canada (including Environmental Protection and Canadian Wildlife Service (CWS)); • Parks Canada; • Department of Environment and Conservation (including Inland Fish and Wildlife Division, Parks and Natural Areas Division, Lands Division and Water Resources Management Division); • Department of Natural Resources; • Department of Municipal and Provincial Affairs; and • Department of Government Services. |
| <p>In order to protect the salmon in the <i>Tshenuamiu-shipu</i> (Kenamu River) system, DFO should schedule the entire river (including <i>Utshashumeku-shipu</i>) and establish a monitoring program in partnership with the Innu Nation to assess harvesting effort and population levels there.</p> | <ul style="list-style-type: none"> • DTW acknowledges this recommendation and encourages DFO to adopt a similar position. |
| <p>Ice-fishing on numerous lakes on the Eagle River plateau runs the risk of seriously reducing fish stocks. We noted previously that DFO has scheduled <i>Iatuekupau</i> (Park Lake) as a way to prevent ice-fishing. The scheduling of other lakes in the Eagle River watershed should be given serious consideration for the same reason.</p> | <ul style="list-style-type: none"> • DTW acknowledges this recommendation and encourages DFO to adopt a similar position. |
| <p>The Canadian Wildlife Service in partnership with other federal and provincial resource management agencies and the Innu Nation should establish a comprehensive monitoring and enforcement presence with respect to the important migratory</p> | <ul style="list-style-type: none"> • DTW acknowledges this recommendation and encourages CWS to adopt a similar position. |

| <p align="center">Recommendations (Armitage and Stopp (2003))</p> | <p align="center">Department of Transportation and Works</p> |
|--|--|
| <p>waterfowl populations and habitat in the Eagle River watershed.</p> | |
| <p>A good monitoring programme should be established involving the Innu and government departments and agencies responsible for the management of natural resources (e.g. wildlife and fish) to ensure mitigation measures are effective. The Innu Nation’s Environment Office has the capacity to participate in a monitoring programme.</p> | <ul style="list-style-type: none"> • DTW acknowledges this recommendation and encourages DFO, CWS, and Inland Fish and Wildlife Division to adopt a similar position. |
| <p>Government departments responsible for managing wildlife and fish resources should conduct an immediate review of their monitoring and enforcement capabilities. Where deficiencies exist, steps should be taken to acquire additional resources to ensure that over-harvesting of wildlife and fish resources does not follow highway construction. Prompt action is required in order to avoid a repeat of the Star Lake experience on the Island of Newfoundland.</p> | <ul style="list-style-type: none"> • DTW acknowledges this recommendation and encourages DFO, CWS, and Inland Fish and Wildlife Division to adopt a similar position. |
| <p>Quick action by governments on the officialization of Innu place names on the Eagle River plateau could help mitigate the sense of dispossession and loss of independence that many Innu experience when they see their place names disappearing from the map. Acceptance of Innu toponyms would recognize the important cultural heritage of the region. As an added measure, the Government of Newfoundland and Labrador should consider giving the new highway an Innu name (e.g. the “Akamiuapishku Highway”), a practice not without precedent in other provinces.</p> | <ul style="list-style-type: none"> • DTW acknowledges this recommendation and supports action on this item. |