

Transmittal

COVER PAGE			
TO:	Lower Churchill Hydroelectric Generation Project Environmental Assessment Panel Labrador Island Transmission Link Environmental Assessment Committee		
ATTN:	Livain Michaud, Thomas Graham Bas Cleary (NL Environment and Conservation) Bill Coulter (Canadian Environmental Assessment Agency)		
CC:	Richard Nuna, Nancy Kleer		
FROM:	Rick Hendriks		
RE:	An Assessment of Lower Churchill Project Effects on Labrador Innu Land Use and Occupancy		
DATE:	April 8, 2011	PAGES:	1 (including this page) 1 attachment

On February 15, 2011 the Lower Churchill Hydroelectric Generation Project Panel wrote to Innu Nation inviting us to provide information “related to the nature and scope of potential or established Aboriginal rights or title in the area of the Project, as well as information on the potential adverse impacts or potential infringement that the Project/undertaking will have on asserted or established Aboriginal rights or title”.

At this time, we are please to submit to the Panel the following report in relation to adverse impacts:

- Innu Nation. 2011. An Assessment of Lower Churchill Project Effects on Labrador Innu Land Use and Occupancy. Prepared by Peter Armitage (Wolverine & Associates Inc.) on behalf of Innu Nation.

This study assesses the environmental effects of the proposed Lower Churchill Hydroelectric Generation Project and Labrador Island Transmission Link on Innu of Labrador land use and occupancy.

A second submission concerning the “nature and scope of potential or established Aboriginal rights or title in the area of the Project” will be provided to the Panel early next week and prior to April 13, 2011.

An Assessment of Lower Churchill Project Effects on Labrador Innu Land Use and Occupancy

Peter Armitage
(Wolverine & Associates Inc.)

5 April 2011



Report to Innu Nation

Sheshatshiu and Natuashish
Nitassinan (Labrador)

© 2011 Innu Nation

This report is the property of Innu Nation. Innu Nation has submitted this report to the Joint Review Panel for the environmental assessment of the Lower Churchill Hydroelectric Generation Project and the Labrador-Island Transmission Link Project. The report may be used for any environmental or regulatory proceedings related to these two proposed projects, or for the environmental assessment or regulatory proceedings of any other proposed generation or transmission developments related to these two proposed projects within the Study Area described in this report.

Table of Contents	
List of maps.....	3
List of tables.....	4
Report notes	5
Acknowledgements.....	5
1.0 Introduction – study objectives	6
2.0 Impact assessment methodology	6
3.0 Environmental effects assessment.....	21
3.1 The effects of hydroelectric and other industrial projects on Indigenous land use and occupancy (comparative data)	21
3.2 Potential effects of the LCP.....	28
3.2.1 Construction phase.....	29
3.2.2 Operation and maintenance phase.....	55
3.2.3 Accidental events.....	63
3.2.4 Cumulative effects	64
3.3 Mitigation.....	67
3.4 Residual environmental effects	76
3.5 Monitoring	91
4. Conclusions and recommendations	92
5. References.....	99
Appendix 1. Excerpts from Armitage and Stopp (2003) - the effects of roads on land use - comparative data.....	109

List of maps

Map 1. Study Area for the LCP-Innu LUO effects assessment.....	10
Map 2. Selected Innu place names in the Study Area.....	19
Map 3. Flooding effects on Innu LUO in the Kamitinishkau-shipiss valley.....	33
Map 4. Flooding effects on Innu LUO in the Etuat-shipiss area.....	34
Map 5. Flooding effects on Innu LUO between Etuat-shipiss & Uapushkakamau-shipu.....	35
Map 6. Flooded toponym features & places of religious/historical significance.....	37
Map 7. Berry picking site on the transmission line at Nakapishku-nipi (Wilson Lake).....	42
Map 8. Berry picking site on the transmission line near the Gull Island road.....	42
Map 9. Location of cabin 19 – close proximity to the existing transmission line.....	43
Map 10. Locations of Innu camps at “tent 1” and “tent 2” near existing or planned transmission line access roads.....	44
Map 11. Locations of Innu camps at “tents 3,” “tent 4,” and “cabin 16” established by existing or planned transmission line access roads.....	44
Map 12. Location of Innu camps and cabins at “tents 5,” “tents 6,” “cabin 12,” and “cabin 13” within the transmission line corridor.....	45
Map 13. Innu camps, cabins and the Joey Penunsi memorial at Diver Brook.....	46
Map 14. Innu camps and cabins in the Kaiamianut/Etuat-shipiss area.....	47
Map 15. Borrow areas in relation to an Innu cabin in the Muskrat Falls area.....	48
Map 16. A possible borrow area in relation to Innu LUO features in the TLH-Gull Island road area.....	49
Map 17. Selected Innu LUO features in the Gull Island area.....	50
Map 18. The location of reservoir clearing access roads along Mishta-shipu.....	51
Map 19. Proposed reservoir clearing camps	52
Map 20. Location of reservoir clearing roads #6 and #7 in relation to Mishta-shipu and Kaiamianut.....	56

Map 21. Reservoir clearing access roads to Uinukupau and Mishta-shipu.....	57
Map 22. Transmission line route in relation to Mush-nipi.....	60
Map 23. Overlap between military flight training and LCP Study Area.....	66

List of tables

Table 1. LCP interactions with Innu land use and occupancy.....	9
Table 2. Innu toponym features that will be flooded by LCP reservoirs.....	36
Table 3. Overlaps between other activities & projects and the LCP.....	64
Table 4. Summary of residual environmental effects of the LCP regarding Innu LUO.....	93

Report notes

- Title page photo – The west end of Tshiashkuenish (Gull Lake) looking west along Mishta-shipu (Churchill River) towards Tshiashku-paushtik^u and the site of the proposed Gull Island dam (photo P. Armitage).
- All cartography for this report was undertaken by Peter Armitage with the exception of Map 19 (Proposed reservoir clearing camps) which was prepared by Nalcor.
- All Innu terms, including toponyms, have been spelled using the shared spelling system because it respects the rules of Innu-aimun grammar and makes it possible for all Innu people to read the names irrespective of dialect. The draft Pan-Innu dictionary was used to verify spellings.¹
- A number of the Innu toponyms (place names) that appear on maps in this report have a labialized consonant at the end which is represented by a superscript “u” as in Atatshi-uinipek^u (Lake Melville). However, the GIS programme (MAPINFO) used to generate maps for this report does not permit superscripts. Thus, names like Assiuashiku-minishtik^u are written Assiuashiku-minishtiku on the maps with no superscript “u” at the end.

Acknowledgements

I wish to thank Pat Marrie, Jim Price, Tony Parr, Shanimen Benuen, Terry Croucher and Andrea Marshall for their time in responding to specific questions of relevance to this assessment. Their contributions and institutional/corporate affiliations (if any) are footnoted at various locations throughout the report.

Patt Larcombe (Symbion Consultants, Winnipeg, Manitoba) and Mario Blaser (Canada Research Chair in Aboriginal Studies, Memorial University) provided a number of useful references concerning the effects of industrial projects on Indigenous land use and occupancy as well as how these projects interact with Indigenous worldviews.

I would also like to thank Rick Hendriks (Chignecto Consulting Group Inc.), Justina Ray (Wildlife Conservation Society Canada), and Larry Innes (Olthuis, Kleer, Townshend LLP) for their comments on an earlier draft of this report or portions thereof.

All errors of omission, misunderstanding, and misinterpretation are primarily my responsibility.

¹ Pan-Innu dictionary database (draft September 2010). Toolbox version. Editors: Lynn Drapeau, José Mailhot, Marguerite MacKenzie, Yvette Mollen, and Hélène St-Onge.

1.0 Introduction – study objectives

This study assesses the environmental effects of the proposed Lower Churchill Hydroelectric Generation Project and Labrador Island Transmission Link (collectively, the “Lower Churchill Project” or “LCP”) on Innu of Labrador land use and occupancy (LUO). The study will support decision-making by Innu Nation, Innu, the Joint Review Panel (JRP) for the Lower Churchill Hydroelectric Generation Project, the federal Responsible Authorities, and provincial Departments concerning the potential environmental effects of the LCP. The specific objectives of the study are to:

- identify environmental effects of similar hydroelectric and transmission or linear corridor projects on Indigenous LUO in Canada, focusing on the Quebec-Labrador Peninsula;
- identify existing knowledge and data concerning Innu LUO, including data gaps and limitations in relation to predicting possible effects of the LCP; predict adverse and beneficial effects of the LCP on Innu LUO, making note of differences with the proponent, Nalcor Energy’s (“Nalcor”), assessment predictions;
- evaluate and recommend possible mitigation measures and monitoring programmes, making note of differences with Nalcor’s proposed mitigation and monitoring measures; and
- identify significant adverse effects with respect to Innu LUO, if any, expected to persist despite implementation of mitigation measures.

2.0 Impact assessment methodology

Assessment approach

The assessment of the potential impacts of the LCP is based on a review of Nalcor’s environmental impact statement (EIS) documents, Innu Nation comments on these documents, Innu Nation LUO data and reports, discussion with the members of the Innu Traditional Knowledge Committee (ITKC), and comparative literature regarding impacts of hydroelectric, mining and other developments on Indigenous and non-Indigenous LUO.

The assessment was conducted in general accordance with Nalcor’s EIS Volume 1A – Chapter 9 Environmental Assessment Approach and Methods (Nalcor, 2009a), including consideration of the following:

- EIS Volume 3: 2.8 Land and Resource Use;

- EIS Volume 3: Chapter 5 Environmental Effects Assessment – Land and Resource Use;
- Innu Nation EIS review comments IN.21-IN.26;
- Innu Nation LUO data in relation to the LCP features to identify locations where these features are most likely to interact with Innu LUO;
- Innu LUO data gaps in relation to possible LCP impacts on Innu LUO.

The assessment approach adopted in Nalcor's EIS categorizes the biophysical and human environment according to Valued Ecosystem Components (VECs) and considers possible interactions of the LCP with these VECs during the construction, operation and maintenance phases of the project. Key Indicators (KI) "are selected when the VEC requires sub-components for additional focus to provide a meaningful environmental effects analysis" (EIS. V3, p.5-6). Innu "land and resource use" is identified as a VEC in the EIS, and like that of non-Innu people in the project area, does not require the identification of KIs because it "provides an appropriate level of focus and scope for the assessment of Project environmental effects" (ibid.).

For the purpose of this assessment, the VEC has been re-defined slightly so that it encompasses Innu "land use and occupancy" (LUO) rather than Innu "land and resource use."² This change was required to ensure that we are clear about examining interactions of the LCP with more than the economic behaviour involved in land use (i.e., hunting, trapping, fishing, gathering and travel); we want also to consider project interactions with Innu ethics (values), the pedagogical aspects of land use (e.g. transmission of history and skills to youth), aesthetic appreciation of their territory, sense of place, etc.

Nalcor lists 14 project activities and physical works that could interact with "land and resource use" during the construction phase, seven such activities and works during the operation and maintenance phase, and two activities and works in the event of accidents and malfunctions. These are listed in Table 1. According to Nalcor, concrete production, site water management, expenditures, and site waste management will not interact with "land and resource use" during the construction, operation and maintenance phases.

²Use "refers to activities involving the harvest of traditional resources; things like hunting, trapping, fishing, gathering of medicinal plants and berry picking, and travelling to engage in these activities" (Tobias, 2000:3). Harvest locations and travel routes may be recorded using the map biography method. In contrast, *occupancy* refers to "continuing use, habitation, naming, knowledge, and control" of an area that a "particular group regards as its own" (Usher, 1992:10-11). "When mapping occupancy using the map biography method, one documents 'fixed cultural sites' such as habitations, places of 'spiritual' significance, burial grounds, place names, place-based stories, etc. Other information that cannot be mapped may also be documented such as kinship and ideas about land tenure, but such information is usually obtained by means of in-depth semi-directive interviews with community experts" (Armitage, 2010:14).

Nalcor's propositions about project interactions with Innu "land and resource use" in the Study Area are accepted for the purpose of this assessment although applied to Innu "land use and occupancy," and with the addition of the possible impacts of vehicular traffic and accidents **off site**. All forms of project-related traffic and accidents associated with this traffic should be assessed at any point along the Trans Labrador Highway (TLH) and its tributary roads, either existing or built for the project, due to the fact that Innu currently occupy cabins and camps, travel along, and harvest in the vicinity of these linear transportation corridors.

Study area

The Study Area boundaries for this assessment are the Mishta-shipu (Churchill River) valley and surrounding territory in southern Labrador that will be affected by construction and operation of hydro dams and reservoirs, road access to hydro facilities, and transmission lines during the construction, and operation and maintenance phases of the LCP. This is the same Study Area as that adopted for the Innu of Labrador Contemporary Land Use Study (Armitage, 2010) (see Map 1).

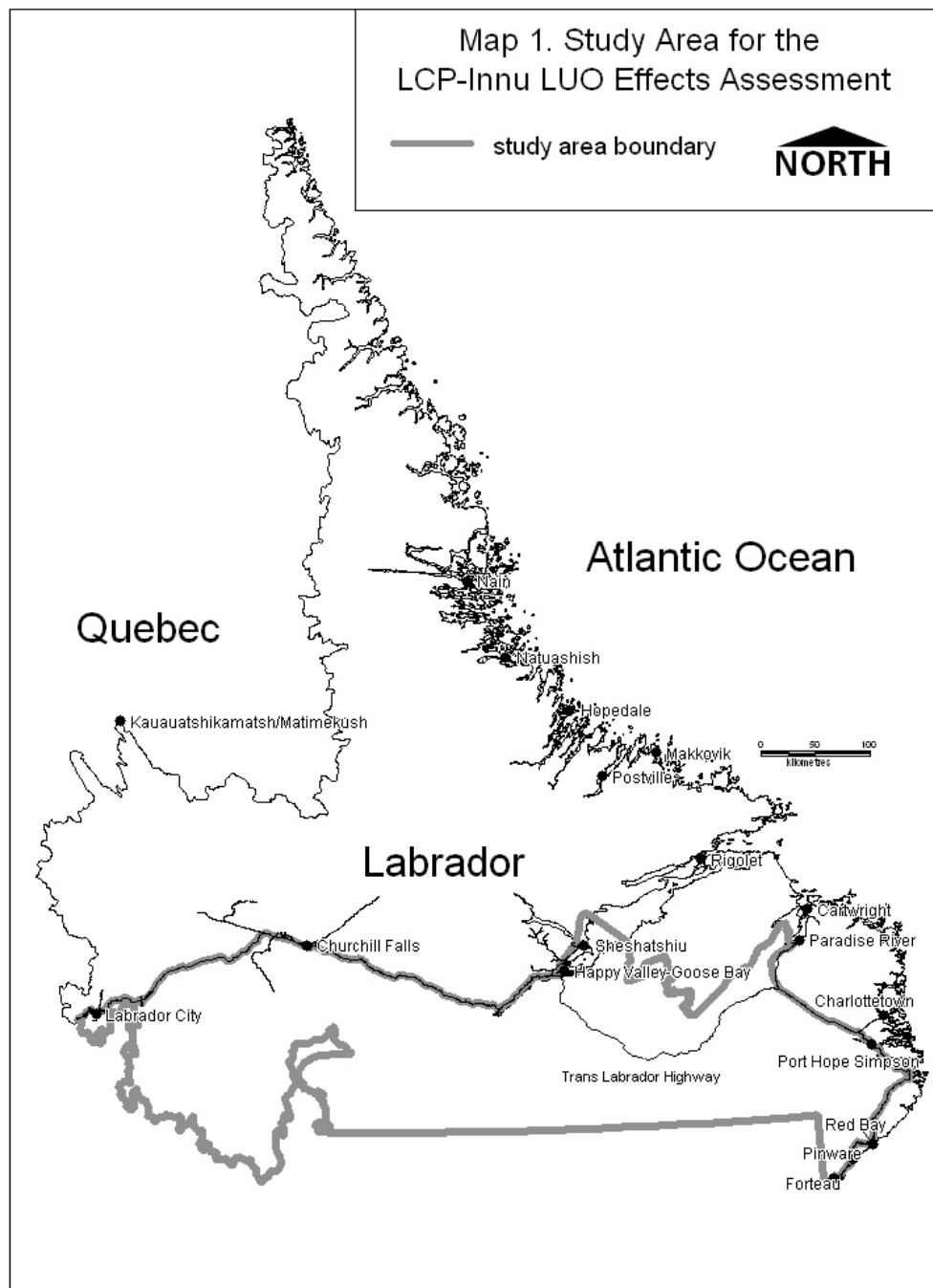
The assessment of LCP impacts on Innu LUO considers transmission lines between Muskrat Falls and Gull Island, between the latter point and Churchill Falls, in addition to a line to the Island of Newfoundland. Two options for the Labrador-Island transmission link are considered³:

- starting at a Labrador converter station located at Gull Island, on the north side of Mishta-shipu (Churchill River), with the HVdc transmission corridor extending from there and across southeastern Labrador to the Strait of Belle Isle (for a distance of approximately 407 km). Nalcor has identified the route of a two kilometre wide transmission corridor within which it will select a specific route for the transmission line (for an average 60 m wide cleared right-of-way);
- starting at a Labrador converter station located at or near the Muskrat Falls dam, with the HVdc transmission corridor extending from Muskrat Falls to the TLH (Phase 3) and along the south side of the TLH3 to its southernmost point, before heading to the Strait of Belle Isle.

³ The 735 kV transmission line between Gull Island and Churchill Falls will be 203 km long. The 230 kV transmission line between Muskrat Falls and Gull Island will be 60 km long (EIS, V1A, p.4-17). For the Labrador-Island transmission link, see the project description changes identified in the letter from Todd Burlingame (Manager, Environment and Aboriginal Affairs, Nalcor Energy) to Bill Coulter (CEAA) and Pat Marrie (Department of Environment and Conservation Government of Newfoundland and Labrador) 15 Nov. 2010.

Table 1. LCP interactions with Innu land use and occupancy

Project activities & physical works	Nalcor EIS	Approach in this study
Construction		
Upgrading/constructing site access roads	x	x
Site preparation and construction of site buildings	x	x
Excavation and installation of generation components	x	x
Concrete production		
Transmission line construction	x	x
Site water management		
Camp operations	x	x
Vehicular traffic on site	x	x
Vehicular traffic off site		x
Quarrying and borrowing	x	x
Reservoir preparation	x	x
Impounding	x	x
Employment	x	
Transportation & road maintenance	x	x
Expenditures		
Operation & maintenance		
Water management and operating regime	x	x
Operation of generation facilities	x	x
Site waste management		
Inspection/maintenance, repairs along transmission line	x	x
Employment	x	
Transportation/presence and maintenance of access roads	x	x
Expenditures		
Accidents & malfunctions		
Dam failure	x	x
Forest fire	x	x
Traffic accidents, harmful substance spills		x



Innu land use and occupancy datasets

The Innu LUO data used for this assessment include:

- Innu LUO data for the period 1990 to 2010 obtained during a three week period in August and early September 2010 based on interviews with 28 people in Sheshatshiu (Armitage, 2010);
- Innu testimony documented during a fieldtrip to Ushkan-shipiss, a tributary of Mishta-shipu where the last shaking tent ceremony was conducted anywhere in Labrador-Quebec Innu territory (Armitage, 2008);
- locations of and information concerning Innu “places of religious significance” in Labrador (Armitage, 2007a);
- knowledge of Innu history, land use, animals, “that which grows in the earth,” “habitat,” Innu ethics (values), and propositions concerning LCP effects in the Mishta-shipu documented through the work of the ITKC (Armitage, 2007b);
- Innu LUO data documented as part of the environmental assessment of Phase 3 of the TLH from Cartwright to Happy Valley-Goose Bay (Armitage and Stopp, 2003);
- Innu LUO data documented as part of the environmental assessment of a proposed “Safety Template” for laser guided weapons at DND’s Minipi Lake Practice Target Area (Armitage 2001);
- Innu LUO data documented for the purpose of land claims negotiations between Labrador Innu and the federal and provincial governments (Armitage, 1990);
- information concerning Labrador and Quebec Innu LUO and linear transportation corridors as part of the assessment of the proposed Labrador “Tote Road” between Churchill Falls and Ross Bay Junction (Tanner and Armitage, 1986);
- Innu life histories documented in 1982 as part of the Sheshatshiu Innu socio-linguistic variability study (Mailhot 1988a; see also Mailhot, 1997);
- Labrador Innu toponymic data (Armitage, 2006; Mailhot, 1988b; www.innuplaces.ca);
- Sheshatshiu Innu First Nation (SIFN) Outpost Programme data compiled by Armitage (Armitage, 2010; Armitage and Stopp, 2003);
- Innu Nation cabin location data (see Armitage, 2010:34); and
- miscellaneous Innu LUO data from Innu Nation GIS databases and archives used for the 2010 contemporary land use study (Armitage, 2010).

The references listed above are either on the public record and/or the data from them were compiled and synthesized for the Innu of Labrador Contemporary Land Use Study (Armitage, 2010) provided to the JRP and Nalcor under separate cover. Readers of this assessment study should take careful note of the “research and data limitations”

discussed in the 2010 study (ibid.:32-39), a number of which are reiterated in the data gaps section below.

Analyzing effects - measurable parameters

The measurable parameters⁴ used to assess LCP impacts on Innu LUO include:

- Innu land use: measured by changes in the location of hunting, trapping, fishing, spring water use, berry and medicinal plant collecting; changes in the pattern of these activities due to changes to aquatic, avian and terrestrial animals, spring water locations, berry and medicine plant habitat; changes in these activities due to altered health or quality of animals, plants and spring water for human consumption; and changes in competition with other land users;
- Innu occupancy: measured by changes in the number of camps and cabins; changes in the location and patterns of use of community/group gathering sites; changes in place naming; etc.;
- travel: measured by changes in access and patterns of travel (e.g. winter snowmobile travel across reservoirs, boating during ice-free seasons, increased use of ATVs, etc.);
- special areas: measured by changes in the number and quality of special areas including places of religious, cultural and historical significance;
- ethics⁵: evaluated in terms of documented ITKC member discourses with respect to Innu ethical concerns about disrespecting other-than-human beings, wasting animals and medicines, etc.;
- health and safety: measured in terms of the risk of motor vehicle collisions with Innu travelers, pedestrians and camp occupants along the TLH and other linear transportation corridors (e.g. children playing in the vicinity of roads); noise and dust generated by road traffic, etc.;

⁴ Most of these parameters are similar to those used by Nalcor in its assessment of impacts on land and resource use (EIS, V.1, pp.9-16).

⁵ Innu ethics in relation to the LCP are part of what the EIS Guidelines refer to as “values.” The Guidelines state that “Aboriginal traditional and community knowledge of the existing environment shall be an integral part of the EIS, to the extent that it is available to the Proponent. In environmental assessment, Aboriginal traditional and community knowledge may be regarded as the knowledge, understanding and *values* that residents of Aboriginal and local communities have in relation to the environment and the potential environmental effects of the Project and proposed mitigation measures (my italics)” (p.8). Furthermore, the guidelines ask Nalcor to demonstrate its “understanding of the interests, *values*, concerns, contemporary and historic activities, Aboriginal traditional knowledge and important issues facing Aboriginal groups, and indicate how these will be considered in planning and carrying out the Project” (p.40).

A number of parameters could not be used to assess LCP impacts on Innu LUO due to lack of data. These include:

- Innu land use: measured by changes in the intensivity⁶ and frequency of hunting, trapping, fishing, spring water, berry and medicinal plant collecting;
- Innu occupancy: measured by changes in patterns of use (e.g. frequency, seasonality, demographics such as gender and age, etc.);
- sense of place: measured in terms of documented Innu discourses concerning the historical and cultural significance of the Study Area, the social-psychological and pedagogical underpinnings of land use (e.g. impacts of construction and traffic noise on sleep, “peace of mind,” positive or negative valuation of places following disturbance, etc.);
- landscape/river aesthetics: measured by pre- and post- development aesthetic value.

No research has been done to document the relative intensivity of Innu LUO within the Study Area compared to other parts of Labrador Innu territory, nor has research been conducted to document what Mishta-shipu (Churchill River), the TLH and its tributary roads *mean* to the Innu. In addition, no cross-cultural research has been conducted concerning Innu notions of “beauty,” “peace of mind,” and other considerations that may attract Innu to these parts of their territory.

Analyzing effects - use of GIS and spatial data

LCP interactions with Innu LUO were analyzed with the help of a Geographic Information System (viz., MAPINFO GIS) and Google Earth Pro in order to assess the effects of the project on this VEC. Spatial data from the aforementioned Innu Nation LUO datasets used in the analysis include:

- overnight sites (tents, cabins);
- large animal kill sites (black bear, moose, caribou);
- furbearer kill sites;
- fish kill sites;
- miscellaneous land use sites (boil-up locations, berry, medicine and drinking water collecting sites);
- travel routes (vehicles, snowmobiles, canoe, boat-with-motor, walking, portages);

⁶ Intensivity is the “[d]epiction of various measures of the relative importance and value of different areas for use and occupancy. One of many such measures is harvest geography” (Tobias, 2009:440). “Harvest geography....is basically a harvest survey in which respondents report not just the number of animals killed in a specified period, but also the mapped location of the kill sites. The intent of harvest-geography maps is to allow researchers to compare different parts of a study area and conclude which are more important than others” (ibid.:39).

- fixed cultural sites (birth, burial, death, and gathering places, places of religious significance, former shaking tent locations, family treatment programme camps);
- toponyms (i.e., place names).

It should be noted that LCP interactions with Innu caribou harvesting were assessed even though caribou kill site data cannot be made public due to confidentiality and ethics considerations. Within the last 20 years, Sheshatshiu Innu have killed caribou in an area where the Government of Newfoundland and Labrador has banned caribou hunting and which overlaps with the Study Area for this assessment.⁷

A number of map atlases, individual maps, and ArcGIS layers provided by Nalcor were used in order to study potential interactions between LCP features and Innu LUO. These data are of sufficient resolution to facilitate a reasonable degree of comparison (i.e. overlap analysis) of LCP features with individual LUO features. They include:

- Appendix 1B-B “Transmission Line Corridor Mapping” for the proposed transmission lines between Muskrat Falls and Churchill Falls (Nalcor Energy. 2009b);
- Appendix 1B-C “Inundation Mapping” for the reservoir impoundments resulting from the construction of dams at Muskrat Falls and Gull Island (Nalcor Energy. 2009b);
- Appendix 1B-D “Forest Clearing Areas and Reservoir Limits Mapping” showing reservoir limits, reservoir clearing access roads,⁸ and reservoir clearing camps (Nalcor Energy. 2009b);
- the maps contained in the EIS concerning the “construction sequence” (Nalcor, V1A, Figures 4-17 to 4-25), and which show the locations of reservoir clearing access roads and camps, albeit at small scale;
- the three map atlases that comprise the “Interconnecting Transmission Line Constraint Mapping Atlas” including aquatic, land use and archaeological, terrestrial and wildlife constraints (AMEC Earth & Environmental. 2009), and showing the TLH, existing roads, snowmobile trails, and transmission lines as well as proposed TL240 KM postings, a 1 kilometre wide transmission line corridor, proposed “access trails” to the transmission lines, the reservoir floodlines, and other information;⁹
- “Borrow Areas Construction Camp and Access Roads” in the vicinity of Gull Island, prepared by SNC-AGRA, December 1998;

⁷ As noted in Armitage (2010:28), “Standard research ethics protocols require that such data not be included in this report because their public release could lead to the identification of individual hunters thereby exposing them to negative sanction.”

⁸ Portions of the “reservoir clearing access roads” will not be flooded as a result of impoundment.

⁹ There is no distinction made on these maps between existing “access roads” to the existing transmission lines and new roads that may be built for the proposed new lines.

- “Lower Churchill Project – Muskrat Falls. 2010 Site Investigation Exploration Borehole & Test Pit Location Plan” prepared by SNC-Lavalin BAE-Newplan showing the location of the proposed accommodations complex, access road from the TLH to the construction site, and borrow pit locations;
- “Construction Camp – Access Roads and Potential Borrow Areas Location Plan” in the vicinity of Muskrat Falls, prepared by SNC-AGRA, January 1999, attached to IR#JRP26s;
- “Labrador – Island Transmission Link: Labrador Converter Station and Transmission Corridor. Option 2: Muskrat Falls to the Strait of Belle Isle.”¹⁰
- ArcGIS layers including “ProposedTransmissionLineCorridor_LabSection,”¹¹ “GenStn,” Bdy_Reservoir_MF,” and “Bdy_Reservoir_GI.”

Analyzing effects - determination of significance

The determination of the significance of LCP effects followed the method outlined in Nalcor’s EIS (2009, Vol.3, p.5-8 to p.5-37 & Appendix III-B). However, it was guided by the observations and concerns of the members of the Innu Traditional Knowledge Committee (ITKC), and a consideration of both comparative information concerning the impacts of hydroelectric projects and other industrial developments on Indigenous people elsewhere in Canada, as well as Labrador Innu LUO data. The significance of LCP effects was determined using the following criteria:

- the nature of the effects (adverse, positive, negligible);
- magnitude (low, moderate, high);
- geographic extent (site-specific, local, regional);
- duration (short term, medium term, long term);
- frequency (not likely to occur, occurs once, occurs sporadically at irregular intervals, occurs on a regular basis and at regular intervals, continuous);
- reversibility (reversible, irreversible);
- ecological or social context (undisturbed, disturbed);
- level and degree of certainty of knowledge (low, high);

Consideration of ITKC discourses/information

Information from the 2006-2007 meetings of the Innu Traditional Knowledge Committee (ITKC) as well as the supplementary meetings on 2-3 February 2011 was used in a consideration of the significance of LCP effects. It was also used to:

¹⁰ Letter from Todd Burlingame, Manager, Environment and Aboriginal Affairs, Nalcor Energy, to Bill Coulter, CEAA, and Pat Marrie, Environmental Assessment Division, Dept. Environment and Conservation, Government of Newfoundland and Labrador, 15 Nov. 2010.

¹¹ No ArcGIS layer showing the transmission line route from Muskrat Falls to Churchill Falls was available at the time of this assessment.

- highlight differences of opinion between the members of the ITKC and Nalcor or western science with respect to effects and the significance of effects;
- identify ethical concerns about the LCP effects that have not been addressed by Nalcor;
- evaluate LCP effects on Innu places of religious and historical significance;
- evaluate the appropriateness of transplanting *assiuashik*^u (Canadian yew) from three islands along Mishta-shipu to locations above the flood line.

Cumulative environmental effects

The cumulative effects of the LCP on Labrador Innu LUO were assessed for the construction, operation and maintenance phases of the project, taking note of the various activities and projects identified by the proponent (Nalcor, 2009a:9-28 to 9-33).¹² Nalcor's cumulative assessment methods were used for determining the extent of overlap between these activities and projects and Labrador Innu LUO in the Study Area.¹³

Mitigation

While a variety of possible mitigation measures are recommended with respect to LCP impacts on Innu LUO, they are made without the benefit of discussion with Labrador Innu, in particular community representatives most likely to be responsible for the design and/or implementation of mitigation measures. The consideration of mitigation measures takes into account the cumulative effects of the LCP in conjunction with the other activities and projects in the Study Area.

Residual environmental effects

The residual effects of the LCP on Innu LUO are those that remain after mitigation measures have been implemented. This assessment attempts to determine what these effects may be (e.g. increased harvesting competition with non-Innu). Their significance is evaluated in terms of their magnitude, geographic extent, duration (frequency), ecological or social context, reversibility, and certainly.¹⁴

Monitoring

The assessment evaluates possible monitoring mechanisms that could enable Innu governments and other responsible authorities to adaptively manage the LCP effects.

¹² See also Nalcor's responses to JRP.97 and JRP.97s.

¹³ Nalcor's responses to JRP.97 and JRP.97s.

¹⁴ EIS, V3, p.5-37.

Data gaps

Every effort has been made to identify data gaps that would limit the utility of this assessment of LCP effects on Innu LUO, and the identification of mitigation and monitoring measures. Ways to fill these data gaps are recommended so that the quality of any future mitigation and monitoring measures (adaptive management) can be improved (see recommendations below). Data gaps that limit the certainty of the effects predictions and potential efficacy of mitigation and monitoring measures include the following:

- many of the LCP spatial features were not available in a digital format for manipulation in MAPINFO GIS and Google Earth Pro (e.g. no GIS layers showing “reservoir clearing access roads,” “access trails,” and the transmission line from Goose Bay to Churchill Falls). Therefore, the analysis of some LCP spatial interactions with Innu LUO was conducted in a less precise manner by “eye-balling” both the LUO and LCP features simultaneously, and by comparing LUO features with existing hydroelectric transmission lines near the TLH, given that the proposed routing for the new LCP lines is proximate to the older ones;
- the Labrador Innu LUO data used for this assessment have a number of limitations that are described in Armitage (2010:32-39). One significant limitation relates to the Innu Nation cabin database, which is incomplete and inaccurate. The cabin data are therefore provisional, with cabin coordinates requiring systematic ground-truthing using GPS;¹⁵
- as noted in Armitage (2010:36), no LUO information was obtained from Elizabeth (Tshaukuesh) Penashue or any other people who accompanied her with respect to their snowshoe treks to Minai-nipi (Minipi Lake) or canoe expeditions down Mishta-shipu. Dating to the late 1990s, these expeditions are a form of land use in the Study Area, albeit of short duration, and with limited harvesting.¹⁶ The GIS database and maps generated as part of the 2010 study contain no camp site, travel routes or any other LUO features related to these expeditions. As a result, no assessment of LCP effects on the LUO of Penashue and her fellow land users in the Mishta-shipu valley has been undertaken;
- there are currently no baseline data concerning Innu country-food production and frequency of land use in the LCP Study Area, nor for Innu territory as a whole. As a consequence, it is not possible to determine the intensivity of Innu LUO in different portions of the Study Area. The lack of data also make it difficult to

¹⁵ The cabin database was generated for the purpose of land claims negotiations between the Innu, federal and provincial governments. The parties recognize that the data are incomplete and need to be validated (N. Kleer, e-mail to P. Armitage, 12 September 2010).

¹⁶ See Penashue’s Blog at <http://elizabethpenashue.blogspot.com/>

- understand the relative importance of LUO there in relation to LUO in other parts of the Innu territory, and its social-economic and health benefits, if any;
- the potential impact of Innu wage employment with Nalcor during the construction phase of the LCP on Innu LUO cannot be assessed even though it as an important variable, due to lack of data. No research has been conducted among the Innu to evaluate the effects of their participation in LCP wage labour on their LUO.¹⁷ How many Labrador Innu are likely to work on LCP construction, and of these, how many are land users in the Study Area? Will Innu involvement in wage labour during the construction phase facilitate increased land use, interfere with or diminish land use, or have no effect whatsoever? These questions cannot be addressed here without the input of additional information;
 - LUO research methods in the past have relied heavily on the map biography method, which privileges the spatial aspects of human social organization at the expense of beliefs, values and practices which cannot be easily georeferenced, if at all. Therefore, the phenomenological aspects of LUO in the LCP Study Area - what the land *means* to the Innu, the emotional attachments to it, their memories of deceased *Tshishennuat* ('Elders')¹⁸ and other loved ones associated with the area, the pedagogical benefits of living there in terms of transmitting knowledge to younger generations, etc. – are poorly documented. As a result, our ability to fully understand the effects of flooding and other destructive elements of the LCP is greatly impaired;

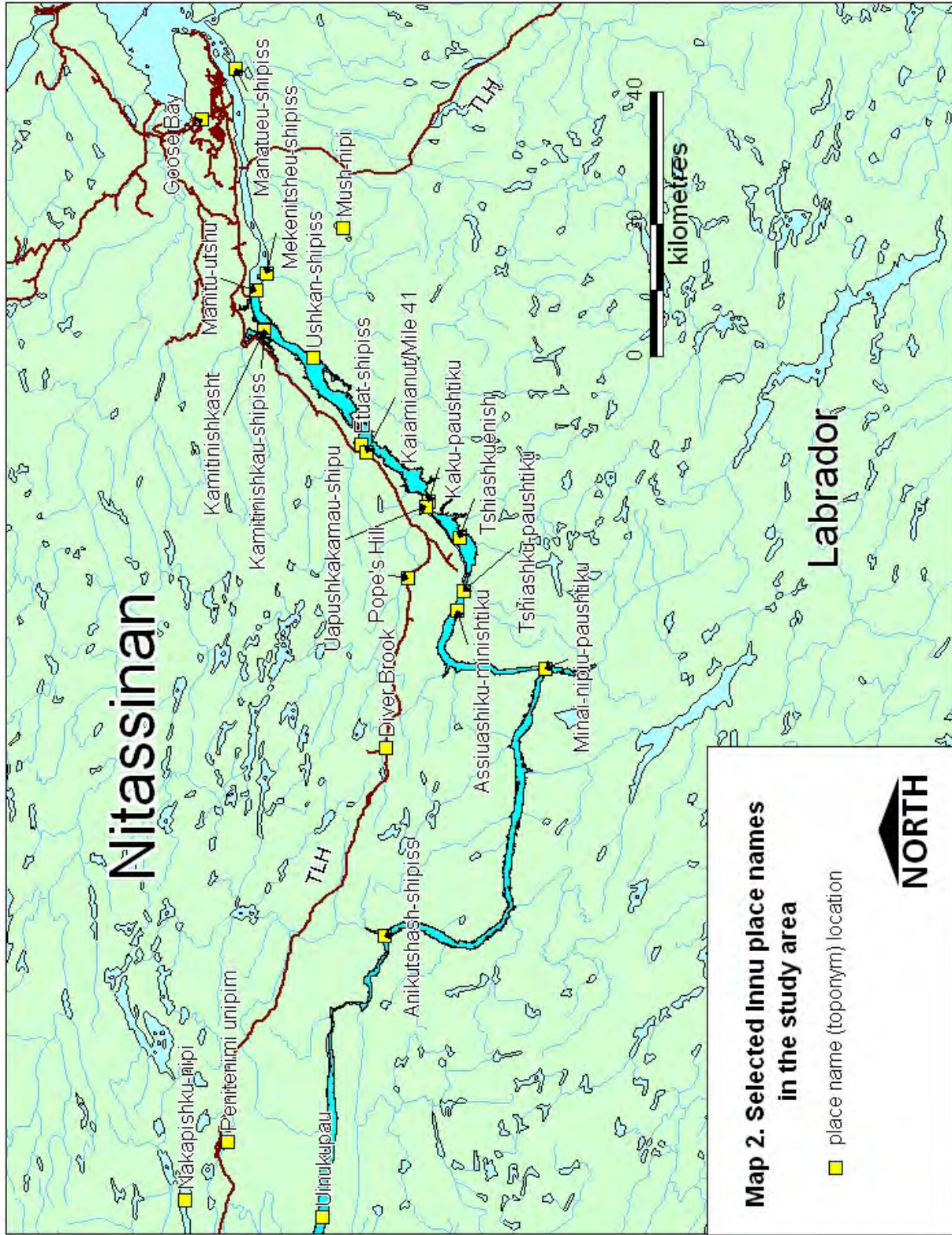
related to the previous point is the fact that we have no data on Innu notions of landscape beauty and other elements of aesthetic appreciation, nor do we have data on their perceptions of tranquility and *nutshimit* values.¹⁹ Therefore, what may appear as hideous scars on the landscape to non-Indigenous people, such as quarries and the sterile draw-down shorelines of hydro reservoirs, may be perceived in very different ways by Labrador Innu.²⁰ Similarly, we have no information on Innu perceptions of

¹⁷ I included several questions related to wage labour interactions with land use and occupancy during the map biography interviews for the Innu of Labrador Contemporary Land Use Study, but the “statistical validity of responses by the sample respondents to questions about employment, country food sharing and other socio-economic matters is severely compromised by the extremely small sample size in combination with a lack of age and gender parity to the demographic structure of the broader population. As a consequence, generalizations cannot be made for Sheshatshiu members on the basis of the survey sample responses” (Armitage, 2010:38-39).

¹⁸ *Tshishennuat* is pronounced [chen-ut].

¹⁹ *Nutshimit* means ‘the country’. I cannot properly describe “*nutshimit* values” in the absence of data concerning what the country means to Labrador Innu these days. I offer this term as a temporary label of convenience for the spectrum of emotions, attachments, memories and other attributes that Innu associate with spending time on the land. See Nadasdy’s brief discussion of Kluane people’s utilitarian views regarding “spectacular” landscapes (2005:305). This should serve as a caution about any efforts we “outsiders” make to make sense of Innu social constructions of landscape, beauty, the sublime, etc.

²⁰ Therefore, it is hard to know if “viewscape management” is important to the Innu.



- highway traffic noise and other sources of noise disturbance that could be used to better understand the potential effects of LCP-related vehicular traffic along the TLH as well as construction-related noise such as blasting operations;
- no focused gender analysis has been conducted with respect to this assessment of LCP effects on Labrador Innu LUO. The EIS guidelines state that “[t]he assessment of the beneficial and adverse effects of the Project on the socio-economic environment shall consider how the Project may affect various segments of the local populations (e.g., youth, elders, men, women, Indigenous groups, harvesters, existing workforce including professionals)” (Government of Canada, et al., 2008:33);
 - the snowmobile trail along the TLH between Goose Bay and Labrador City brings recreational land users into contact with Labrador Innu while they are at their cabins and camps on the TLH. No data were available concerning the frequency of use of the snowmobile trail nor the frequency of non-Innu snowmobiler interactions with Innu;
 - there is insufficient information concerning the topography of Kamitinishkau-shipiss above the flood line (see Map 3), the new shoreline (in terms of access to the reservoir), and the post-flooding habitat characteristics of this area to know whether it will be biologically productive and accessible enough to support future Innu land use activities such as hunting and fishing;
 - there is insufficient information concerning the post flooding habitat characteristics of the Etuat-shipiss area (see Map 4) to know whether it will be biologically productive enough to support future Innu land use activities such as hunting and fishing. The topography of the post-flooding shoreline should be considered as well in order to determine how accessible this area will be to Innu land users either itinerant or based at Kaiamianut (see Map 4);
 - there is insufficient information concerning the post-flooding habitat characteristics of the section of Mishta-shipu between Etuat-shipiss and Uapushkakamau-shipu (Pinus River) to know whether it will be biologically productive enough to support future Innu land use activities such as hunting and fishing;
 - the Innu occupants of a cabin located on the TLH near Muskrat Falls were not interviewed during the 2010 Innu of Labrador Contemporary Land Use Study, so it is not known if they hunt, collect berries or engage in any other LUO activities in the vicinity of their cabin that may overlap with the proposed borrow areas. As a result, it is not possible to assess the effects of LCP activities related to borrow-pits on their LUO;
 - no data are available concerning current traffic volumes along the TLH, nor estimates of the increase in this volume as a result of LCP construction activities. For example, information about the number and scheduling of trips by logging

trucks involved in reservoir timber clearing operations are required to permit an analysis of traffic safety, noise disturbance, dust and other issues with respect to traffic along the TLH;

- Nalcor has not described the types of harmful/hazardous materials, if any, that will be transported along the TLH. Therefore, it is not possible to assess properly the possible effects of accidents involving these materials on Labrador Innu LUO;
- with respect to the criteria for characterizing the effects of the LCP on Innu LUO, it is difficult to determine the magnitude of the effects in terms of the numbers of Innu land users affected by a given activity due to the lack of quantitative data concerning the number of Innu using the Study Area and the intensity of their LUO while there.

3.0 Environmental effects assessment

3.1 The effects of hydroelectric and other industrial projects on Indigenous land use and occupancy (comparative data)

The vast majority of hydroelectric developments in Canada were undertaken as economic development, nation-building, and “civilizing” endeavours designed not only to provide electricity to distant urban centres but also to open the north to mining, pulp and paper and other resource extraction industries (Manore, 1999:53).²¹ This brought hydroelectric developments into direct conflict with northern peoples, in particular the Indigenous inhabitants. Environmental impact assessments were not conducted for the majority of these projects, and many ended up in litigation with the Indigenous residents of the flooded territories seeking compensation for the social, economic and health effects that resulted directly and indirectly from these hydro projects.

Despite the ubiquity of hydroelectric projects in Canada, and the fact that they date to the early industrialization of the country, surprisingly little systematic research has been conducted into the social, economic and health impacts of these projects on Canada’s Indigenous peoples. Much of what has been written about hydroelectric impacts on them constitutes “grey literature,” is narrowly focused on compensation and mitigation issues, and/or describes the impacts in a relatively superficial manner. Nonetheless, the literature surveyed for this study points to significant effects including the following:²²

- fish and animal habitat damage, flooding of rice fields, and loss of biological productivity thereby undermining local subsistence economies (Bartlett, 1990; Berkes, 1990; Brody, 1982:134; Charest, 1982:420; Gill and Cooke, 1975:54;

²¹ For an international perspective on the social-economic and health effects of hydroelectric projects, see World Commission on Dams (2000:97-133).

²² Many of these points are mentioned in Nalcor’s (2009) Environmental Impact Statement.

Goulet, 1988:21-25; Indian Claims Commission, 1998; Keeper, 1990; Lovisek, 1998; McCutcheon, 1991:117; Northern Flood Committee Inc. and Cobb, 1993:11-13, 16-17; Rosenberg, et al., 1997:47-48; Shkilnyk, 1985:137; Usher, et al., 1979:123-128; Usher and Weinstein, 1991:9; Waisberg and Holzkamm, 1998);²³

- reductions in the “total area of land available for harvesting activities, causing changes and displacement of land use and resource harvesting patterns” (Usher and Weinstein, 1991:9);
- loss of traplines due to flooding (Bartlett, 1990; Charest, 1982:420; 1980:329-331; Keeper, 1990; Manore, 1999:57; Northern Flood Committee Inc. and Cobb, 1993:14);
- disruption of customary land tenure systems based on family hunting territories and/or registered traplines (Berkes, 1988:210-211; McCutcheon, 1991:117);
- flooding of villages, reserve lands, community relocation (Lovisek, 1998; Manore, 1999:56; Usher, et al., 1979:123-128; Waldram, 1988);
- flooding of grave sites, archaeological sites, and places of religious significance (a.k.a. “sacred sites”) (Linklater, 1994; Lovisek, 1998; Manore, 1999:56; Nabokov, 2006:162; Northern Flood Committee Inc. and Cobb, 1993:14-15);²⁴
- mercury accumulation in reservoir fish (Berkes, 1990:635; Berkes, 1988:207-208; Hydro-Québec, 1993a; Scott, 2001; Simard, et al., 1996:138-140);
- reservoirs filled with debris resulting in reduced commercial and subsistence fishing (Loney, 1987:58; Rosenberg, et al., 1997:47);
- land use-related travel on reservoirs difficult, dangerous and/or unreliable (Bartlett, 1990; Goulet, 1988:23; Rosenberg, et al., 1997:47);
- exacerbation or onset of serious social pathologies and rapid increase in dependence on government transfer payments (e.g. welfare) with serious repercussions for the subsistence economy of hunting, trapping, fishing and gathering (Loney, 1987:69-73; Loney, 1995; Northern Flood Committee Inc. and Cobb, 1993:15-16; Rosenberg, et al., 1997:47; Waldram, 1988:107-109; 1985);
- eroded sense of place, aesthetic values, emotional attachments to place, etc. (Keeper, 1990:620; Linklater, 1994; Northern Flood Committee Inc. and Cobb, 1993:14).

²³ The Indian Claims Commission concluded that “The construction and the operation of the Bennett Dam have substantially changed the hydrology and ecology of the Peace-Athabasca Delta, causing direct and serious harm to IR 201 and the Athabasca Chipewyan First Nation. No other conclusion is possible from the *prima facie* evidence before us” (1998:6-7).”

²⁴ Internationally, “Large dams have had significant adverse effects on [cultural] heritage through the loss of local cultural resources (temples, shrines, and sacred elements of the landscape, artefacts and buildings) and the submergence and degradation of archaeological resources (plant and animal remains, burial sites and architectural elements...” (World Commission on Dams. 2000:116).

Churchill Falls Project and the Smallwood Reservoir

The Labrador Innu themselves have direct experience with the effects of large hydroelectric developments, in particular the Churchill Falls Project and its Smallwood Reservoir. Constructed over several years in the late 1960s and early 1970s, the Churchill Falls Project inundated Kapakuashu (MacKenzie Lake), Meshikamass (Michikamats Lake), Meshikamau (Michikamau Lake), Ushiku-manauan (Ossokmanuan Lake), Menutinau-nipi (Windbound Lake) and other lakes on the central Labrador plateau.²⁵ Sheshatshiu Innu including the late Pinute Ashini, Shushep Abraham, and Matiu-Ben Andrew spoke of the following project impacts (Tanner, 1977:128-131):

- hunting and trapping lands inundated;
- canoes, traps, snowshoes, caribou-hide scrapers, beaming tools, ice chisels, axes and other tools lost due to flooding;
- decline in animal populations due to drowning;
- high mortality of beaver in headwater ponds that experienced deep freezing (below beaver lodge entrances) due to reduced water levels;
- lower water levels in Meshikamau-shipu (Naskaupi River) with impacts on salmon and lake trout migration and spawning.

The late Shapatish Penunsi conducted a map biography interview with researcher Alex Andrew during which he identified a caribou calving ground north of Kasheshibaw Lake that was flooded as a result of Smallwood Reservoir impoundment.²⁶ Penunsi's information is supported by Folinsbee, et al. (1973:3) who noted that the "bogs around Michikamau Lake were at one time a major caribou calving ground and waterfowl nesting area, but now are largely under water" (see also Bergerud, 1994:11-16).

The effects of the Churchill Falls Project and the fact that the Innu were never consulted or compensated became a festering sore point for that generation of Innu who knew the Meshikamau region and settled with their families in the government-built village of Sheshatshiu (Armitage, 1990). According to the late Pinute Ashini,

[w]e knew that there was going to be damming of the river, but we did not know what it would mean. We had no idea of what the level of the water would be. At most, we compared it to a beaver damming a river. I was still there during the

²⁵ See Griffiths (2001) and Nalcor (2009, V3, p.5-4). For a discussion of the effects of the flooding on historic resources in the Meshikamau/ Meshikamass area (i.e. archaeology), see Loring, et al. (2003).

²⁶ Conducted under the supervision of geographer, Brenda Sakaue, the map biography interviews asked Innu respondents to describe their LUO during three time periods. The caribou calving ground in the Meshikamau area was identified on a 1:250,000 scale NTS map by Shapatish Penunsi for the time period 1920-1950. "Q: Were there many caribou in Michikamau region? A: Yes, to the north, the caribou was plentiful and up further north at the barrens the caribou were many. [Q:] And where do the caribou calve? [A:] One area would be a marshy area close by the Michikimau Lake before it was flooded" (Shapatish Penunsi interview with Alexander Andrew, 1 Feb. 1979; see also Loring, et al., 2003:68).

construction that summer. When I went back the next year, everything was water....Indians were not consulted at all about what was going to happen. I was very bitter after I found out that the lands were flooded. There wasn't much that could be done (Tanner, 1977:128).

More recently, the issue of the flooding of Meshikamau and neighbouring lakes arose at various points in discussions with the members of the ITKC. Examples of their observations and propositions concerning the impacts of the Churchill Falls Project are presented in the report of the work of the ITKC (Armitage, 2007b:83-84).

Access roads and other linear transportation corridors

One of the most significant effects of hydroelectric development on Indigenous LUO is the building of access roads to support the construction and maintenance of dams, dikes, reservoirs, generating facilities, transmission lines, and other infrastructure. However, such effects are also associated with forest access roads, mine access roads and other linear transportation corridors. New roads can lead quickly to competition with non-Indigenous hunters and fishers, and various biophysical effects that damage fish and game populations. But they can also improve access to traditional territory by Indigenous people for whom travel to distant camps by charter aircraft can be extremely expensive (Hayeur, 2001:73; Hydro-Québec Production, 2007:39-115-118; Penn, 2003:2).

Several years ago in conjunction with Dr. Marianne Stopp, I undertook a survey of the comparative literature concerning the effects of roads on Indigenous LUO in relation to the environmental assessment of TLH Phase 3 between Cartwright and Happy Valley-Goose Bay (see Armitage and Stopp, 2003). This literature survey is reproduced in Appendix 1 below because of its usefulness for the LCP environmental assessment and because the original report may not be easily accessible to the JRP and interveners.²⁷ Furthermore, careful attention to comparative data concerning road impacts elsewhere

²⁷ In addition to the comparative literature reviewed in Appendix 1, see Berkes (1981:168-169;1988), Charest (1982:423), Hydro-Québec (2007:39-115-118), Rosenberg, et al. (1997:46) and Warner (1999:107-110) in relation to road networks built for hydroelectric projects, Staples and Poushinsky (1997:73-77) in relation to mine access roads, and Kneeshaw, et al. (2010) and Tanner (2009) in relation to forest access roads. Hydro-Québec (1993b) predicted competition between Cree/Inuit and southern sport hunters and fishers in relation to roads associated with the proposed Great Whale hydroelectric project. "The new road system (totalling about 685 km in main roads) will constitute one of the largest sources of impact on Native land use" (ibid.:1993:15). However, note Simard et al.'s contention that sports hunting and fishing in the area covered by the James Bay and Northern Quebec Agreement during the period 1970-1990 did not threaten "traditional Cree activities" because tourists did not penetrate very far into the territory and they were not interested in the same species that the Cree were" (1996:140-141, my translation).

in Canada is prudent given that this category of impacts is probably the most important as far as LCP interactions with Innu LUO are concerned. The following effects were identified in the literature concerning the impacts of linear transportation corridors:

- increases in moose, caribou, black bear, aquatic furbearer and small game hunting, followed by declining game populations;
- increased angling pressure on salmon, brook trout and other fish stocks, with rapid and significant declines in fish stocks in some cases;
- declines in waterfowl densities near roads due to hunting;
- declines in marten populations due to trapping pressure adjacent to roads;
- increases in illegal hunting and fishing;
- increased potential for outfitting and tourist lodge development;
- increases in recreational cabin use;
- construction of temporary and permanent cabins and camps by recreational hunters, some of whom establish more distant structures by transporting construction materials on ATVs;
- public safety problems due to the frequent discharge of firearms near roads;
- improved access for Indigenous people to hunting camps and traditional lands in general;
- for Indigenous people, competition with non-Indigenous hunters, trappers and fishers in territories that were previously the former's exclusive domains;
- disruption of customary Indigenous wildlife management systems by non-Indigenous hunters who fail to respect Indigenous hunting territory custodianship;²⁸
- increases in inter-community "poaching";²⁹
- disrespect for Indigenous religious beliefs by non-Indigenous people, e.g., by improperly disposing of animal remains;
- contamination of drinking water and fishing sites due to the improper disposal of animal carcasses near roads;
- theft from and vandalism of road-accessible cabins and camps belonging to Indigenous people.

It was clear from the 2003 literature review for the TLH Phase 3 assessment that environmental monitoring programmes can provide potentially the only meaningful data to support analyses of the effects of linear transportation corridors, yet are generally not implemented in any systematic way once the construction phase is over (ibid.:59).

²⁸E.g. in the Quebec James Bay region, non-Aboriginal hunters who fail to respect Cree hunting territory custodianship based on the idea of people receiving invitations from a "tallyman" to use his territory (see Appendix 1).

²⁹E.g., in the Quebec James Bay region, the harvesting of beaver from lodges on individual hunting territories by Cree from other communities without the permission of the "tallyman" (see Appendix 1).

Gravel pit camping

There appear to be some similarities between current Innu LUO practices along the TLH and its side roads and those of non-Innu “gravel pit campers” in Labrador and on the Island of Newfoundland that should be considered. What appears to happen is that a pit is occupied, found to be suitable, and then a cabin appears. In Labrador, the cabin may sometimes be owned by an Innu person, but more often, non-Innu. Occupancy of gravel pits by non-Innu contributes to encroachments on Innu LUO.

It is important to note, however, that with the exception of cultural/political meetings such as the 2006 Tshiashkuenish³⁰ women’s gathering and mobile treatment programme camps, Innu overnight places along the TLH and its tributary roads amount to small clusters of tents, occupied short term, or one or two cabins built in close proximity to one another. They in no way resemble the large, long-term agglomerations of trailers and old buses found at some locations in Newfoundland, such as the famous “Whisky Pit” on the Salmonier Line or gravel pit camps near Country Pond on the Witless Bay Line, and on the Trans Canada Highway near the Come By Chance oil refinery during Hibernia and Terra Nova oil platform construction at Bull Arm.³¹

Nonetheless, the Government of Newfoundland and Labrador has raised concerns about social, health and traffic safety problems associated with unregulated camping at gravel pits and other road-side locations on the Island that could be relevant for Innu LUO of the TLH and its side roads. With respect to the environmental assessment of the Vale INCO smelter at Long Harbour, the Government noted that experience with previous industrial construction projects showed that “workers will maximize the take on the travel allowance, and other incentives, by living as cheaply as possible. This usually translates into gravel pit camping with all the associated hazards (road safety, unsanitary sewage and solid waste disposal, sub-standard water supplies, etc.)” (Vale INCO. 2008:13). In the Vale INCO case, the proponent was asked to “state policies that will truly be a disincentive to the practice of gravel pit camping by workers directly employed and by subcontractors” (ibid.:13).

Information was sought from the provincial Department of Environment about the specific issues that could be expected to arise in the context of the proposed LCP.

³⁰ The *Pepamuteiati nitassinat* website (www.innuplaces.ca) records “Tshiashku-nipi” for Gull Lake, but this toponym needs further research given that virtually everyone in Sheshatshiu who knows the name pronounces it [tʃja:ʃkwē:ʃ] in which case the spelling should be Tshiashkuenish. I have adopted this latter spelling in this report. Innu apply this name to the entire Gull Lake-Gull Island area.

³¹ E.g. see James McLeod. 2009. “Memories of the Whisky Pit.” *The Telegram*. Nov. 18th. <http://www.thetelegram.com/Arts---Life/Commuting/2009-11-18/article-1445072/Memories-of-the-Whisky-Pit/1>

Unfortunately, the Department's corporate memory with respect to the evidence mustered to support concerns about gravel pit camping has faded with the retirement of expert staff, meaning that we cannot presently evaluate its arguments and supporting data concerning road safety hazards and other problems attributed to gravel pit camps.³²

Irrelevant comparative data

Some of the comparative data concerning the effects of hydroelectric developments on Indigenous LUO elsewhere in Canada are not directly relevant to the Labrador Innu for the following reasons:

- in the case of hydroelectric projects in northern B.C., Saskatchewan, Manitoba, Ontario, and Quebec in the 1950s, 1960s and 1970s,³³ Indigenous peoples were still heavily involved in subsistence economies of hunting, trapping, fishing and gathering, where country foods and cash inputs from commercial trapping, wild rice, fisheries, and/or berry collecting contributed significantly to household incomes in relation to wage-labour and government transfer payments. However, it would appear that the importance of the subsistence economy to Sheshatshiu Innu has declined sharply over the last 30 years, in terms of country food and commercial fur production. Therefore, damage to the biological productivity of the land due to hydroelectric development may have little effect on current country food production by Labrador Innu overall (more on this below);³⁴

³² Patt Marrie, personal communication, 21 February 2011. Jim Price, former Resource Planner with provincial Crown Lands, says that he and his colleague, Aubrey Golding, conducted a survey of gravel pit camps across the Island 25 years ago, and wrote a report concerning sanitation, water quality, traffic safety and other planning issues. Both Price and Golding are retired from the provincial government (Jim Price, personal communication, 28 Feb. 2011).

³³ E.g. W.A.C. Bennett Dam (Peace River), Wintego Project (Saskatchewan), Churchill-Nelson River Hydro Project (Manitoba), Caribou Falls (Ontario), Kenogamisee Falls (Ontario), Bersimis 1 & 2 (Quebec), La Grande River (Quebec), Manic 1-5 (Quebec), etc.

³⁴ This proposition is a matter of "professional judgment;" it is not based on an assessment of hard data concerning contemporary edible meat and fur production by Labrador Innu, the composition of household diets, amount of time spent hunting, trapping, fishing and gathering, participation rates in SIFN Outpost Programmes, etc. However, the only known research concerning the importance of *nutshimiu-mitshim* ('country food') relative to other inputs to household economies indicates that in 1987, country food, expressed as cash equivalent value, contributed 12.5% of the total Sheshatshiu cash income. Wage employment comprised 39.7% of the total income, unemployment insurance 16.5%, social security payments 14.8%, federal child tax credits 6.6%, federal family allowance 5.2%, old age security 2.6%, and fur sales 1.7%. Full-time, part-time, seasonal, and occasional wage employment provided income for 47.3% (172 people) of the population 15 to 65 years of age (364 people) (Armitage, 1991). I would be highly surprised if new data for the post-1987 period show country food production to be any more important in relation to other income sources than it was in 1987. Nonetheless, my proposition concerning the declining importance of the subsistence economy for Sheshatshiu Innu is subject to revision obviously should contradictory evidence become available. I note Usher's caution about using market criteria to evaluate the importance of country food (Usher, 1976:117-118).

- a number of hydroelectric projects elsewhere in Canada flooded registered traplines and/or family hunting territories. In contrast, the land tenure system of Labrador Innu has never included traplines and individual hunting territories (Armitage, 1990; Mailhot, 1997); they have no registered traplines or individual hunting territories associated with “tallymen” (*utshimauat*) that could be affected by the LCP (more on this below);
- hydroelectric developments in other parts of Canada disrupted customary land tenure³⁵ systems based on family hunting territories and/or registered traplines, for example, by facilitating intra-community “poaching” through the uninvited harvesting by people from neighbouring communities on traplines or territories belonging to individual “tallymen.” In contrast, the TLH and its side roads appear to be a “common land” freely accessible by all Labrador Innu no matter what kinship ties they have to the people historically associated with the area. However, these linear transportation corridors are also freely accessible to everyone regardless of their ethnic background meaning that non-Innu land uses are encroachments on Innu LUO and can affect Innu land tenure, the custodial/stewardship aspects of this tenure, etc.;
- elsewhere in Canada, hydro reservoirs and river diversions flooded Indigenous villages and reserve lands and forced people to relocate above the flood line. In contrast, the LCP will not flood any Innu villages, reserve lands, or lands designated as “Labrador Innu Lands” (LIL) or “Labrador Innu Settlement Area” (LISA) under the terms of the “Tshash Petapen” agreement;³⁶
- grave sites and places of religious significance (a.k.a. “sacred sites”) were flooded as a result of hydroelectric development elsewhere in Canada, and Innu grave sites were flooded as a result of the Churchill Falls Project. In contrast, the LCP will not flood any known Innu grave sites, although it will affect places of religious and historic/cultural significance to the Labrador Innu (more on this below).

3.2 Potential effects of the LCP

As noted in the Innu of Labrador Contemporary Land Use Study (Armitage, 2010:39-47), the available evidence points to a significant change in Sheshatshiu Innu land use over the last 20 or more years. The change is most apparent in the shift in Innu harvesting efforts and camp establishment away from remote locations formerly accessible by canoe and snowshoe, and in more recent years by aircraft, to road

³⁵ “Land tenure refers to the way that people regulate their social relations with one another with respect to the land and its resources; the social rules that determine who lives where, and who has access to which resources in a given territory” (Armitage and Stopp, 2003:35).

³⁶ A copy of this agreement is appended to Nalcor’s response to IR# JRP.151 “Aboriginal Consultation and Traditional Land and Resource Use.”

accessible ones. Available data show that Innu have built cabins at approximately 24 road accessible locations in the Study Area over the last 20 years, 18 of which are along the TLH between Goose Bay and Churchill Falls. Another eight or so cabins have been built in recent years at the mouth of the Kenamu River, which is accessible by motor-boat or snowmobile after freeze-up. In addition to these locations, Innu have also built cabins at North West Point, and along the road between Sheshatshiu and Goose Bay.

A comparison of contemporary Innu LUO features with LCP features including highways, reservoirs, transmission lines, access roads to transmission lines and construction camps, generating facilities, and reservoir forest clearing locations, shows that the primary overlaps between these features are in the Mishta-shipu (Churchill River) valley between Minai-nipiu-paushtik^u and Manitu-utshu at Muskrat Falls, and along the TLH between Goose Bay and Gull Island. *However, the area of greatest concern for contemporary Innu LUO is this section of the TLH, between Goose Bay and Gull Island, where Innu have established camps, cabins, gathering sites, and conducted various LUO activities in association with them.* Both options for the Labrador-Island transmission link have limited spatial interaction with contemporary Innu LUO with the exception of that section of the transmission line near Mush-nipi (more on this below).

While the effects of the LCP on Innu LUO west of Gull Island are less significant, there are still issues that require our attention. Furthermore, while there has been very little contemporary Innu LUO in the area south of Mishta-shipu between Manatueu-shipiss (Traverspine River) and Muskrat Falls, concerns remain about the potential effects of the proposed access road from TLH Phase 3 to Muskrat Falls, as well as the proposed routing of the Labrador-Island Transmission Link.

3.2.1 Construction phase

Possible effects on Innu land tenure³⁷

With respect to the environmental assessment of the TLH Phase 3 on Innu LUO, Stopp and I concluded that,

opening the area to generalized access by way of the TLH could have an impact on the land tenure system. Innu associated with the Penipuapishk^u (Red Wine Mountains), Ashtunekamik^u (Snegamook) and Ashuapamatikuan (Shipiskan Lake) areas could start to use the Akami-uapishk^u (Mealy Mountains) area, when

³⁷ Usher and Weinstein (1991:6) note that “one important but often inadequately considered element is the indigenous system of land tenure and resource management, which preceded the development of Crown systems and which continues to function in modified form. [Social Impact Assessment] methodology must be able to take account of such historical determinants of resource harvesting, in view of their importance and of the ways they condition local responses to project effects.”

in the past, they did so either sporadically or only in cases where they had close kinship relations with southern Innu. We have seen this change already in the harvesting activities by people associated with Akami-uapishk^u (Mealy Mountains) group who, nowadays, hunt and fish in areas not normally associated with their group – namely in central and western Labrador – locations accessed by way of the TLH (Armitage and Stopp, 2003:72-73).

Nowadays, the TLH between Goose Bay and Churchill Falls and the Mishta-shipu area in general are not associated with any particular Innu family group. As noted previously, these areas appear to be “common lands” freely accessible by all Labrador Innu no matter what kinship ties they have to the people historically associated with the area. Historically, the nearby Mishta-shipu (Churchill River) was “both an important travel corridor as well as the dividing line between two regional subgroups of Innu who traded at the Hudson’s Bay Company store in Sheshatshiu/ North West River (Armitage, 2007b:18; Mailhot, 1997:142-144).

The LCP will have no significant effect on Labrador Innu land tenure in terms of disrupting customary Innu family attachments to particular regions, and where access to these regions is facilitated by kinship. Furthermore, the project is unlikely to interfere with the current trend in Innu LUO, which is to spend more time at road-accessible destinations along the TLH and its tributary roads, or destinations easily accessible by boat and snowmobile from the community (e.g. Tshenuamiu-shipu [Kenamu River]) at the expense of the more remote, familial parts of the territory, access to which requires charter aircraft financed by SIFN.³⁸ However, there are the cumulative effects of increased hunting and fishing competition with non-Innu and encroachment in terms of new non-Innu cabin developments to consider. The cabin enclaves that now exist at prime locations on the TLH, the Esker Road, the Ashuanipi, and the Manic system in Quebec are virtually entirely non-Innu, and they constitute encroachments on Innu LUO. New quarries and borrow pits in the Study Area could lead to additional non-Innu cabin enclaves.

Flooding of land use and occupancy areas

Based on the available evidence, with all the cautions and limitations noted in Armitage (2010:32-39),³⁹ it appears that areas of contemporary Innu LUO that will be flooded are

³⁸ A few families finance their own travel to places customarily used by their subgroup, however, these are exceptions to the rule, which is that for the majority of Sheshatshiu Innu who go to *nutshimit* (‘the country’), travel to remote areas by charter aircraft is financed by the SIFN.

³⁹ Readers are asked to remember that the study sample was 28 respondents with map biographies made with 26 of them. The map biographies document “some” of the kill sites and other land use features between 1990 and 2010. The composite data compiled using this method do not permit an analysis of the intensivity (e.g. frequency) of land use in any given area. Furthermore, the number of land use features located in this area is not necessarily representative of all community harvesting activities here.

at Kamitinishkau-shipiss, Etuat-shipiss (Edwards Brook), and from there to Uapushkakamau-shipu (Pinus River).

Regarding, **Kamitinishkau-shipiss** ('Muddy Place River' [small]), which is between Muskrat Falls and Gull Island, six respondents for the 2010 study (Armitage 2010) established camps in the lower reaches of this brook in the period 1990-2010, between the TLH and the mouth of the brook. These respondents also harvested porcupine, beaver, snowshoe hare, partridge, ducks and geese and fish along or near Kamitinishkau-shipiss in addition to along a small tributary of Mishta-shipu a short distance to the west. The camp locations and kill sites for the game and fish harvested in this area are shown on Map 3. Camps marked 2, 4 and 41 will be flooded as a result of reservoir impoundment.⁴⁰

In addition to the camps and kill sites marked on this map, the point marked XC is of significance. This is the approximate location of the 1946 birthplace of one of my 2010 respondents (PIN10), and the campsite that she returned to on a number of occasions with her parents during her youth. She returned there shortly after her marriage to another of my respondents (PIN9). Their memories of, and affection for, this place are described in Armitage (2010:79-80). The campsite apparently has been washed away by erosion (ibid.:80).

The effects on Innu LUO in the Kamitinishkau-shipiss area as a result of flooding cannot be mitigated. There is a high probability that the area will be lost from the Sheshatshiu Innu inventory of productive land use territory.

However, we presently do not have enough information concerning the topography of the brook above the flood line, the new shoreline (in terms of access to the reservoir), and the post-flooding habitat characteristics of this area to know whether it will be biologically productive and accessible enough to support future Innu land use activities such as hunting and fishing.

Regarding **Etuat-shipiss** (Edwards Brook, 'Edward River' [small]), ITKC members reported that historically (pre-1990), *makatsheu/mikuashai* (suckers) may spawn just below the rapids up the brook, from its junction with Mishta-shipu (Armitage, 2007b:59). *Tshinusheu* (pike), *minai* (burbot), *atikamek* (whitefish), *kukamess* (lake trout), and *makatsheu/mikuaishai* (suckers) were found at the mouth of Etuat-shipiss (ibid.:50). Three respondents for the 2010 study (Armitage 2010) harvested beaver, ducks, geese, and fish in this area including at the mouth of the brook. Two of these respondents, who were hunting partners at the time, erected a geese hunting blind at the northeast corner of the island across from the mouth of Etuat-shipiss. Most of this island will be flooded as a result of impoundment (see Map 4).

The Etuat-shipiss area is immediately beside the Kaiamianut (Mile 41) gathering place where three Sheshatshiu Innu have cabins. There is a high probability that Kaiamianut will be used for gatherings at some point in the future, and that Innu who reside in this

⁴⁰ The Muskrat Falls reservoir "will be 59 km long with an area of 101 km². The area of inundated land will be 41 km² at full supply level (39 m asl)" (Nalcor, 2009, V1a, p.1-8).

area, either at cabins or in tents during gatherings, will hunt, fish and collect berries there.

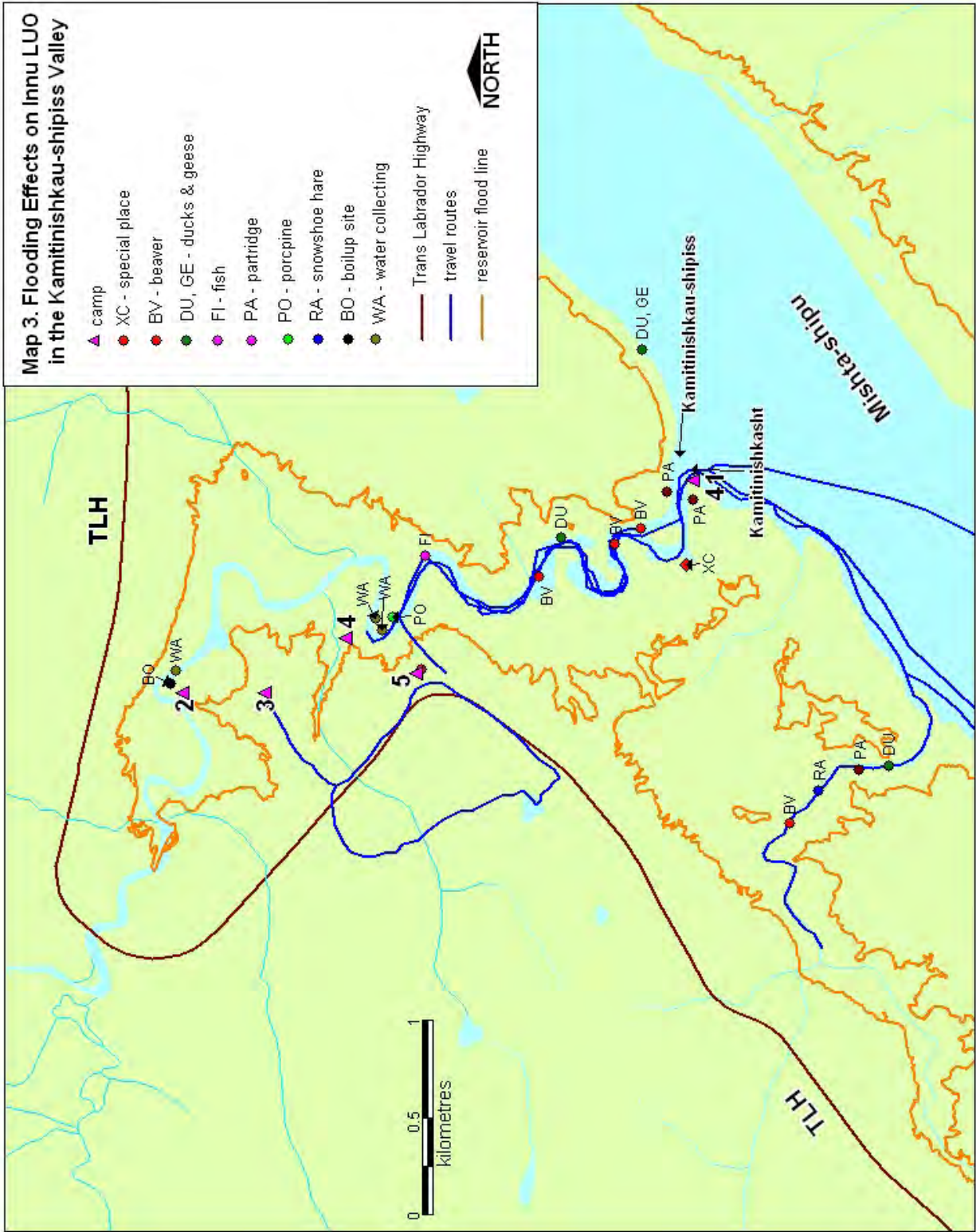
As with the Kamitinishkau-shipiss area, we presently do not have enough information concerning the post-flooding habitat characteristics of this area to know whether it will be biologically productive enough to support future Innu land use activities such as hunting and fishing. The topography of the post-flooding shoreline should be researched as well in order to determine how accessible this area will be to Innu land users either itinerant or based at Kaiamianut.

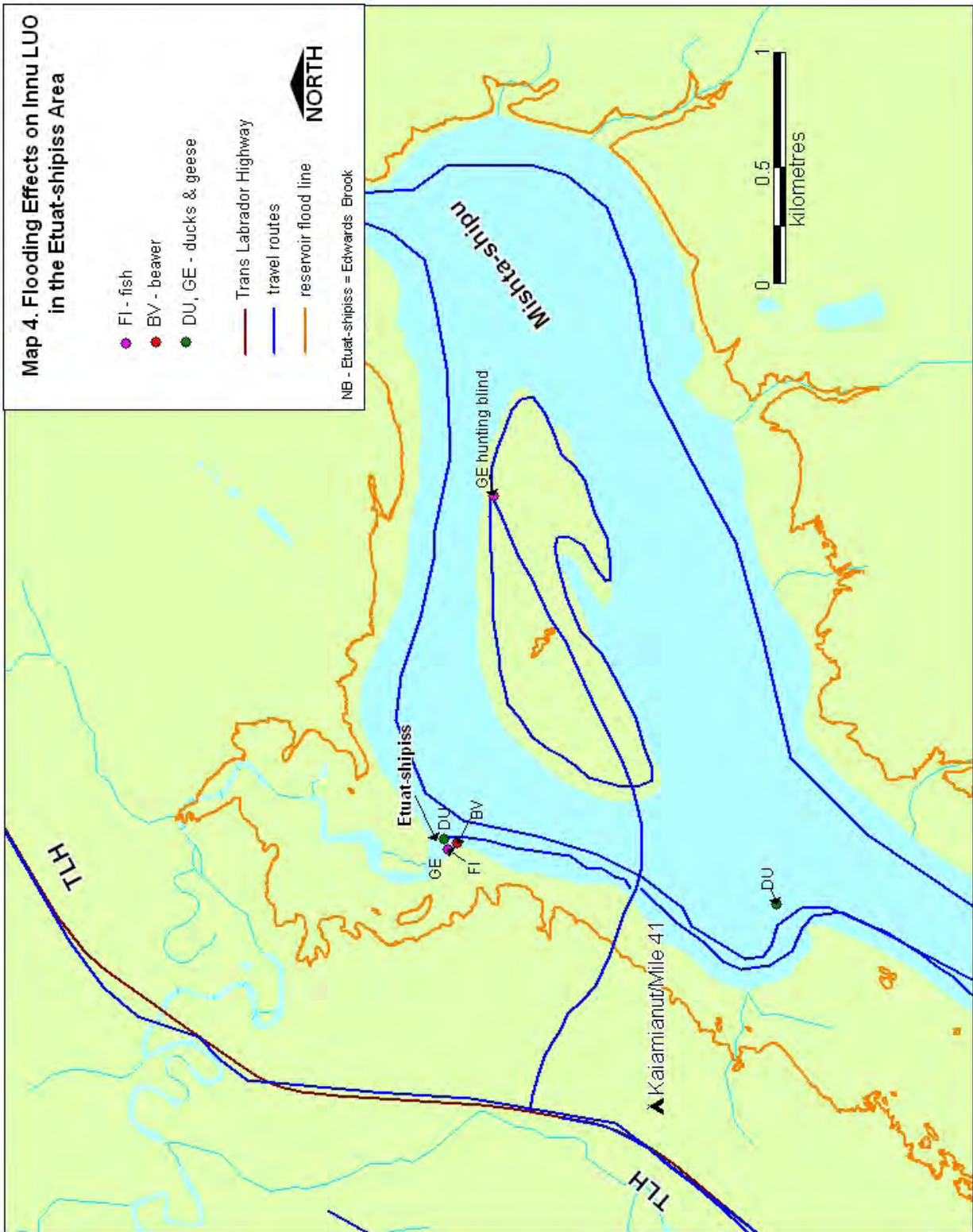
The third area to consider in terms of reservoir flooding effects on LUO is the stretch of **Mishta-shipu between Etuat-shipiss and Uapushkakamau-shipu** (Pinus River, 'Burnt Area Lake River') (see Map 5). Members of the ITKC said that historically (pre-1990) Innu caught *kukamess* (Lake trout), *matamek*^u (brook trout) (on occasion), *tshinusheu* (pike), and *makatsheu/ mikuaishai* (suckers) at the mouth of Uapushkakamau-shipu (Armitage, 2007b:51). Three respondents for the 2010 study (Armitage 2010) harvested beaver and geese and had boil-ups at two locations along the shores of Mishta-shipu in this area. Their travels appear to have been reconnaissance trips in part, with opportunistic harvesting along the way. Flooding along this section is unlikely to have a significant effect on Innu LUO. However, we presently do not have enough information concerning the post-flooding habitat characteristics of this area to know whether it will be biologically productive enough to support future Innu land use activities such as hunting and fishing.

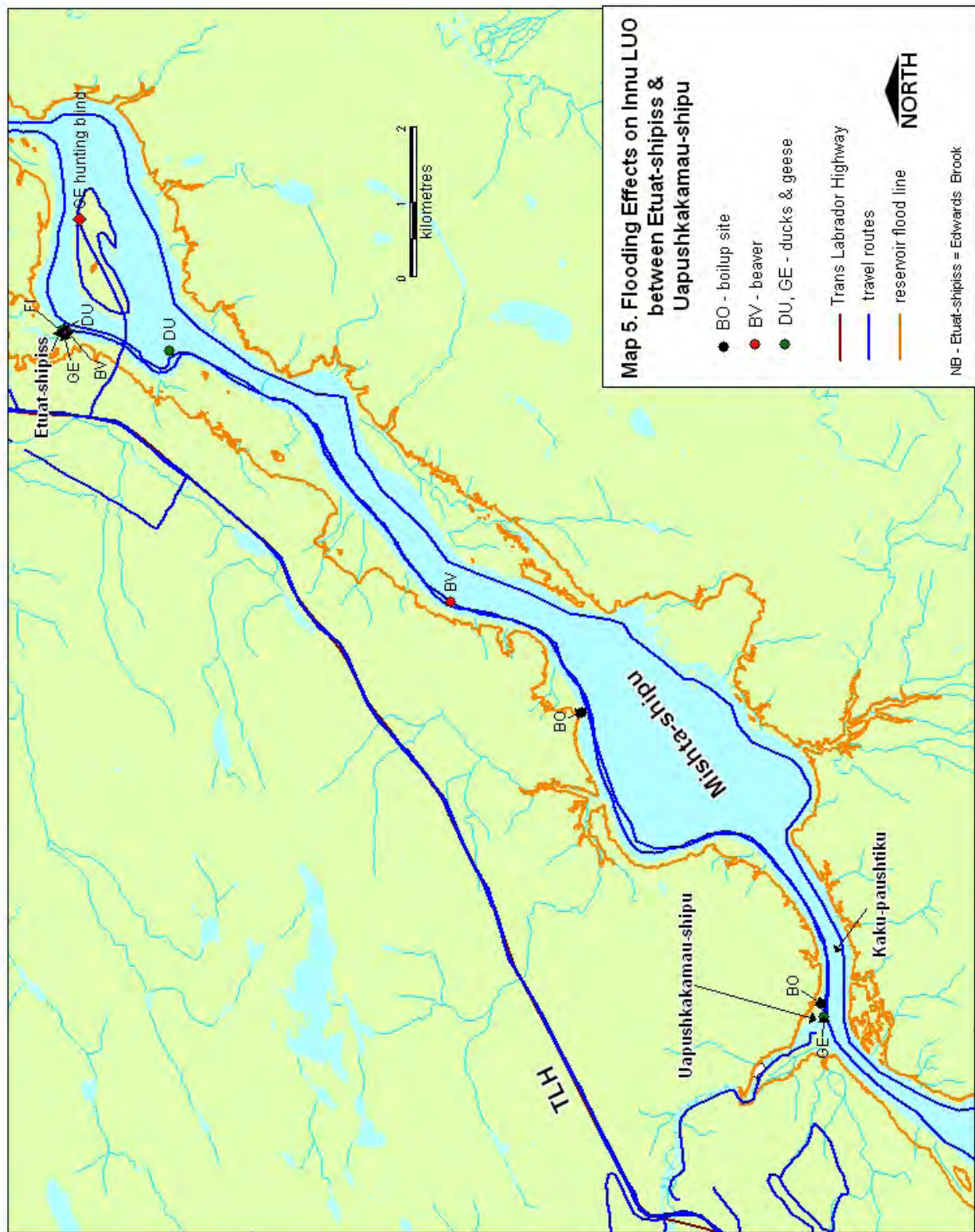
The flooding of **Assiuashiku-minishtik**^u ('Canadian Yew Island') just upstream of Gull Island is a serious concern for the Innu *Tshishennuat* ('Elders') who were members of the ITKC, even though none of them harvested *assiuashik*^u (Canadian Yew) from the island during the period 1990-2010. ITKC members believe that this "powerful" *nutshimiu-natukun* ('country medicine') is extremely rare in their territory, found only on

this island,⁴¹ although researchers retained by Nalcor found the medicine on two other islands upstream both of which will also be flooded (Nalcor, 2009:5-16). Proposed mitigation measures with respect to this medicine as well as ITKC member opinions concerning such measures are discussed below. Given the power of *assiuashik*^u and its extreme rarity in Labrador Innu territory, the potential destruction of this medicine is a significant adverse effect as far as ITKC members are concerned.

⁴¹ The rarity of *assiuashik*^u was discussed further with ITKC members during my meeting with them in Sheshatshiu on 2-3 February 2011.







With respect to occupancy issues, six **Innu toponym (place name) features** will no longer exist once reservoir impoundment is complete. These toponyms are listed in Table 2. They are among 570 Innu toponyms that are to be submitted to the Newfoundland and Labrador Geographical Names Board for officialization. However, should the LCP proceed and the geographical features they label be inundated, the names will have to be removed from the officialization list. Labrador Innu toponyms are a finite cultural resource, so the loss of these names contributes to the erosion of Innu history and culture, albeit in a minor way.⁴²

Table 2. Innu toponym features that will be flooded by LCP reservoirs.⁴³

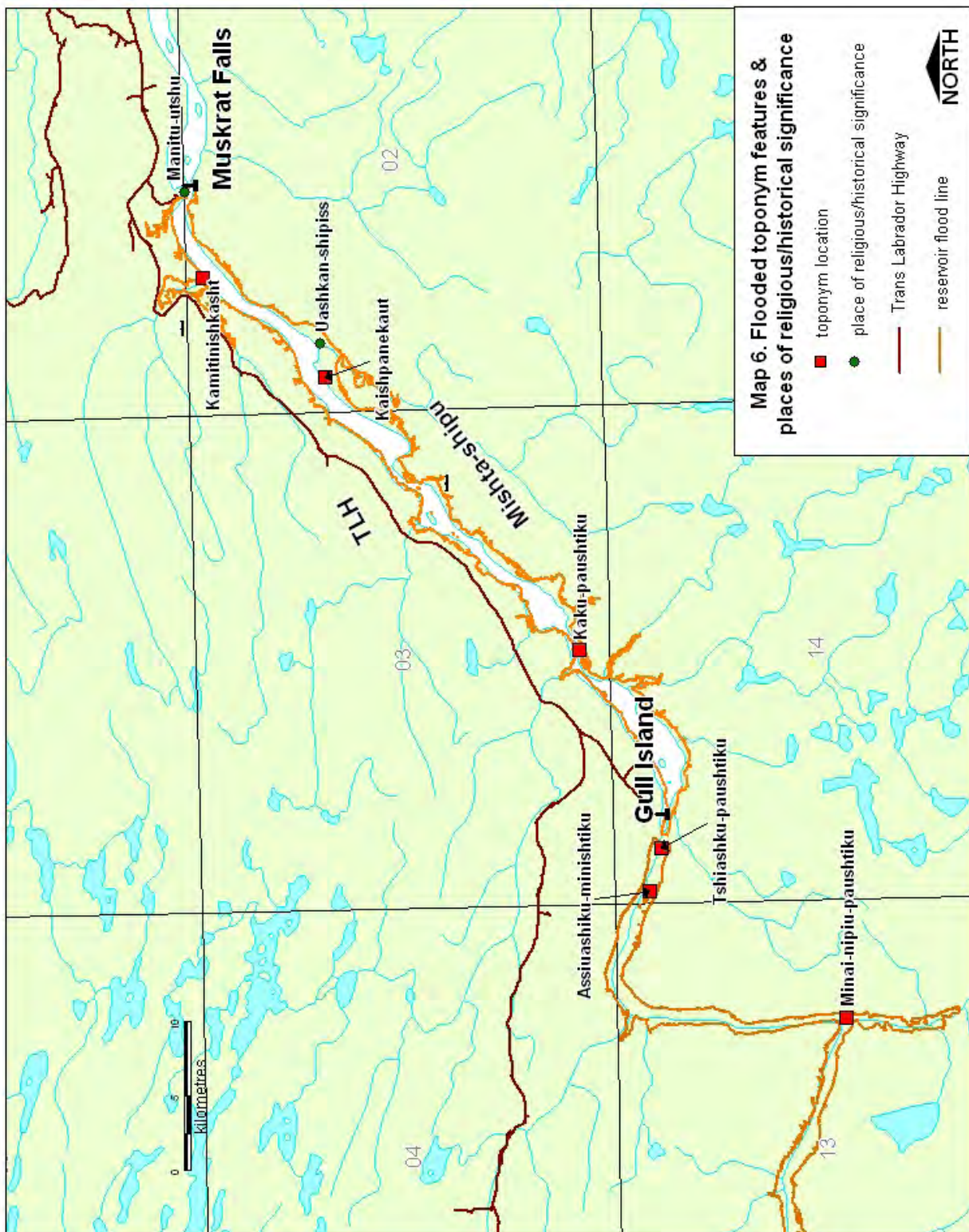
Toponym name	Translation	Feature
Kamitinishkasht	Muddy Place (small)	point
Kaishpanekaut	High Sandy Bank	locality
Kauku-paushtik ^u	Porcupine Rapids	rapids
Tshiashku-paushtik ^u	Gull Rapids	rapids
Assiuashiku-minishtik ^u	Canadian Yew Island	Island
Minai-nipiu-paushtik ^u	Burbot Lake Rapids	Rapids

A potentially important place of historic/cultural significance to the Innu will also be flooded as a result of reservoir impoundment. This is the site of the last known *kushapatshikan* (shaking tent) ceremony anywhere in Innu territory in Labrador and Quebec, near the mouth of **Ushkan-shipiss** on the south shore of Mishta-shipu between Muskrat Falls and Gull Island (see Map 6). The ceremony was conducted by the father of the one of the ITKC members, a man by the name of Uatshitshish who passed away in 1971, and who was the last *kamanitushit* (shaman) known to the Innu. Several Sheshatshiu *Tshishennuat* ('Elders') and other witnesses to the 1969 ceremony visited the *kushapatshikan* site at Ushkan-shipiss on October 14, 2006, as part of a commemorative and documentary trip sponsored by Nalcor (Armitage, 2008) (more on this in the mitigation section below).

The last matter of concern with respect to the flooding that will result from LCP reservoir creation is the **“wasting” of *nutshimiu-natukun* (country medicine) and animals**. This issue was raised very ardently by a number of ITKC members during their meetings in 2006 and 2007 and again in February 2011. Their concerns are based in

⁴² They are a finite resource because new toponym generation in the Innu language has virtually ended. Younger Innu are strongly disinclined to use Innu toponyms, preferring to use English toponyms, or invent new names in Innu-aimun for geographic features. The decline in Innu toponymy is part of two larger issues: (1) declining land use; (2) erosion of Innu-aimun, a threatened minority language.

⁴³ Source – www.innuplaces.ca



traditional ethical concepts which themselves are intimately connected to their beliefs in the need to respect various other-than-human beings, in particular, animal masters (*aueshish-utshimauat*).⁴⁴ Assurances by Nalcor that the Innu will still be able to hunt and fish the same species elsewhere in their territory despite localized habitat losses, the reconfiguration of *ashkui* ('open water area') throughout the Mishta-shipu valley, etc., and that efforts will be made to live-trap and transplant beaver to areas outside the flood zone do nothing to assuage Innu *Tshishennuat*. ITKC members remain convinced that "wasting" animals and medicine as a result of flooding will be a major impact of potentially catastrophic proportions.⁴⁵ Disturbing the powerful otter-like beings, Uenitshikumishteu, who reside at Manitu-utshu (the rocky knoll beside Muskrat Falls) is also a very serious matter as far as the *Tshishennuat* are concerned. These beings are powerful enough to destroy the hydro dams, they argue.

An insight into the worldview of Innu *Tshishennuat* was provided in the ITKC report, for example, in the testimony of one ITKC member in response to the discovery of a caribou carcass on the road between Sheshatshiu and Uhu-neiau (North West Point).

The community has gone a year without a suicide or a fatal accident, but what's going to happen now that there has been such a terrible act of disrespect? Why do people take too much animals if they end up wasting it....It is very disrespectful to waste the animals like this. Innu like my father always respected the animals which they needed for their survival. The culture, the animals, must be respected (Armitage, 2007b:91).

Innu *Tshishennuat* believe that disrespecting powerful other-than-human beings such as the animal masters can invite various forms of retribution (punishment) ranging from youth suicides in their villages, to fatal accidents, and extreme weather events such as tornadoes and hurricanes that kill many people (ibid.:91, 94). Wasting animals and medicine and disturbing Uenitshikumishiteuat are therefore extremely important ethical matters because they assault the moral order and jeopardize the lives of Innu and non-Innu alike.

⁴⁴ Nadasdy (2005) provides an important caution regarding the ethnocentric imposition of Euro-Canadian interpretations of the term "respect." E.g. "Shooting a wolf is not blasphemy or sin. On the contrary, First Nation people's concept of respect is *based* on the need to kill animals. As long as hunters behave properly toward wolves and their remains, killing them can be a perfectly sensible and respectful act. Most Euro-North Americans, however, do not understand this and persist in interpreting First Nation behavior according to their own assumptions" (ibid.:320, italics in the original).

⁴⁵ This matter was discussed at greater length with the ITKC on 2-3 February 2011. It was first presented to Nalcor representatives in the context of the ITKC process (Armitage, 2007:84), and the proponent has taken note of this in the EIS (2009, V1A, p.9-7). "Having devoted three days in group sessions with the ITKC participants discussing the potential impacts of the Project on the land, water, animals, fish, trees, bushes, berry plants, and other biota, it became apparent that the participants believe that these impacts are obvious. The land and the various animal and plants species that live there will be flooded, and animals that do not evacuate the flood zones will die."

Nonetheless, while the consequences of horrendous acts of disrespect make the *Tshishennuat* extremely anxious, the onus of responsibility for these acts and the agent who is most likely to bear the brunt of retaliatory actions by other-than-human beings is the proponent, Nalcor. It is possible to communicate with other-than-human beings such as Uenitshikumishiteuat to ask them not to punish humans for acts of disrespect. This is done through tobacco or tea offerings or by drumming, at which times they must always be addressed as *nimushumat* ('my grandfathers').⁴⁶ Once again, however, the onus for establishing contact with these beings lies with Nalcor, not the Innu.⁴⁷

Tshishennuat concerns are shared by other Indigenous peoples throughout the Americas with respect to the impacts of resource developments. A short step to the west in the James Bay area of Quebec, we have the example of Eastmain Cree concerns about the northward diversion of the Eastmain and Opinaca Rivers.

In the Cree view the animals help man by allowing themselves to be caught so that their bodies become food and nourishment for the hunter and his family, and the hunter helps the animals by treating the animal and its remains with respect so that the soul of the animal will be happy and will be re-born again as an animal in the future....Among the things a hunter must do to fulfill his obligations as a hunter is to kill animals quickly and efficiently, not to kill animals unnecessarily, and to utilize those he does kill fully....For the Cree the diversion scheme involves unnecessary and therefore dangerous destruction of wildlife, fish and vegetation. Flooding and construction will kill animals, will remove or flood the vegetation and diversion will remove water and result in fish kills. Such damages because they are seen to be unmoderated are practically dangerous and personally threatening, reducing both individual and community security that the land will continue to provide for the Cree people of Eastmain (Penn and Feit, 1974:57-58),

Traditionally-minded Anishinaabeg (Ojibway) from Iskatewizaagegan (Shoal Lake) in northern Ontario talk of *manidoo ogitigan*, the 'Creator's Garden', which

includes all the human persons, other-than-human persons, and all other things found in the particular place that have been given as a gift to a group of Anishinaabeg....In return for this abundance of gifts provided to the Anishinaabeg, the Creator also placed a moral, 'custodial' responsibility upon the Anishinaabe that Robin Greene has called the principle of ***gimiinigoowizimin gaaganawendang***. This, too, is difficult to translate but an English gloss that

⁴⁶ For more insight concerning Innu *Tshishennuat* thinking about offerings as a means of communicating with other-than-human beings including the *atshak*^u ('soul', 'shadow') of a deceased person, see Henriksen, 2009:110).

⁴⁷ P. Armitage interview with ITKC member P3, 1 Feb. 2011.

communicates this concept is 'keeper of the gifts'. This gloss contains both the idea of the gifts given for the survival of the Anishinaabeg as well as the moral responsibility the people bear to the Creator....The way in which Anishinaabe people know that they are taking care of the Creator's garden is by being aware of the consequences of their actions on others. This requires establishing a relationship with other beings in the garden and being aware that mistreating them can lead to unwelcome incidences, such as an illness or misfortune, in one's own life path (emphasis in the original. Davidson-Hunt, et al. 2005:196).

The Athapaskan-speaking Kluane people in the Yukon,

continue to conceive of animals as intelligent, social, and spiritually powerful other-than-human persons with whom they are engaged in an ongoing set of reciprocal relations, and they see their relations with animal peoples as vital to their physical and cultural survival....If a hunter fails to live up to the obligations he or she incurs through hunting, then the animal or animals may terminate their relationship with the hunter by refusing to give themselves in the future.... Especially powerful or bad animals may also impose other sanctions on the hunter, such as illness or even death. Indeed, disrespectful behaviour is often viewed as a threat to the entire community (Nadasdy, 2003:92-93).

In the United States, Indigenous opposition to strip mining, waste dumps, hydro-dams, and ski resorts has been expressed frequently in terms of the "sacred" and concerns about the consequences of disrespect for sentient beings and places with power (see Kelly and Francis, 1994; Nabokov, 2006). Recent testimony by D. Setah at public hearings concerning the proposed Prosperity Gold-Copper Mine Project in northern B.C. also resonates with what the *Tshishennuat* have to say in relation to dam construction and the flooding of Mishta-shipu.

Let's go to stories about Ts'yl-os [a "sacred" mountain]. I know my mom shared a story with me....Anyway, this rancher chased a lot of cattle into this area, like in how the fields were and how all the grazings were. After he left his cattle, here, he went back to get some more. And what happened is that roughly about six to seven feet of snow came down overnight and wiped out all his herd and after it wiped out all his herd, he was bringing more cattle, he seen too much snow, he brought his other cattle back that he went to get. The first time you guys came here, he gave you a little warning. It snowed. I know this might be a myth to you. You might treat it as one. I challenge you right now to point at him and make fun at him, see what happens, see you later. This is, a lot has to do with what you do

on our land also. You got to respect the land. Same way as we approach it. Because we got to, we got a sacred mountain that takes care of us also.⁴⁸

An example from even further afield is the 2006 opposition to a proposed mining concession at a mountain known as “Sinakara” in Peru (de la Cadena, 2010:338). This mountain is considered a sentient entity, itself governed by a more powerful mountain being called “Ausangate.” According to the Indigenous opponents, “Ausangate would not allow the mine in Sinakara, a mountain over which it presided. Ausangate would get mad, could even kill people. To prevent that killing, the mine should not happen” (ibid.:339).⁴⁹

Construction of new transmission lines and “access trails”

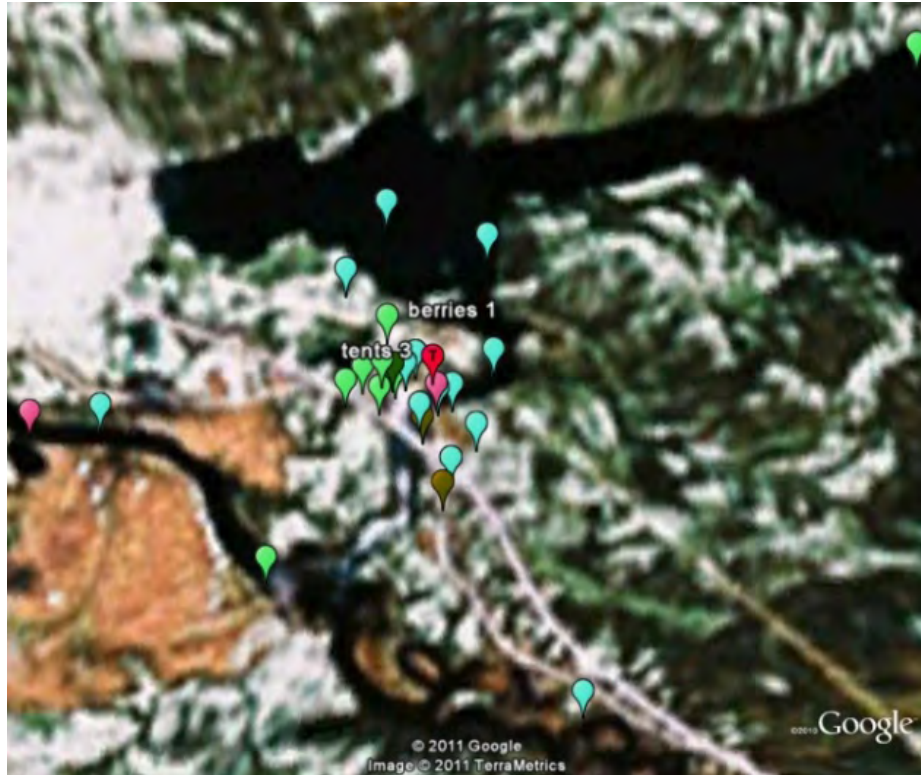
The construction, operation and maintenance of existing and proposed hydroelectric transmission lines and the “access trails” to them could affect Innu LUO in various ways, including disturbance of people residing at cabins and camps due to construction noise and construction traffic along the trails. Innu will most probably not want to camp at the sides of existing trails during construction and maintenance of the nearby transmission lines. Construction and maintenance activities could pose health and safety hazards to children, especially at camps and cabins located near transmission line “access trails.”

Some existing berry picking habitat could be damaged as a result of mechanical disturbance by construction vehicles, but this likely will not be a significant effect should the quantity of berries harvested there be low and provided there is adequate berry habitat located in the vicinity. In fact, more transmission lines in the area could create additional blueberry and redberry habitat depending on the way that “vegetation management” is conducted. The issue of vegetation control along the transmission lines is addressed below.

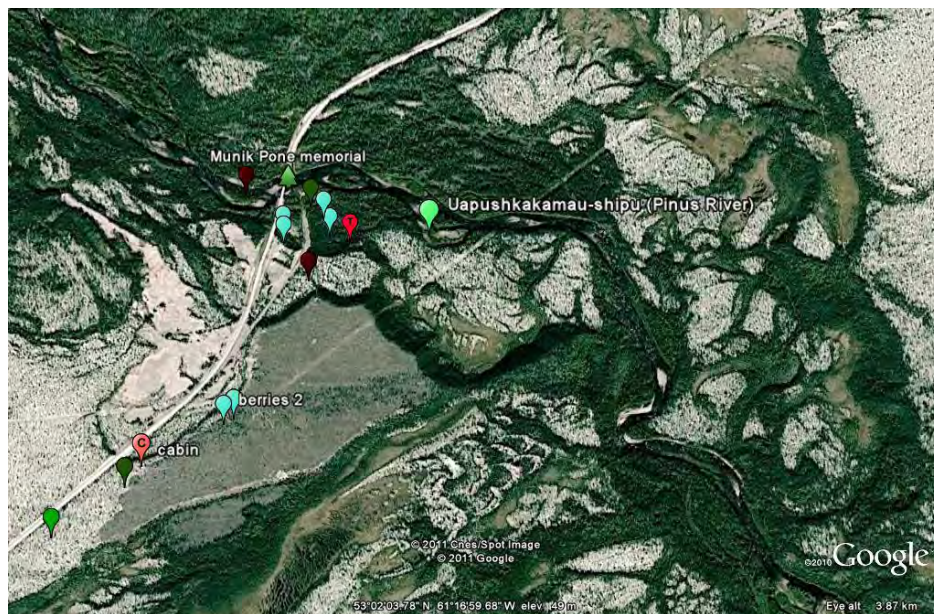
Two berry picking locations were identified along the existing transmission line corridor between Goose Bay and Churchill Falls, one near the outlet of Nakapishku-nipi (Wilson Lake), the other near the TLH-Gull Island road junction. They are depicted in Maps 7 and 8 below. New transmission line construction could generate significant new berry habitat, but this is uncertain.

⁴⁸ Transcripts of proceedings of the Federal Review Panel Public Hearing, Prosperity Gold-Copper Mine Project, CEAA registry #09-05-44811, community session, Xeni Gwet'in Community Band Hall, Nemiah Valley, B.C., 30 March 2010. pp.1877-1878.

⁴⁹ de la Cadena says that Ausangate is “well known in Cuzco [Peru] as a powerful earth-being, the source of life and death, of wealth and misery; obtaining a favorable outcome requires maintaining proper relationships with it and its surroundings (other mountains, lesser sentient entities) (2010:338). I am indebted to Mario Blaser for drawing my attention to this article.



Map 7. Berry picking site on the transmission line at Nakapishku-nipi (Wilson Lake).



Map 8. Berry picking site on the transmission line near the Gull Island road.

Likely interactions between existing and proposed transmission lines and the “access trails” to them were analyzed by comparing these LCP features with Innu LUO data from the 2010 contemporary land use study (Armitage, 2010). The following discussion and maps point to key areas of concern.



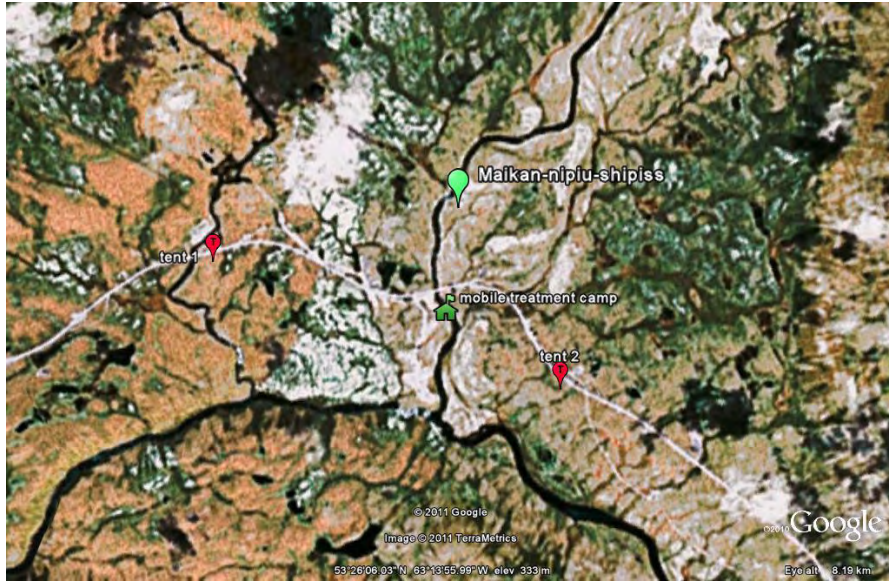
Map 9. Location of cabin 19 – close proximity to the existing transmission line.

Cabin 19 near the TLH – Orma Dyke road junction (Map 9) has been built almost directly under the existing transmission line between Goose Bay and Churchill Falls. The cabin appears to be located within the “land use constraints” polygon identified in Figure 3.45 near line posting #238 on the map entitled “Proposed Transmission Line Routing Constraints – Land Use 14.”⁵⁰ Innu associated with this cabin have also erected at least one canvas tent in this transmission line corridor, almost directly under the line.



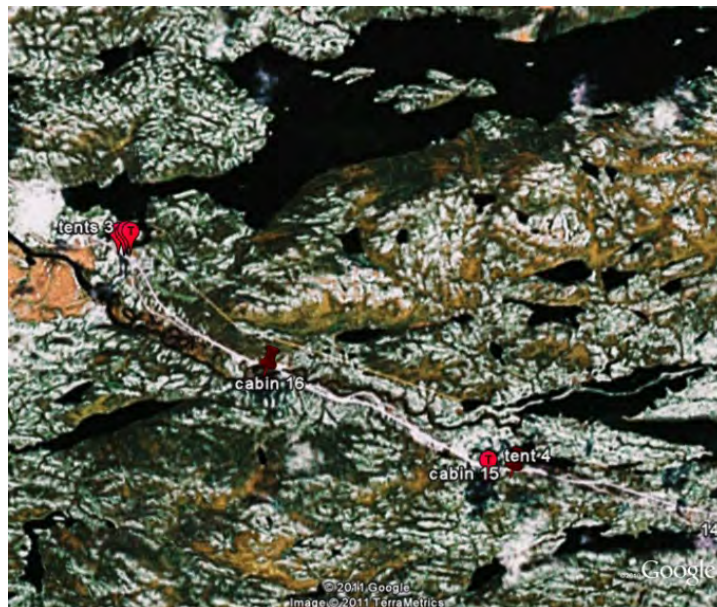
This cabin has been built in close proximity to the existing transmission line. The remains of a tent are visible almost directly beneath the transmission line (right). Note the osprey nest on top of the transmission line tower (left) (photo P. Armitage, Aug. 2011).

⁵⁰ AMEC Earth & Environmental. 2009.



Map 10. Locations of Innu camps at “tent 1” and “tent 2” near existing or planned transmission line access roads.

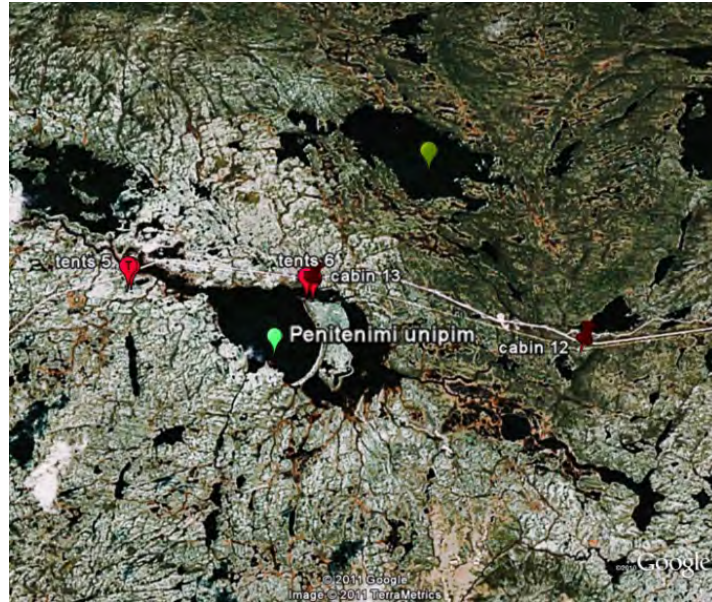
The Innu camps located near tributaries of Maikan-nipiu-shipiss (Metchin River) depicted at “tent 1” and “tent 2” on Map 10 were established immediately adjacent to existing or planned transmission line “access trails.”⁵¹ An Innu mobile treatment camp was previously established at the side to the TLH at the edge of the proposed one kilometre wide transmission corridor.



Map 11. Locations of Innu camps at “tents 3,” “tent 4,” and “cabin 16” established by existing or planned transmission line access roads.

⁵¹ See Figure 3.43, line postings 190, 194, “Proposed Transmission Line Routing Constraints – Land Use 12,” AMEC Earth & Environmental. 2009.

The outlet of Nakapishku-nipi (Wilson Lake) has been a popular camping destination for Labrador Innu in the contemporary period due to its proximity to the lake and its road accessibility. The Innu camps located here (“tents 3”) as well as a short distance to the east along the TLH at “cabin 16” and “tent 4” on Map 11 were established immediately adjacent to existing or planned transmission line “access trails.”⁵²

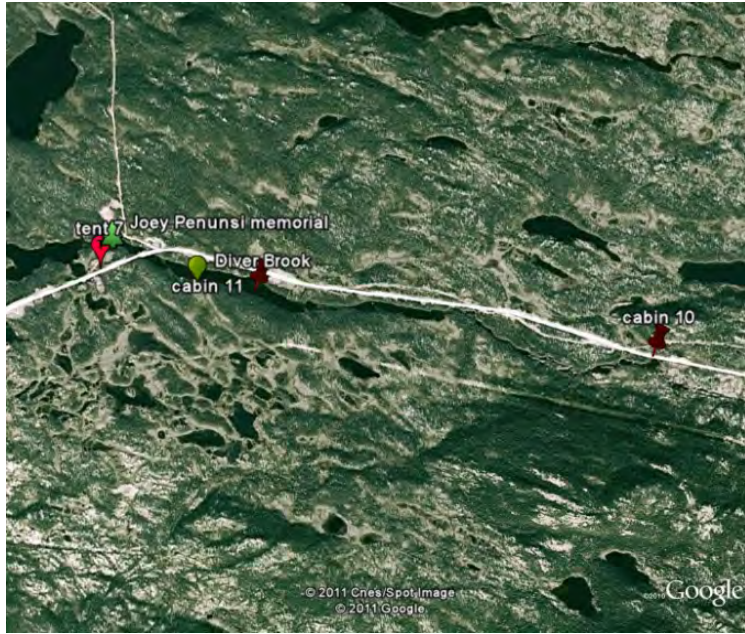


Map 12. Location of Innu camps and cabins at “tents 5,” “tents 6,” “cabin 12,” and “cabin 13” within the transmission line corridor.

Contemporary Innu LUO activities in the Penitenimi unipim area have been based at “tents 5,” “tents 6,” “cabin 12,” and “cabin 13” depicted on Map 12. These cabins and camps were established within the one kilometre transmission line corridor and/or in close proximity to current or proposed “access trails.”⁵³

⁵² See Figure 3.41, line postings #162, 163, 165, 167, 168. “Proposed Transmission Line Routing Constraints – Land Use 10,” AMEC Earth & Environmental. 2009.

⁵³ See Figure 3.40, line postings #142, 148, 152. “Proposed Transmission Line Routing Constraints – Land Use 09,” AMEC Earth & Environmental. 2009.



Map 13. Innu camps, cabins and the Joey Penunsi memorial at Diver Brook.

An Innu camping site (“tent 7”) and the Joey Penunsi memorial are located just outside the one kilometre transmission line corridor (Map 13) and are unlikely to be affected by transmission line and “access trail” construction, operation and maintenance. However, cabins #11 and #10 on Map 13 are within the corridor. Cabin #11 is unlikely to be affected by LCP-related construction, operation and maintenance because the “access trail” near line posting #82 will be located on the south side of Diver Brook. Innu occupants of cabin #10, on the other hand, could be affected by transmission line and “access road” activities located near line posting #80.⁵⁴



Existing Goose Bay to Churchill Falls transmission line and “access trail”
(photo P. Armitage, Aug. 2010)

⁵⁴ See Figure 3.37, line postings #80, 82. “Proposed Transmission Line Routing Constraints – Land Use 06,” AMEC Earth & Environmental. 2009.



Map 14. Innu camps and cabins in the Kaiamianut/Etuat-shipiss area.

The section of the TLH in the vicinity of Etuat-shipiss (Edwards Brook) and Kaiamianut depicted in Map 14 has been used heavily by Labrador Innu in the contemporary period (1990-2010). Occupants of cabins and camps established at Kaiamianut (cabins #5, 6, tent #8) could be affected by the transmission line “access trail” near line posting #34, while occupants of camps located at “tents 10” could be affected by the “access trails” near line postings #32 and #33. The latter camps are located within the “land use constraints” polygon identified on the “Proposed Transmission Line Routing Constraints – Land Use 02” map.⁵⁵

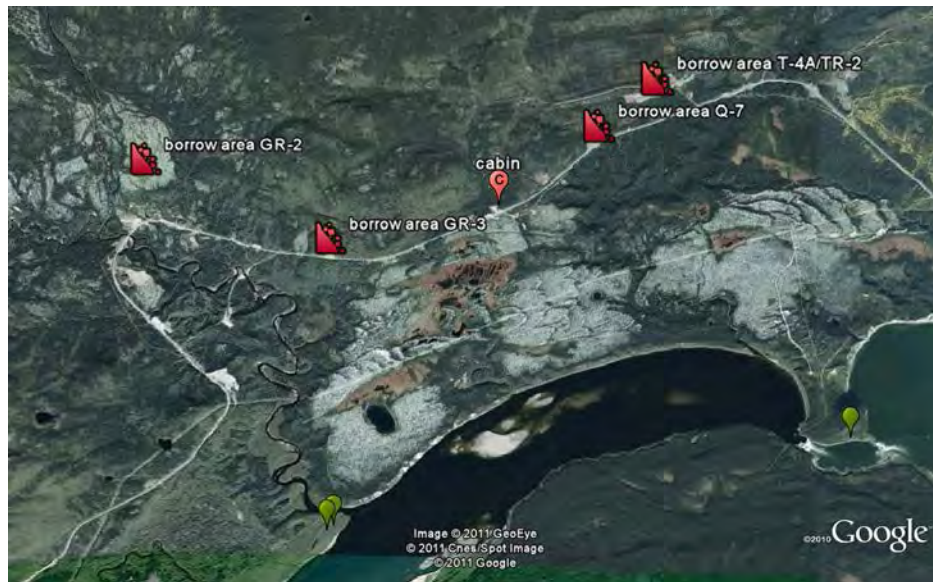
Quarries and borrow areas

Excavation and removal of materials from borrow pits and quarries along the TLH could affect Innu LUO in two areas: (1) near Muskrat Falls; and (2) near the junction of the TLH and the turn-off to Gull Island (Armitage, 2010:40). Regarding the Muskrat Falls area, an Innu cabin is located between borrow areas GR-3 and Q-7 (see Map 15).⁵⁶ The latter borrow area is approximate 1 ¼ km east of the cabin. Noise-related issues from blasting, machinery and heavy equipment traffic along this part of the TLH could disturb the sleep, *nutshimit* values, and peace of mind of the Innu occupants of this cabin at certain times of the year and hours of the day. They were not interviewed during the 2010 Innu of Labrador Contemporary Land Use Study, so it is not known if

⁵⁵ See Figure 3.33, line postings #32, 33, 34. “Proposed Transmission Line Routing Constraints – Land Use 02,” AMEC Earth & Environmental. 2009.

⁵⁶ The references for the borrow area locations on this map are (1) “Lower Churchill Project – Muskrat Falls. 2010 Site Investigation Exploration Borehole & Test Pit Location Plan” prepared by SNC-Lavalin BAE-Newplan, and (2) “Construction Camp – Access Roads and Potential Borrow Areas Location Plan” in the vicinity of Muskrat Falls, prepared by SNC-AGRA, January 1999, attached to IR#JRP26s.

the cabin holders hunt, collect berries or engage in any other LUO activities in the vicinity of their cabin that overlap with these borrow areas.

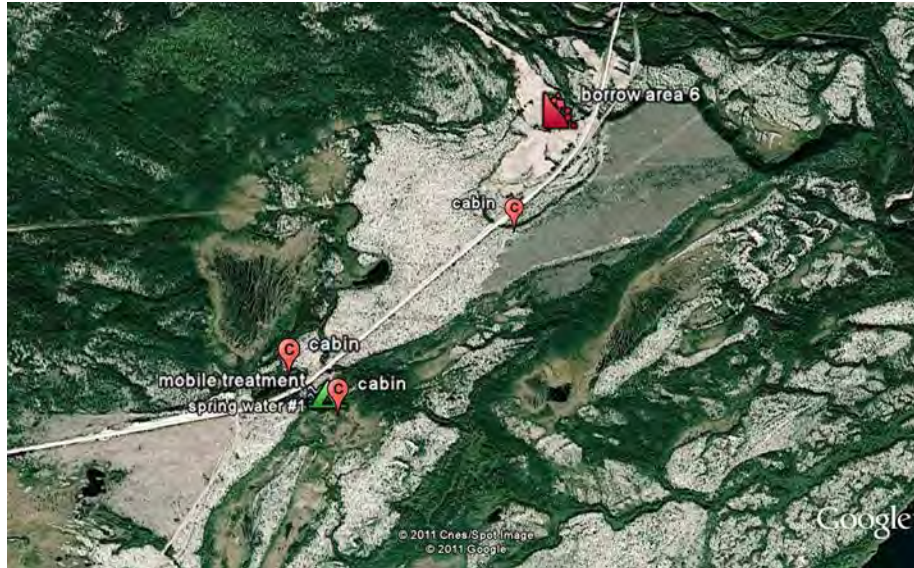


Map 15. Borrow areas in relation to an Innu cabin in the Muskrat Falls area.

Regarding the TLH-Gull Island road junction area, an Innu owned cabin is located approximately $\frac{1}{2}$ km from borrow area 6 while two other cabins are located at the road junction less than 2 km from this borrow area. An important Innu spring water source is also located at this junction (see map 16).⁵⁷ In addition, an Innu mobile treatment programme and recently a small Innu women's gathering⁵⁸ have been run at this latter location as evidenced by the numerous *matukapa* ('old camp sites') there. As with the cabin location near Muskrat Falls, noise-related issues from blasting, machinery and heavy equipment traffic along this part of the TLH could disturb the sleep, *nutshimit* values, and peace of mind of the Innu occupants of the cabins or tent camps in this area at certain times of the year. The risk of contamination of the spring water site at the junction will be addressed under "accidental events" below.

⁵⁷ The reference for the borrow area location on this map is "Borrow Areas Construction Camp and Access Roads" in the vicinity of Gull Island, prepared by SNC-AGRA, December 1998.

⁵⁸ The women's gathering here, winter 2011, involved approximately 30 women (S. Benuen, personal communication, 25-2-11).



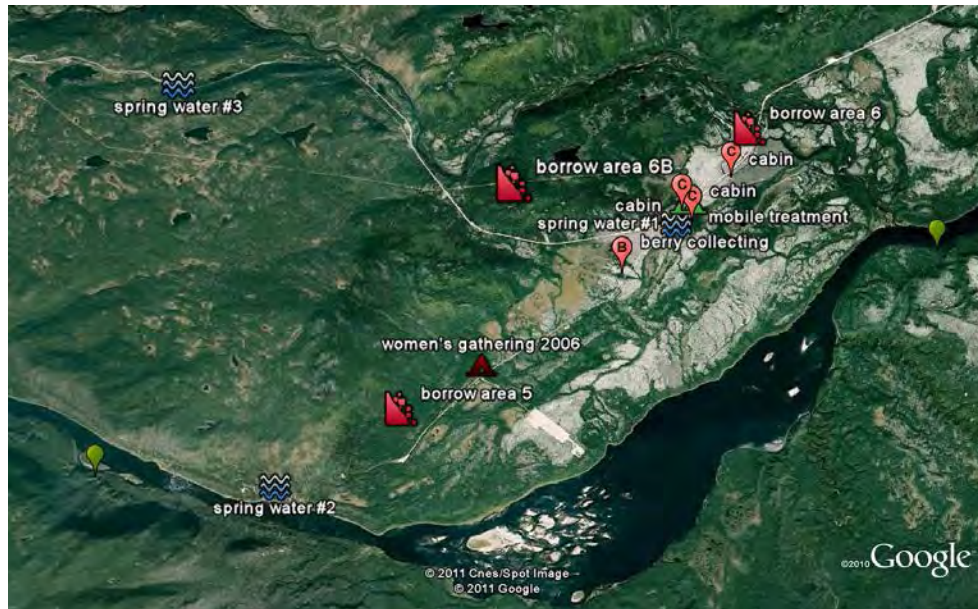
Map 16. A possible borrow area in relation to Innu LUO features in the TLH-Gull Island road area.

Construction activities at Gull Island and Muskrat Falls

Labrador Innu have camped in the vicinity of the Gull Island road during the contemporary period, and the large, flat, burn-over area at the TLH-Gull Island road junction has been a productive red berry collecting area (Armitage, 2010:56). In addition, the road has been used for gatherings of Innu from communities throughout Labrador and Quebec (see Map 17). For example, a large gathering of Innu women was held in 2006 in a cleared, sandy area on the northwest side of the Gull Island access road very near to where the main construction camp is to be located (Armitage, 2010:68). This site was chosen because of its physical characteristics – road accessible, flat, cleared of vegetation, enough space to accommodate numerous tents plus a large gathering tent, and isolation from Sheshatshiu and Goose Bay which meant that participants would not be distracted by competing activities back at Upper Lake Melville.⁵⁹ Gathering organizers hired three people to collect drinking water from nearby Uapushkakamau-shipu (Pinus River), otherwise many participants with vehicles obtained water from the fresh water spring at Pope's Hill ("spring water #3" on Map 17).

During the construction of the Gull Island dam, generating station and other facilities, the Gull Island access road will be closed to public access. As a result, the 2006 gathering site and other places suitable for large gatherings will not be accessible to the Innu for a period of eight or more years. However, unless there are extensive and rapid site reclamation initiatives following construction, many of these places could once again be suitable for Innu gathering activities.

⁵⁹S. Benuen, personal communication, 25 Feb. 2011.



Map 17. Selected Innu LUO features in the Gull Island area.

The spring water site on the Gull Island access road near Mishta-shipu (#2 on Map 17) will also not be accessible to Labrador Innu during the construction phase of the LCP, and it could well be terminated as a result of dam construction activities. However, my impression, based on several informal conversations with Sheshatshiu Innu, is that this spring water site is less used than the two located nearby on the TLH because it is less known to the Innu, and due to its distance from the TLH (approximately 10 km).

Various construction activities such as road construction that disturb subsurface hydrology, at either the Gull Island or Muskrat Falls sites, could create new fresh water springs that Innu may use in the post-construction period.

The redberry picking location at the TLH-Gull Island road junction will most likely remain accessible to the public, so the LCP is not expected to have any effect on this component of Innu LUO.

With respect to noise disturbance, construction noise (e.g. rock crushing machines) could disturb Innu based at the cabin, camp, and gathering location at the TLH-Gull Island road junction despite the fact that the dam construction site at Gull Island is approximately 8 kilometres away. Eight kilometres is not a great distance in a quiet environment.

Access roads to reservoir clearing areas and camps

In order to remove trees from areas that will be flooded by the Muskrat Falls and Gull Island reservoirs, Nalcor plans to construct 375 km of access roads, most of which will

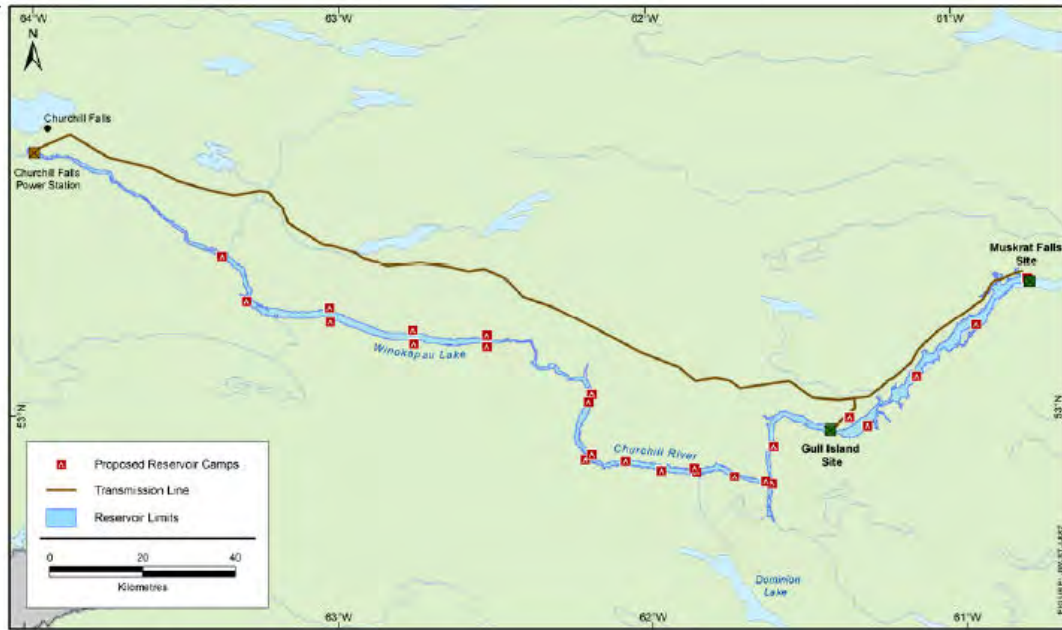
be submerged following impoundment.⁶⁰ The approximate location of these roads is shown on Map 18 below. I note that approximately 15 to 30 km of roads (or sections of them) will not be flooded, and may permit access to the reservoirs as well as the lands between these water bodies and the TLH (Nalcor, 2009, V3, p.5-12).

An estimated 20 camps will be established to accommodate workers involved in the tree clearing operation (Nalcor, 2008, V1A, p.4-38). These camps may be situated at the places depicted on Map 19 below.



Map 18. The location of reservoir clearing access roads along Mishta-shipu.

⁶⁰ The locations of these roads are shown approximately given the fact that I did not have access to an accurate GIS layer from the proponent. I plotted them by “eye-balling” their routes from the maps contained in Appendix 1B-D “Forest Clearing Areas and Reservoir Limits Mapping” showing reservoir limits, reservoir clearing access roads, and reservoir clearing camps (Nalcor Energy. 2009b), and the maps contained in the EIS concerning the “construction sequence” (Nalcor, V1A, Figures 4-17 to 4-25).



Map 19. Proposed reservoir clearing camps (Nalcor, 2008, V1A, Figure 4-29, p.4-38).

In comparing the locations of the proposed reservoir clearing access roads and camps with contemporary Innu land use, I could find no instances of direct, physical interaction between these features and Innu camps and cabins along the TLH and its current tributary roads, or significant interference with contemporary Innu hunting, trapping, fishing, and collecting activities. Nonetheless, there are some important issues related to the operation and maintenance phase of the LCP that pertain to the access roads that are addressed below.

Access road to Muskrat Falls generating station and construction camp

Innu who settled in Sheshatshiu once fished and collected berries in the lower reaches of Mekenitsheu-shipiss (McKenzie River). While they have not used this area in the contemporary period (1990-2010), they may wish to again in the future should an access road to the Muskrat Falls dam be built. Members of the ITKC reported that fish species there included *utshashumek*⁶¹ (Atlantic salmon) (Armitage, 2007b:49).⁶¹ Excavation at borrow pits, the construction of a bridge crossing and construction camp, and other activities could damage salmon and other fish habitat in the lower reaches of Mekenitsheu-shipiss and thereby reduce or destroy future opportunities for Innu to harvest fish there.

⁶¹ Anderson (1985:161) notes the presence of salmon in the nearby Manatueu-shipiss (Traverspine River) system, but makes no mention of this fish species in Mekenitsheu-shipiss.

Trans Labrador Highway traffic

Although dust from warm-weather construction related traffic is no longer a concern along the newly paved section of the TLH between Goose Bay and Gull Island road, it remains a concern in relation to Innu LUO activities along the TLH (e.g. cabin use, camping, hunting, etc.) west of the Gull Island road (Armitage and Stopp, 2003:64). In addition to dust, speeding traffic and the potential for accidents, both vehicle and pedestrian collisions are also concerns. Innu who are hunting, berry picking or collecting water at various points along the road may be at risk of being struck by oncoming vehicles, and the risk of injury or fatality may be the greatest in the vicinity of Innu road-side cabins and camps.

Nalcor estimates that “the truck traffic on the TLH will be approximately 16 round trips per day for material delivery” and that

[t]here will be a regularly scheduled bus service operating to transport workers to the [Gull Island] site, including local residents. All workers will be urged to use the bus system, and there will be limited parking on-site for private vehicles, the use of which will be discouraged for safety reasons. There will be approximately five bus trips per day to transport personnel (Nalcor, 2009, V1a, p.4-58).



Innu camping area at the junction of the TLH and Gull Island road
(photo P. Armitage, Aug. 2010)

At face value, this projection of construction-related traffic on the TLH points to no significant increase in the risk of vehicular accidents along the TLH. However, it does not consider construction machinery traffic between borrow pits and the dam construction sites, nor does it consider logging truck traffic to and from the reservoir clearing access roads.

In the absence of any data and analysis by the proponent, I have undertake a cursory “back-of-the-envelope” estimate of the volume of logging truck traffic along the TLH using the Gull Island reservoir for illustrative purposes. Nalcor estimates that the total volume of merchantable timber to be removed from the Gull Island reservoir under the full clearing option is 655,000 m³. Assuming that the average logging truck can transport 72 m³ per trip, the removal of this quantity of timber from the reservoir would require 9,097 logging truck trips. Ten (10) logging trucks doing two (2) trips per day for 150 days per year for three years would be able to transport 3,000 loads per year which would amount to 40 trips per day along the TLH, *aller-retour*. Assuming, finally, that these trips occur within a 12 hour period each day, an Innu cabin/camp at Kaiamianut near Etuat-shipiss could expect a logging truck to pass by every 20 minutes or less (i.e. 3.3 trucks per hour). During dry weather, this logging traffic could contribute to the dust problem on the TLH for Innu cabins/camps located along the unpaved portions of the road.

I note, here, that Labrador Innu currently build cabins wherever they please along the TLH and its access roads; they are not subject to regulation by any level of government, be it Innu or provincial.⁶² What this means at present is that Innu can build cabins without the benefit of government planning expertise which can address issues of traffic safety, sanitation, and other health and safety issues.

Furthermore, some Innu may decide to commute to work at Gull Island or Muskrat Falls from cabins and camps situated along the TLH and its tributary roads. In the absence of comparative data, I cannot say whether this practice would constitute a problem for the Innu, the proponent or any other interested party, unless the number of LCP workers at Innu camps started to resemble the “gravel pit camps” of concern to the provincial government.

⁶² The TLH between Goose Bay and Churchill Falls most likely will not be included in LIL or LISA should a Final Agreement between the Innu Nation, federal and provincial governments be finalized. So Innu cabin construction along the highway will be subject to provincial “laws of general application.”

3.2.2 Operation and maintenance phase

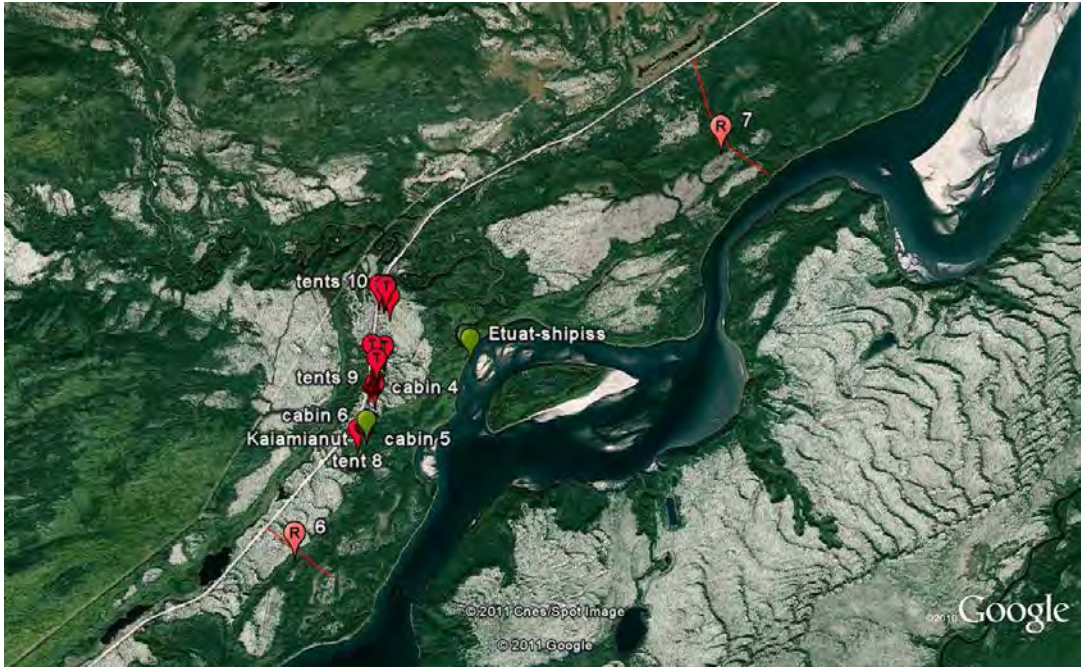
Access issues

As noted previously, Nalcor plans to build 375 km of access roads, mostly from the TLH, to Mishta-shipu for the purpose of facilitating the removal of trees in the areas to be flooded by reservoir impoundment. However, the proponent estimates that 15 to 30 km of roads (or sections of them) will not be flooded in which case it plans to remove stream crossings and eventually “rehabilitate” the access roads (Nalcor, 2009, V3, p.5-12). Nalcor does not describe the “rehabilitation” method, nor does it tell us which roads it plans to terminate. There are some important issues here assuming that the roads are not decommissioned immediately (i.e. made impassible) post-construction, or are kept open as a matter of public policy.

One issue is that they will most likely provide greatly enhanced access to animal and fish habitat for hunting, trapping, fishing and collecting activities, as well as cabins and camps, in areas that were previously relatively difficult to access.⁶³ The opening of these areas to vehicle access (i.e. car, truck, ATV, snowmobile, boat) could be beneficial to Labrador Innu given their current pattern of LUO, with its greater emphasis on road accessible areas. One place where access roads could be of particular value to them is the gathering place location at Kaiamianut shown on Map 20. The reservoir will be only a short distance from this popular meeting and camping location, and access roads #6 and #7 will provide relatively easy access to hunting and fishing in the reservoir area during the ice free seasons, assuming that boat access is not a problem.

The downside of enhanced road access for the Labrador Innu is that it will likely bring with it competition from non-Innu land users, as well as Innu from Quebec, especially those with interest in caribou. The increased access to such areas could result in significant pressure on local game and fish, as has been observed for new forestry, dam and reservoir access roads elsewhere in Canada (see comparative information above).

⁶³ See Nalcor's discussion of road access issues with respect to competition between Aboriginal and non-Aboriginal hunters and anglers, and excess harvesting pressure on game and fish (2009, V3, p.5-4).



Map 20. Location of reservoir clearing roads #6 and #7 in relation to Mishta-shipu and Kaiamianut.

Of particular concern are the areas between the TLH and Uinukupau (Lake Winokapau)/ Mishta-shipu (Churchill River) between the west end of Uinukupau and Anikutshash-nipi (Cache River). The reservoir clearing access roads #1, #2, and #3 on Map 21 below could make it easier for hunters, be they Labrador Innu, Quebec Innu, or non-Innu people to harvest caribou in this area, which could pose a caribou conservation concern given the evidence of a significant decline in the population of the *Mushuau-atikuat* (George River caribou) herd and the fact that the also-declining *Penipuapishku-atikuat* (Red Wine Mountains caribou) have frequented this area over the last five years.⁶⁴ Reservoir clearing access road #4 depicted on Map 21 is also a concern, given the fact that *Penipuapishku-atikuat* use the region between Anikutshash-nipi (Cache River) and Gull Island.⁶⁵

⁶⁴ Tony Parr, GIS specialist, Institute for Environmental Monitoring and Mitigation, personal communication, 2 Mar. 2011. Mr. Parr manages George River and Red Wine Mountains caribou telemetry data for the Institute. George River caribou telemetry data are shared with the governments of Quebec and Newfoundland Labrador, and the Innu Nation, while Red Wine data are shared with the government of Newfoundland and Labrador and the Innu Nation. The telemetry data in the environmental baseline report concerning caribou prepared by Minaskuat Inc. for Nalcor are seriously out-of-date, with caribou data depicted to 2005 only (Minaskuat Inc. 2009, Figure 6-2).

⁶⁵ Justina Ray, a zoologist with Wildlife Conservation Society Canada who works with the Innu Nation and is familiar with the radio-telemetry data from the *Penipuapishku-atikuat* (Red Wine Mountains caribou) population says, "There are RW telemetry points between Winokapau Lake and the TLH and the region between Cache and Gull Island, which is very close to the construction sites and dams (e-mail to P. Armitage, 2 Mar. 2011).



Map 21. Reservoir clearing access roads to Uinukupau and Mishta-shipu.

The Government of Newfoundland and Labrador has raised access concerns with respect to interactions between woodland caribou and Hydro-Québec's Romaine River hydroelectric project that are relevant to the LCP.

This project is potentially a negative one for caribou as it will exert further negative pressure on remaining animals well north of the coast. The proposed roads associated with the project will increase access to areas inhabited by protected woodland caribou. The reservoirs themselves may also increase access by water and, in the winter, by snowmobile. Linear transmission corridors will increase access for hunters as well as for predators. In common with most of the rest of the North American woodland caribou range, caribou on the Québec North Shore and Labrador are, in most cases, declining or at best stable. Newfoundland and Labrador maintains its strong commitment to the protection and conservation of woodland caribou in Labrador. We feel that this development would lead to increased hunting pressure on protected woodland caribou and thus a negative impact on the current population (Government of Newfoundland and Labrador. 2008:4).⁶⁶

⁶⁶ Provincial government concerns about woodland caribou were conveyed to the JRP for the Romaine project c/o Maryse Pineau, Panel Manager, CEAA, by Bill Parrott, Deputy Minister (Acting), Dept. Environment and Conservation, Government of Newfoundland and Labrador, 7 November 2008.

These concerns must surely apply to the LCP as well. However, in addition to the effects of enhanced human access to the habitat of threatened caribou south of the TLH, the reservoir clearing access roads are likely to have significant biological effects which have long-term repercussions for Innu LUO. These relate to the effects of improving access to the area for wolves which have an affinity for linear transportation corridors including roads and snowmobile trails (e.g., see Eriksen, et al., 2009:554-555). Furthermore, tardy or improper “rehabilitation” methods with respect to these roads could allow deciduous trees, fir, and other vegetation preferred by moose to take hold, which in turn could increase the wolf population in the region with negative consequences for both *Mushuau-atikuat* (George River) and *Penipuapishku-atikuat* (Red Wine Mountains caribou) there (James, et al., 2004). It is not in the long-term interests of Labrador Innu to see further reductions in either of these caribou populations given the continuing dietary and cultural importance of caribou.



Natural regeneration along a decommissioned section of the TLH. Note the abundance of deciduous trees and bushes growing up. Moose habitat? (photo P. Armitage, Aug. 2010)

TLH3 to Muskrat Falls

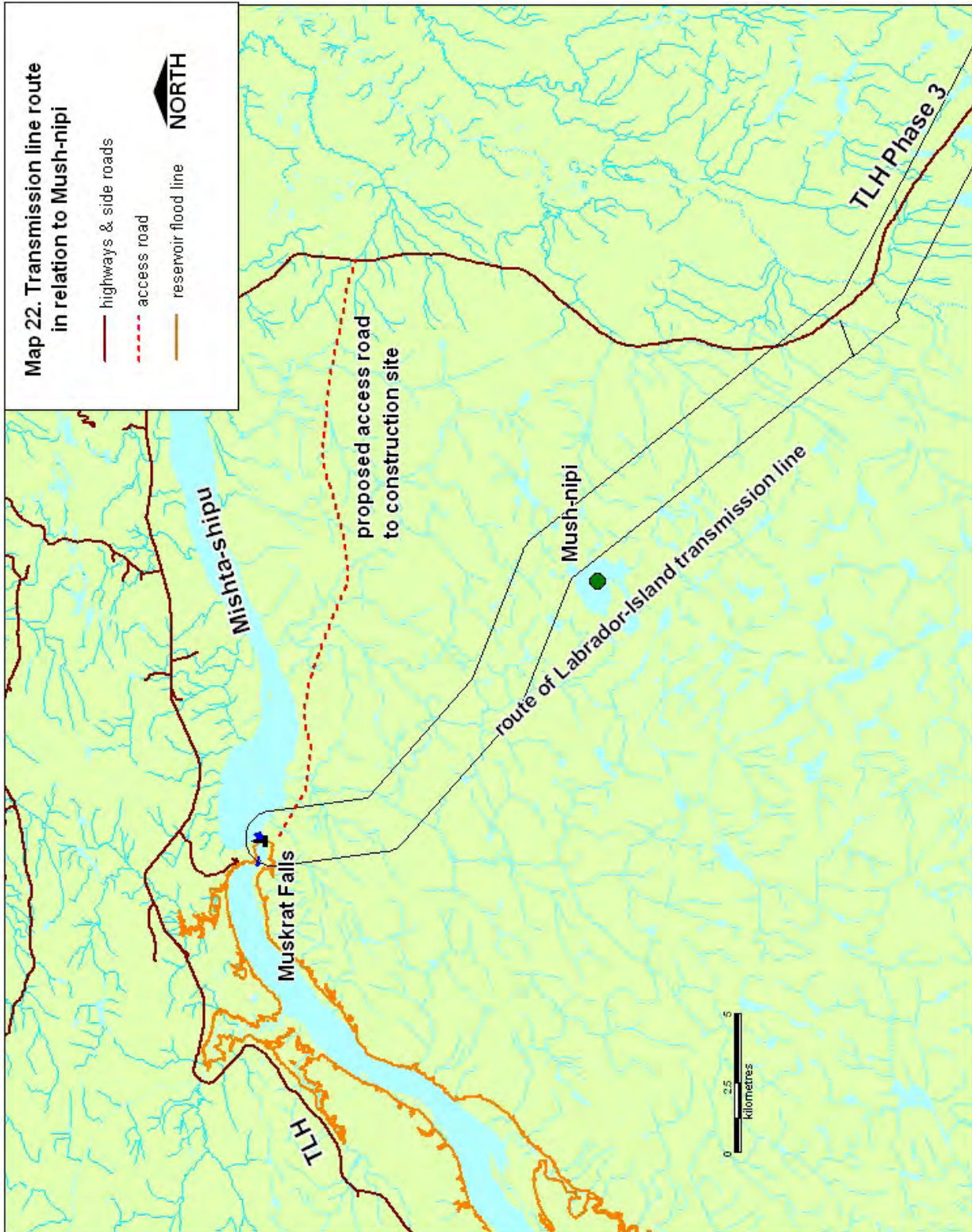
The issue here is the proximity of the road and transmission line to Mush-nipi (see Map 22) in terms of facilitating increased human access to the lake. Enhanced access to this lake could result in overharvesting of game and fish there in addition to cabin development and other types of competing land uses as far as Labrador Innu are concerned (see Appendix 1). Mush-nipi has not been selected in either the Labrador Innu Lands (LIL, CI), or Labrador Innu Settlement Area (LISA, CII) categories under the Tshash Petapen (New Dawn) Agreement between the Innu Nation and provincial government (see the mitigation section below).⁶⁷

Close proximity to a transmission line may not be a deterrent to future Innu camping and harvesting at Mush-nipi, at least for some Innu. Despite the absence of data concerning Labrador Innu concepts of aesthetic appreciation, I note that several Innu have been built or purchased cabins along the TLH at locations very close to the existing transmission line, and in fact, one cabin, near the Orma Dyke road is virtually under the line between Goose Bay and Churchill Falls, as noted previously.



The existing Goose Bay –Churchill Falls transmission line is visible from this cabin, on the north side of the pond (photo P. Armitage, 2010).

⁶⁷ The locations of these land selection categories are depicted in Appendix 1 to the Tshash Petapen Agreement, publicly available at <http://www.releases.gov.nl.ca/releases/2008/exec/0926n07map.pdf>



Given the fact that Innu establish camps and cabins near transmission lines and their associated “access trails,” Nalcor maintenance workers could well encounter Innu at camps and cabins at these locations in the future. Maintenance activities involving heavy equipment operation and vehicular traffic could therefore disrupt Innu LUO activities and/or pose health and safety issues for the Innu living there (e.g. risk of accidents for children at the camps).

Vegetation control along transmission lines

Nalcor plans to undertake various “vegetation management” activities along its transmission lines once the LCP is completed. Presumably, these activities are already undertaken along the existing Goose Bay to Churchill Falls transmission line. They include the application of herbicides such as Tordon 101, Garlon 4 and glyphosate products, which is standard practice for transmission lines across North America.⁶⁸ The use of these herbicides constitutes a potential contaminant health “risk” to Innu who collect blueberries and redberries along transmission line right-of-ways.⁶⁹ Dow AgroSciences specifically mentions berries in its brochure concerning “Facts on Tordon 101 Herbicide”:

As a precaution, Dow AgroSciences recommends that people should not consume berries that have been treated with Tordon 101.... To avoid exposure from an application, it is recommended that people avoid treated areas until leaves, stems and bark are dry. If someone unknowingly walked through a treated area, they may be exposed to the spray solution by rubbing up against a tree which is still damp. The dose received from this type of activity will not cause any harm. The PMRA has determined that there is a very large margin of safety from exposure when walking through a treated site even when the vegetation is still wet.⁷⁰

⁶⁸Terry Croucher, NLVC Ltd., personal communication, 3 March 2011. According to Nalcor (2009, V1A, p.4-61), “Vegetation management commences three to four years after construction is completed. Crews will use approved herbicides (e.g., Tordon 101), as per current standard operating practices, mixed with a surfactant such as Sylgard 300, which will be sprayed using a tracked vehicle with a 1,500 or 2,000 L tank. The quantities of chemicals used will depend largely on terrain, as well as quantity and type of vegetation. A detailed survey will be necessary prior to beginning each vegetation management program. The herbicide will be sprayed directly so that application is confined to areas requiring treatment (i.e., tall-growing species). Shrubs and bushes will not be sprayed. This vegetation management program will be carried out every eight to 10 years. The management schedule varies with the type of vegetation, the extent of ground disturbance during construction, and terrain and experience gained in operations. Cut and stump applications may also be used and involve cutting the vegetation and applying herbicide to the freshly cut stumps to control re-sprouting of woody species. This vegetation control method will use such products as Tordon 101, Garlon 4 and glyphosate products.”

⁶⁹ I have placed the term “risk” in quotation marks in order to caution readers about the various ways that this particular matter may be constructed as a potential health problem in the Innu context. See Scott (1991) for a provocative discussion about the way in which mercury has been constructed as a “health risk” among the Grassy Narrows Anishinaabeg and James Bay Cree. Are there lessons here that should be applied to the health of Labrador Innu and their interactions with the LCP – be they herbicides, methylmercury, vehicular traffic along the TLH, etc?

⁷⁰ See http://www.ivmexperts.ca/pdfs/Tordon_101_Facts_English.pdf

I have noted previously that Innu have harvested berries at two locations along the existing Goose Bay-Churchill Falls transmission line, one at Nakapishku-nipi (Wilson Lake) the other near Gull Island (see Maps 7 and 8 above). Berry collecting by Labrador Innu at these locations and elsewhere along transmission lines is likely to continue in the future, and as a result, a vegetation management plan that includes a berry contamination “risk” factor is prudent. I return to this matter in the mitigation section below.

In addition, one Innu cabin has been built in the existing transmission line right-of-way near the TLH-Orma Dyke road junction, and a temporary tent camp has been established virtually under the line beside the cabin. The health implications of spraying herbicides in the immediate vicinity of this cabin at certain times of the year should be addressed.

Methylmercury

The issue of methylmercury contamination of fish in hydro reservoirs has been well-documented, and in fact, concentrations of the toxin have been monitored in fish in the Smallwood Reservoir for many years (Jacques Whitford. 2006). With respect to the proposed Muskrat Falls and Gull Island reservoirs, Harris and Hutchinson estimated peak methylmercury concentrations in fish resident there following impoundment (2008; see also Nalcor, 2009, V.3, p.4-47). [Nalcor re-estimated mercury in its response to JRP.156. You will need to update the highlighted materials here] According to their modeling and resultant estimates (ibid.:1-2):

- “Overall, fish mercury concentrations are expected to increase as a result of the proposed Lower Churchill River development;”
- “Peak expected increases in Gull Island Reservoir, 1.5 to 4.5 fold above estimated baseline concentrations, would be within the range observed for other boreal reservoirs;”⁷¹
- “Peak concentrations in lower trophic level fish are expected within a decade, while peak concentrations for higher level predators may occur within 5-15 years;”⁷² and

⁷¹ In Information Request no. JRP.156, the Joint Review Panel asked Nalcor to “re-calculate the predicted fish mercury levels for Gull Island and Muskrat Falls reservoirs based on the comments provided by Environment Canada on the response to JRP.21 (a).” Nalcor’s revised model “predicted a peak increase factor of 2.3X (rounded value) for 700 mm northern pike in Gull Island and Muskrat Falls Reservoirs, compared to the estimate of 1.8X used in the EIS.”

⁷² Having revised its estimates of the “Predicted Peak Hg Concentrations in Fish” in response to Information Request no. JRP.156, Nalcor says that “peak Hg concentrations in fish are still expected within 5-15 years after flooding, declining thereafter to levels associated with natural lakes after a period of about 30 years, as described in the EIS.”

- “The effects of flooding on fish mercury concentrations are expected to be complete within approximately 3 decades.”

Members of the ITKC were well aware of methylmercury issue when it was discussed with them in 2006-2007 (Armitage, 2007b:85), and indeed Nalcor is well aware of their concerns about it (Nalcor, 2008, V3, p.5-6). The proponent’s proposed mitigation measures concerning methylmercury are discussed below.

Apart from the health risks of eating too many fish with high concentrations of mercury in them, my concern here is with Innu *perceptions* of the risk of eating fish and other *nutshimiu-mitshim* (‘country food’) from the reservoirs. Among the James Bay Cree, for example, the perception of the dangers of eating “contaminated” fish has been a deterrent to fishing, raising concerns that the effects of not having a healthy diet of fish far outweigh the risks of eating fish with some level of mercury in them (Scott, 2001:202).⁷³ Thus, even though Innu access to the Muskrat Falls and Gull Island reservoirs may be greatly enhanced by way of reservoir clearing access roads and other routes, they may choose not to make use of the reservoirs for LUO due to the perceived health risks of eating fish and game from them. I return to this important issue in the mitigation section below.

3.2.3 Accidental events

The following interactions between the LCP and Innu LUO are possible with respect to accidental events:⁷⁴

- chemical contamination of the spring water locations identified previously as a result of ruptured oil tanks, gas tanks, and other containers of harmful/dangerous substances during transport to and from the Gull Island construction site;
- spills of harmful/hazardous substances including oil and gas by Innu cabins and camps located on the TLH between Goose Bay and the Gull Island construction site. Nalcor has not described the types of harmful/hazardous substances that will be transported along the TLH, nor assessed the effects of accidental spillage;
- traffic accidents involving collisions between project-related vehicles such as transportation buses, supply delivery vehicles, trucks transporting materials from borrow pits, etc. and Innu men, women and children while they are driving on the

⁷³ See Health Canada’s presentation to the LCP JRP on 5 March 2011. “Health Canada’s Discussion of Health Effects of Mercury Exposure and Review of Lower Churchill Hydroelectric Generation Project Human Health Risk Assessment (HHRA)” by Allison Denning and Roni Bronson. <http://www.ceaa.gc.ca/050/documents/48421/48421E.pdf>

⁷⁴ I accept Nalcor’s argument that the chances of a catastrophic event such as a dam failure are extremely slim. However, I include Innu engaged in LUO activities downstream of the ruptured dam to Nalcor’s bulleted list of dam failure consequences including “loss of life and injury when there is no warning” to (Nalcor, 2009, V1a, p.4-85 to 4-87).

- TLH or living at cabins and camps or hunting and collecting berries along the TLH and its tributary roads;
- forest fires started by construction equipment or other project-related agents that could spread to Innu cabins and camps, particularly occupied ones.

3.2.4 Cumulative effects

Cumulative effects may derive from a variety of activities and projects which, when combined with the effects of the LCP, negatively or positively affect Innu LUO. These activities are listed in Table 3 below.

Of these activities and projects, the Voisey's Bay Mine/Mill operation and mining in western Labrador, do not overlap spatially with Innu LUO in the Study Area, in particular the footprint of the LCP, and as a result, they are not considered in this cumulative effects assessment.

Military training is currently focused on special forces training at the Minipi Practice Target Area (PTA) with personnel transported there by air. The training has no interaction with contemporary Innu LUO in the Study Area including LUO at Minai-nipi (Minipi Lake). The type of military training that is most likely to overlap with Innu LUO and the LCP in the Study Area in the future is more low-level flight training. However, the Mishta-shipu (Churchill Valley) has experienced few low-level flights since the Low Training Training Area (LLTA) was reconfigured in the 1990s (see Map 23). Aircraft

Table 3. Overlaps between other activities & projects and the LCP.

	Activity/project	Overlap with LCP	No overlap with LCP
1	Voisey's Bay Mine/Mill		•
2	mining in western Labrador, e.g. LabMag Iron Ore project		•
3	military training	•	
4	economic/infrastructural development in Upper Lake Melville	•	
5	cultural & recreational land use	•	
6	commercial forestry	•	
7	operation of the TLH	•	
8	additional transmission lines	•	
9	Aurora Resources uranium mine	•	

departing Goose Bay for practice targets and training scenarios within the LLTA generally do not travel through or across the Mishta-shipu valley, although the Mush-

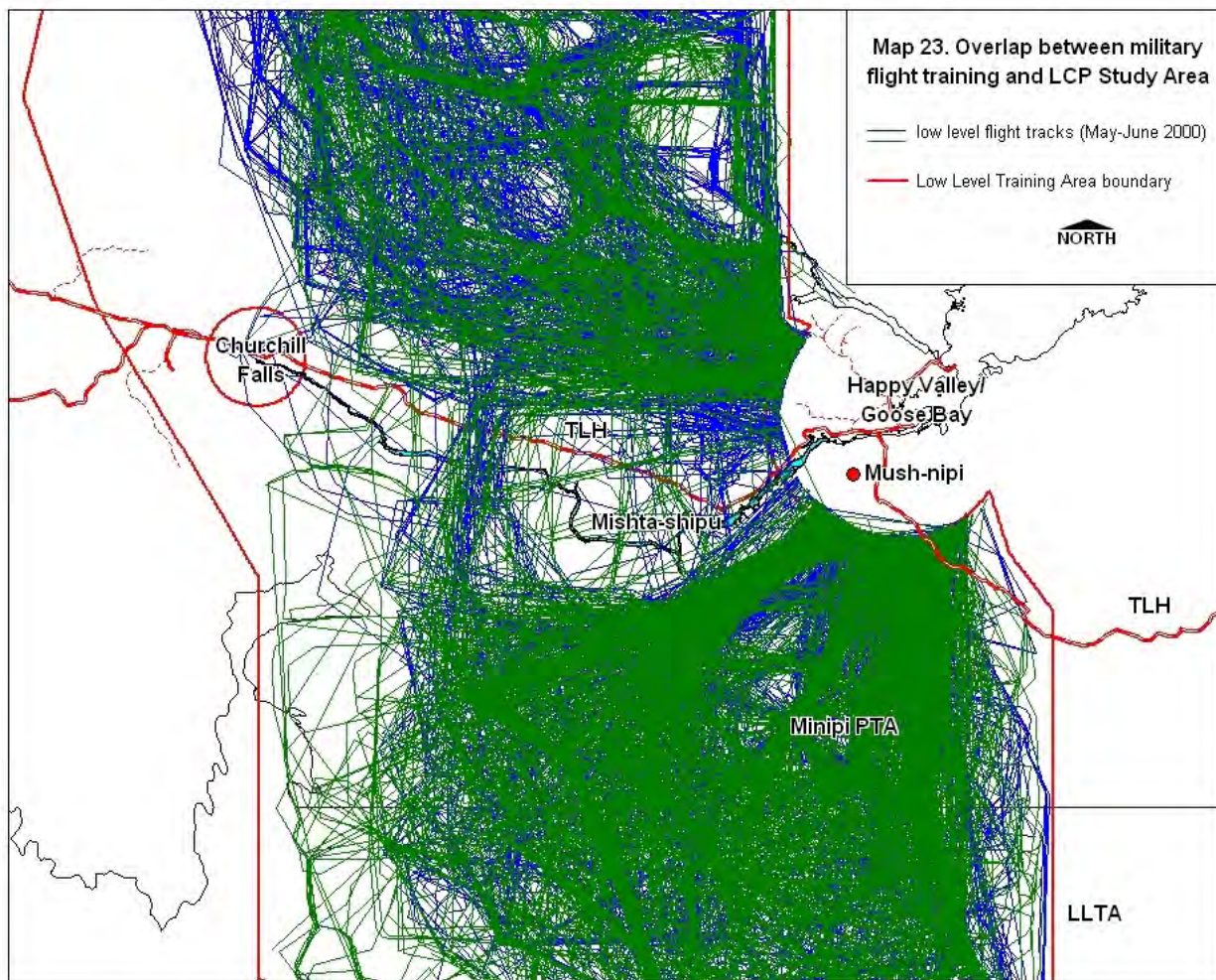
nipi area has experienced numerous overflights in the past involving aircraft travelling to and from the PTA and river valleys in the southern portion of the LLTA (Spaven, et al., 1997).

With respect to general economic and infrastructural development in the Upper Lake Melville Area, any activities or projects that stimulate population growth in central Labrador could affect Innu LUO to the extent that they lead to increased competition with Innu for game, fish, and camp/cabin locations along the TLH and its tributary roads, and in other parts of the LCP Study Area.

Current cultural and recreational land uses in the Study Area (e.g. hunting, trapping, sports fishing, boating, snowmobiling, cabin development) already interact with Innu LUO and are likely to increase in the future as a result of non-Innu population growth in the Upper Lake Melville and Labrador West regions, and increased outdoor orientated tourism facilitated by the completed TLH between Quebec and the Strait of Belle Isle. The snowmobile trail along the TLH between Goose Bay and Labrador City also brings recreational land users into contact with Labrador Innu while they are at their cabins and camps on the TLH, although the frequency of their interactions is unknown.

Commercial forestry in Forest Management District 19A is planned for the area south of Mishta-shipu in the area of Mush-nipi, between the TLH Phase 3 and Muskrat Falls, although cutting activities may be diverted to the Mishta-shipu area for the purpose of reservoir preparation.⁷⁵ Nonetheless, in the longer term, cutting operations and new forest access roads could interact with future Innu LUO in this area, for example, by facilitating access by non-Innu who compete with Innu for game, fish, and prime locations for cabins and camps.

⁷⁵ "If the development is approved, it is expected that some clearing of the reservoir would be necessary to mitigate environmental impacts associated with flooding as well as reduce interference from debris. Clearing would be done in a very intensive way, over a short period of time (less than 10 years). In the event clearing of the reservoir begins during the life of this Plan, it is anticipated that all harvesting activities planned in the Operating Plan will be temporarily suspended, and harvesting will be concentrated in the reservoir (Maps 19-27)" ("Five Year Operating Plan for Forest Management District 19A (Goose Bay). Operating Period January 1, 2008 – December 31, 2012." Government of Newfoundland and Labrador and Innu Nation. July 31, 2007. p.79).



The operation of the TLH will also result in cumulative impacts in that Innu cabin and camp occupants will experience increasing levels of traffic noise, and dust on the gravel road sections west of the Gull Island road as the population of Labrador and tourism increase. Furthermore, the TLH is the major means by which Quebec Innu and non-Innu people compete with Labrador Innu for game and fish, and by which hunters gain access to the habitat of the threatened *Penipuapishku-atikuat* (Red Wine Mountains caribou).⁷⁶

Additional transmission lines, for example, from Gull Island to Quebec by way of the Romaine River, could enhance access for non-Innu hunters and fishers to the area of Kapinien-nipi, south of Uinukupau (Lake Winokapau), depending on the routing of the lines. Kapinien-nipi is currently included in Labrador Innu Lands (LIL, C1) category under the terms of the Tshash Petapen Agreement. However, there would be no road

⁷⁶Quebec Innu have been hunting caribou along the TLH east of Churchill Falls in recent years. See <http://www.cbc.ca/news/canada/newfoundland-labrador/story/2010/03/01/caribou-hunt-investigation-innu.html>

access to this area, meaning that the main method of travel there for non-Innu would have to be by snowmobile along the transmission line, likely a significant deterrent to most recreational hunters and fishers.

Lastly the proposed Aurora Energy uranium mine near Postville on the north coast of Labrador could interact with the LCP and Innu LUO in that uranium (yellow cake) would be transported by truck to North West River/Sheshatshiu, along the road to Goose Bay, and then along the TLH, passing numerous Innu cabins and camps on the way. However, the proponent has not yet decided whether to ship directly from the port of Goose Bay or along the TLH, and even if the latter option were taken, shipments by truck along the road would likely to be in the order of three per week. The mine project has not yet been registered for environmental assessment.⁷⁷

3.3 Mitigation

The Tshash Petapen (New Dawn) Agreement between the Innu Nation, the Energy Corporation of Newfoundland and Labrador, and the provincial government has been tabled with the Joint Review Panel (JRP), and a copy of it is also available on the website of the Government of Newfoundland and Labrador.⁷⁸ The Agreement refers to the “Project IBA currently under negotiation” the draft contents of which are not public.⁷⁹ I presume, however, that this Impact Benefit Agreement (IBA) will include the creation of mechanisms for the cooperative design of mitigation and monitoring measures with respect to the LCP. The recommendations in this LUO effects assessment report, therefore, may provide some guidance to the negotiators of the IBA concerning appropriate mitigation, monitoring, and co-management mechanisms.

Reservoir clearing access roads

As mentioned above, reservoir clearing access roads could provide enhanced access to the Mishta-shipu valley once the Muskrat Falls and Gull Island reservoirs are completed. The Innu Nation, Nalcor and other responsible authorities should work cooperatively to determine which if any of these roads could be kept open in order to promote Innu LUO activities by way of these roads. Roads that are kept open and boat ramps to the reservoirs should be maintained in perpetuity.

However, several of the reservoir clearing access roads in the western portions of the LCP Study Area, specifically roads #1, #2, #3, and #4, penetrate habitat for the

⁷⁷ Andrea Marshall, Manager, Government Relations and public affairs, Aurora Energy, personal communication, 10 March 2011. A cursory description of this project is available on the company's website - http://www.aurora-energy.ca/sites/default/files/pdf/michelin_project_overview_feb_2011_web_eng_lowres_0.pdf

⁷⁸ See http://www.laa.gov.nl.ca/laa/land_claims/#2

⁷⁹ The “Project” is the “lower Churchill hydro-electric project.”

threatened *Penipuapishku-atikuat* (Red Wine Mountains caribou) which could result in increased hunting pressure on this population, and open the area to greater wolf predation as well. They would access the areas between the TLH in the north and Uinukupau (Lake Winokapau) and Gull Island along Mishta-shipu (Churchill River) in the south. **These four roads should not be built**, and therefore, Nalcor should find alternative methods of getting machinery and workers to the area to remove timber in preparation for impoundment. These four proposed roads cannot be decommissioned (“rehabilitated”) quickly enough to prevent enhanced wolf and human access to this area, including by snowmobile during the winter, which could result in significantly greater predation on *Penipuapishk-atik^u* (Red Wine Mountains caribou).⁸⁰

Should no alternative be found to building these particular access roads, then the following measures should be given serious consideration:

- the roads should be decommissioned immediately by removing stream crossings, erecting numerous barriers to vehicular traffic, physical treatment of the roadbed to inhibit wolf access, etc.;
- they should be re-vegetated immediately with black spruce, white fir and deciduous trees and other vegetation preferred by moose should be actively suppressed. In other words, every effort should be made to prevent the expansion of moose habitat in the area, given the known ecological relationship between moose, wolves and caribou;
- responsible authorities should adopt moose management policies that encourage extensive and intensive moose hunting in this area so as to minimize prey densities that act as attractants for wolves;
- the above measures should be developed cooperatively between Nalcor and responsible Innu and provincial government authorities without delay, using the best caribou, moose and wolf management science available. For example, the type of habitat selected for the access roads could directly influence moose-wolf-caribou interactions in the area (James, et al., 2004), and measures to inhibit human access will not always be enough to limit that of other predators (Dzus, et al. 2010).

Post-construction LUO in the construction area

There is a strong possibility that areas along the Gull Island access road that were cleared during the construction period or previously in early phases of the project will be used by Labrador Innu for various LUO activities, including large gatherings, in the post-

⁸⁰ I draw your attention once again to the provincial government’s concerns about woodland caribou (text provided previously) that were conveyed to the JRP for the Romaine project c/o Maryse Pineau, Panel Manager, CEAA, by Bill Parrott, Deputy Minister (Acting), Dept. Environment and Conservation, Government of Newfoundland and Labrador, 7 November 2008.

construction period. Therefore, it is extremely important that any site contamination be mitigated thoroughly, and unwanted construction material, gas and oil drums, and any other materials that may pose a health hazard to future land users, including the Innu, be removed expeditiously.



Drums of aviation fuel left in the bushes along the side of the Gull Island road
(photo P. Armitage, Aug. 2010)

Methylmercury

Nalcor proposed the following measures to manage the health risks associated with elevated mercury in reservoir fish:

- “development and posting of consumption advisories for fish caught from the lower section of the Churchill River. Adherence to the consumption advisory will support a healthy diet while staying within Health Canada’s provisional daily tolerable intake guidelines for mercury” (Nalcor, 2009, V3, p.4-49);
- “liaison with health authorities, as part of their planning process. With respect to potential elevated levels of mercury in humans, increased levels of methylmercury in fish will be monitored, as will the existing methylmercury exposure of local residents. (ibid.:4-54).

My lack of expertise in the area of contaminants, public health education, and methylmercury in particular, means that I have little to say about the efficacy of these measures. However, I suspect that the communication of “risk” to the Innu concerning the health effects of mercury may not have been done very well in the past.⁸¹ Innu believe in general that the industrialization of their territory, in addition to the arrival of

⁸¹ See Johansson (2008) and O’Neil, et al. (1997) for insightful discussions of the cross-cultural communication and social construction of risk. See also Griffiths (2001:11).

airborne contaminants such as cadmium from the south, is affecting increasingly the quality of *nutshimiu-mitshim* ('country food') and drinking water. Innu think about the methylmercury problem in this context, and in reference to their previous experience with methylmercury at the Smallwood Reservoir (see Armitage, 2007b:83). Despite this, responsible authorities concerned with Innu health need to build Innu confidence in their *nutshimiu-mitshim* because of its well-known benefits. It is important, therefore, that the health "risks" of eating fish from reservoirs are communicated to them very carefully. As noted elsewhere in this report, the health benefits of eating *namesh* (fish) can far outweigh the "risks" of eating fish with low levels of mercury in them.

Debris management on the reservoirs

Despite Nalcor's best efforts to remove trees from the shores of Mishta-shipu in preparation for reservoir creation, issues will remain with respect to debris in the reservoirs in the post-construction period. Dead-heads, floating tree stumps and other debris could pose a serious safety hazard to people travelling on the reservoirs by boat. As a result, an ongoing programme to routinely clear debris from the reservoirs during the ice-free months should be adopted by Nalcor and maintained for as long as necessary, that is, until the quantity of debris falls to the levels expected on northern lakes of comparable size.

Verifying the presence of salmon on the McKenzie River, management plan

Apart from specific measures to prevent construction, borrow pits, a bridge crossing, construction camps, and other activities from damaging fish habitat on Mekenitsheu-shipiss (McKenzie River), more research should be conducted on whether *utshashumek^u* (Atlantic salmon) make use of this river. Some type of salmon management may be necessary if salmon are confirmed for that water body, given the greater access to the river that would result from the construction of the proposed TLH Phase 3 to Muskrat Falls access road.

Place names and places of historical and religious significance

The LCP could effect Innu occupancy in ways that relate to intangible cultural heritage and a traditional system of ethics, namely, Innu place names (toponyms), and places of historical and religious significance, although the latter are potentially quite tangible when viewed through the lens of *Tshishennuat* ('Elders') and other traditionally-minded people.

I noted in the effects section previously that a number of islands and rapids in the Mishta-shipu valley will disappear as a result of reservoir creation, and that as a result, six Innu place names associated with them will have little function, except as abstract anchors for historical narratives. However, the LCP can have other intangible impacts through the imposition of non-Innu place names on the new reservoirs and other

geographical features in the project area. Such is the case, already, with the naming of the new bridge over Mishta-shipu – “Black Rock Bridge.” In order to mitigate the effects of this symbolic imposition, Nalcor and the Government of Newfoundland and Labrador should give Innu names to the new reservoirs and other project features. For example, the reservoir above Gull Island could be named the “Uinukapau Reservoir” after the major lake at the western end of Mishta-shipu, while the reservoir above Muskrat Falls could be named “Tshiashkuenish Reservoir” after the Innu name for Gull Lake. This will compensate for the loss of Innu toponyms due to flooding, show respect to the memory of *Tshishennuat* and generations of Innu people who used the Mishta-shipu valley, and make amends for some of the grievous actions of the past when important Labrador features were renamed without regard for the original occupants of the territory and their place names.⁸²

Many other features in the LCP Study Area have Innu place names that are not official (Armitage, 2010:75-76). However, the Innu Nation plans to submit these names to the Newfoundland and Labrador Geographical Names Board for officialization in the near future.

Another effect on intangible cultural heritage will be the flooding of a site of potential historical significance to the Innu of Labrador and Quebec. This is the site of the last known *kushapatshikan* (shaking tent) ceremony anywhere in Innu territory near the mouth of Ushkan-shipiss on the south shore of Mishta-shipu between Muskrat Falls and Gull Island (Armitage, 2008). Nalcor’s mitigation efforts to date with respect to this site include financing a fieldtrip to this place on October 14, 2006 for the *Tshishennuat* (‘Elders’) and other members of their families who witnessed the ceremony. A professional film crew documented the commemorative event with high definition video that could be used in the future for school curricula and other educational or cultural purposes.

Although I provided VHS copies of this video to the participants shortly after the fieldtrip, no other cultural or educational products have been generated with it, and in that sense, LCP mitigation concerning this heritage site is incomplete. The high definition video material should be used in the near future to produce a quality educational/cultural product while the witnesses to the event are still alive to provide expert advice, provide supplementary information, and enjoy the finished product.⁸³ Furthermore, the sooner an educational product concerning the important shaking ceremony conducted there in 1969 gets into the Innu school curriculum the better. The schools are mandated to make

⁸² E.g., imposing the name “Smallwood Reservoir” over the flooded Meshikamau and other lakes with Innu names on the central Labrador plateau, renaming Patshishetshuanau “Churchill Falls,” etc.

⁸³ Manitoba Hydro financed interpretative display cases for artifacts recovered during salvage archaeology at a site along a proposed transmission line in northern Manitoba (see Petch, 1998:193).

their curricula culturally relevant, and are in great need of more materials that are relevant to the Labrador Innu.

Methods of mitigating LCP effects on Manitu-utshu, an important place of religious significance to Labrador Innu, must also be considered. Manitu-utshu is the “rocky knoll” feature immediately beside Muskrat Falls, and to which the north side of the dam structure will be attached. A temporary construction access road will be built to the dam along the west side of the hill in addition to a transmission line, should the LCP proceed.

Although Nalcor had modified its project description to reduce impacts on Manitu-utshu,⁸⁴ the *Tshishennuat* (‘Elders’) of the ITKC remain firmly convinced that there is a high risk that the Uenitshikumishiteuat beings who reside there will be disturbed (disrespected) by the dam, and could destroy the dam or seek retribution in other ways. As noted above, ITKC members believe that the onus of responsibility for disrespecting these other-than-human beings lies with the proponent, Nalcor. Therefore, it would be prudent for Nalcor’s Chief Executive Officer (CEO) to communicate with the Uenitshikumishiteuat to ask them not to engage in retaliatory actions in response to dam construction. The CEO could consult with Innu *Tshishennuat* (‘Elders’) concerning the best methods of communication.



View of Manitu-utshu from the TLH (photo P. Armitage, Aug. 2010)

⁸⁴ See Nalcor (2009, V1A, p.9-2).

Flooding of Assiuashiku-minishtik^u

Nalcor notes in its EIS (2009, V3, p.5-16) that reservoir flooding above Gull Island will eliminate three islands where the medicine plant Canadian yew (*Taxus canadensis*) grows. Innu *Tshishennuat* ('Elders') call one of these islands Assiuashiku-minishtik^u (literally 'Canadian Yew Island'), and say that the powerful medicine *assiuashik^u* growing there is extremely rare in their territory. The proponent proposes to "relocate these plants to suitable sites for re-establishment" (ibid.), although this will be largely experimental due to the fact that little if any evidence can be found concerning successful transplants of this species elsewhere in North America.⁸⁵ Nonetheless, the *Tshishennuat* members of the ITKC who were consulted on the transplant matter are willing to try it.⁸⁶ They had the following to say about the transplant proposal:

- it might be hard to make *assiuashik^u* grow elsewhere;
- the soil/earth in the proposed transplant locations may not be suitable. *Assiuashik^u* is growing on the islands for a reason, because the soil/earth/sand is good there for it. It would be a good idea to take some of the earth/soil/sand that the plants are currently growing in to the transplant locations;
- the *assiuashik^u* could be hard to dig up and transplant because it has long roots;
- Nalcor and the Innu Nation should try to transplant some of the *assiuashik^u* as soon as possible to see if it will grow in the new locations;
- The *Tshishennuat* would like to inspect both Assiuashiku-minishtik^u and the proposed transplant locations to form their own opinions as to the merits of the proposal.

Fresh water springs

As noted previously, the spring water site on the Gull Island access road near Mishtashipu (#2 on Map 17) could be terminated as a result of dam construction activities. However, should this feature persist in the post-construction period, it should be designated a protected area in some way, with proper signage, and water quality testing on a regular basis.

Appropriate long-term management initiatives should be taken with respect to the two nearby springs on the TLH as well (springs #1 & 3 on Map 17), in addition to any fresh water springs that are created as a result of LCP construction. These initiatives should include regular water quality sampling. Any fresh water spring that is contaminated as a

⁸⁵ See Nalcor's response to JRP.103 re. mitigation measures for Canadian yew.

⁸⁶ The discussion concerning the transplant proposal took place during a meeting I held with the ITKC on 2-3 February 2011 in Sheshatshiu. While agreeing with the idea of trying to transplant *assiuashik^u*, the *Tshishennuat* remain deeply concerned about the overall effects of the LCP in particular the "wasting" of animals and "medicine" as a result of flooding. A number of them remain strongly opposed to the project.

result of construction activities or accidental events should be decontaminated if possible, or terminated, or signed as a public health hazard.

It would be prudent to test the water quality of the fresh water spring at the TLH-Gull Island road junction as soon as possible, given that one of the 2010 land use research respondents, who has training in mineral prospecting, said he does not like to drink water from the springs in the Gull Island area, “because I once got high readings [with a Geiger counter?] of some element in the ground. It suggested that the spring water may not be safe to drink” (Armitage, 2010:56).

These mitigation measures are important given the fact that many Sheshatshiu Innu highly value fresh spring water, and even collect it at these locations to take back to the community (see Armitage, 2010:56).



The fresh water spring at the TLH-Gull Island road junction (photo P. Armitage, Aug. 2010)

Vegetation management

With respect to Nalcor’s planned “vegetation management” activities along its transmission lines once the LCP is completed, the use of herbicides such as Tordon 101, Garlon 4 and glyphosate products poses a contaminant health risk to the Innu people who collect berries there. This risk also applies to Innu who have built cabins and erect tent camps in close proximity to or inside transmission line right-of-ways (e.g. the cabin on the TLH near the Orma Dyke road).

In order to deal effectively with this risk, a vegetation management plan should be developed in conjunction with responsible Innu authorities. It should contain the following provisions:

- Nalcor and the responsible Innu authority should undertake an effective community awareness programme about the health risks of berry picking along

transmission lines in advance of, and during, vegetation management activities in any given year. Public education measures should point out that berry collecting can resume after a period of 28 days (?) or so, depending on the herbicide used, and other factors;

- Nalcor's employees or contractors responsible for spraying herbicides along transmission lines should be alert to the presence of berry pickers along the lines in the lead-up to chemical application; great caution should be exercised concerning the way in which the health risks of herbicide use along transmission lines are communicated to the Innu public, keeping in mind that the health effects of not eating nutritious berries could be worse than not eating berries from transmission line corridors, or not eat berries at all. Innu may also be employed in vegetation management along the lines, so they, too, need a clear understanding of these risks.⁸⁷
- In addition to a vegetation management plan, responsible authorities should discourage Innu from building cabins in transmission line right-of-ways given possible health and safety concerns. Planning guidelines and regulations with respect to cabin development along transmission lines should be enforced.

TLH traffic noise, dust and accidental events

Several types of accidental events have been identified that could interact with Labrador Innu LUO including chemical contamination of the spring water locations, spills of harmful/hazardous substances by Innu cabins and camps located on the TLH, traffic accidents, and forest fires caused by LCP-related activities. Key to responding to these events as far as Innu LUO is concerned is the inclusion of Innu LUO in all emergency response planning such as Nalcor's proposed "Safety, Health and Environmental Emergency Response Plan" (Nalcor, 2009, V3, p.4-38). Such plans should be devised in close cooperation with responsible Labrador Innu authorities.

Another key element in the design of an effective emergency response plan that takes into account Innu LUO is the compilation of an accurate database of Innu cabin locations that is kept up-to-date on a regular basis. This will allow emergency services to evacuate the occupants of Innu cabins in response to approaching forest fires and other life-threatening events. The database will also facilitate emergency response should hazardous/dangerous materials/substances be spilled along the TLH between Goose Bay and the Gull Island road.

With respect to traffic accidents, the TLH and its tributary roads should be evaluated for traffic safety concerns in the very near future, with Innu LUO in mind. Consideration

⁸⁷ These recommendations are informed by my discussion with Terry Croucher, whose company (NLVC Ltd.) does a great deal of vegetation management along transmission lines in Newfoundland and Labrador (personal communication, 3 March 2011).

should be given to the following by Nalcor and responsible provincial and Innu authorities, particularly since travelling speeds are now a concern with the recent paving of the TLH between Goose Bay and the Gull Island road:

- reducing speed limits in the vicinity of Innu cabins. This will require appropriate enforcement by the RCMP based in Happy Valley-Goose Bay;
- erecting cautionary road signage by Innu cabins warning motorists, truck drivers and heavy equipment operators that there may be children playing in the vicinity, etc.;
- closing access roads to borrow pits/quarries to the public, including the Innu, during the construction period to eliminate the possibility of collisions between construction vehicles and Innu land users.

The evaluation of traffic safety along the TLH should also consider the potential “risks” arising from the fact that Labrador Innu have in some cases built cabins very close to the TLH. In fact Innu cabin construction has not been subject to regulation by any level of government, and yet it raises concerns about traffic safety, sanitation (e.g. sewage disposal), and contaminant hazards (i.e. vegetation management along transmission lines) for the occupants as well as the general public.

With respect to traffic noise along the TLH, construction traffic and borrow pit activities should be managed so as to minimize noise/sleep disturbance for Innu occupants of cabins/camps along the road. Dust control measures may have to be devised for the unpaved section of the TLH west of the Gull Island road junction, particularly in the vicinity of Innu cabins/camps.

3.4 Residual environmental effects

Residual environmental effects are those that remain after mitigation measures have been implemented. In the case of the LCP, the magnitude, geographic extent, duration, and frequency of residual effects with respect to Labrador LUO depend both on the mitigation measures which may be applied in the short-term, and on the outcome of the IBA and land claims negotiations between the Innu Nation, the Energy Corporation of Newfoundland and Labrador, and the federal and provincial governments.

The efficacy of IBA provisions and specific provincial or federal legislation to mitigate effects, be they the provincial *Endangered Species Act*, *Environmental Protection Act*, *Highway Traffic Act*, *Historic Resources Act*, and *Wild Life Act* or federal *Fisheries Act* and *Migratory Birds Convention Act*, depends on the initiative and capacity of all levels of government to apply specific regulations in a timely manner, and to support effective enforcement efforts.

For the purpose of this assessment, my consideration of the residual effects of the LCP on Labrador Innu LUO assumes that the mitigation measures spelled out in the LCP IBA, mixed appropriately with existing federal and provincial legislation, will effectively mitigate the adverse effects of the Project on Innu land use and occupancy, and facilitate the positive ones. The predicted residual effects in terms of their nature and magnitude are described in the following tables along with explanations of each effects (significance) rating.

1. Traffic along the TLH – Goose Bay to Gull Island road

Project phase	Construction
LCP activity or physical works	Construction-related traffic along the TLH – Goose Bay to Gull Island road including logging trucks removing timber from reservoir clearing zones.
Nature	Adverse
Magnitude	Low: Possible interference with Innu hunting, trapping, fishing, berry and spring water collecting by construction-related traffic, and possible disturbance to the important spring water site at the junction of the TLH and Gull Island road. Construction and traffic noise on the road, tributary roads and at borrow pits for cabin/camp occupants.
Geographic extent	Local: Goose Bay to Gull Island road
Duration/frequency	10 Years (Medium term) / continuous
Reversibility	Reversible
Ecological/ social context	Disturbed: existing highway and tributary roads
Level and degree of certainty of knowledge	Low: given the data gaps mentioned previously, in particular, the lack of data concerning the frequency/intensity of Innu LUO along the TLH, lack of data concerning traffic volumes and scheduling, and the inaccuracies in the cabin location database.
Proposed effects management	Include Innu LUO (e.g. cabin locations) in all emergency response planning, e.g. Nalcor's "Safety, Health and Environmental Emergency Response Plan." Compile accurate Innu cabin/camp location database. Evaluate TLH for traffic safety and need for safety signage. Manage construction traffic so as to minimize noise/sleep disturbance for Innu occupants of cabins/camps along the TLH.
Cumulative effects concerns	Construction traffic adds to non-LCP traffic safety and road noise issues.
Significance	Not significant

Project phase	Operation and maintenance
LCP activity or physical works	Operation and maintenance related traffic along the TLH – Goose Bay to Gull Island road
Nature	Neutral due to minimal project-related operations and maintenance

	traffic along the TLH.
Magnitude	n/a
Geographic extent	Local: Goose Bay to Gull Island road
Duration/frequency	n/a
Reversibility	n/a
Ecological/ social context	Disturbed: existing highway and tributary roads
Level and degree of certainty of knowledge	High (given the amount of predicted traffic, and despite the lack of intensity data re. Innu land use and occupancy in this area)
Proposed effects management	Standard mitigation measures
Significance	Not significant

	Accidental events
LCP activity or physical works	Construction-related traffic along the TLH – Goose Bay to Gull Island road including logging trucks removing timber from reservoir clearing zones.
Nature	Adverse
Magnitude	Low: collisions between LCP-related vehicular and heavy equipment traffic along the TLH and its tributary roads and Innu engaged in harvesting activities adjacent to the road. Collisions with Innu children playing in the vicinity of the TLH and its tributary roads is also a concern. Spills of harmful or hazardous substances near Innu cabins/camps could be serious for the occupants during the construction phase.
Geographic extent	Local: Goose Bay to Gull Island road
Duration/frequency	10 Years (Medium term) / continuous
Reversibility	Risk of serious injury and loss of life
Ecological/ social context	Disturbed: existing highway and tributary roads
Level and degree of certainty of knowledge	Low: given the data gaps mentioned previously, in particular, the lack of data concerning the frequency/intensity of Innu LUO along the TLH, lack of data concerning traffic volumes and scheduling, transport of hazardous/hazardous materials, and the inaccuracies in the cabin location database.
Proposed effects management	Include Innu LUO (e.g. cabin locations) in all emergency response planning, e.g. Nalcor's "Safety, Health and Environmental Emergency Response Plan." Compile accurate Innu cabin/camp location database. Evaluate TLH for traffic safety and need for safety signage.
Significance	Not significant

2. Traffic along the TLH – Gull Island road to Churchill Falls

Project phase	Construction
LCP activity or physical works	Construction-related traffic along the TLH – Gull Island road to Churchill Falls including logging trucks from reservoir clearing zones
Nature	Adverse
Magnitude	Low: an increase in construction traffic related to the building of a new transmission line and access roads in addition to logging trucks. Traffic safety and dust issues.
Geographic extent	Local: Gull Island road to Churchill Falls
Duration/frequency	10 Years (Medium term) / continuous
Reversibility	Reversible
Ecological/ social context	Disturbed: existing highway and tributary roads
Level and degree of certainty of knowledge	Low: given the data gaps mentioned previously, in particular, the lack of data concerning the frequency/intensity of Innu LUO along the TLH, lack of data concerning traffic volumes and scheduling, and the inaccuracies in the cabin location database.
Proposed effects management	Include Innu LUO (e.g. cabin locations) in all emergency response planning, e.g. Nalcor's "Safety, Health and Environmental Emergency Response Plan." Compile accurate Innu cabin/camp location database. Evaluate TLH for traffic safety and need for safety signage. Manage construction traffic so as to minimize noise/sleep & dust disturbance for Innu occupants of cabins/camps along the TLH.
Cumulative effects concerns	Construction traffic adds to non-LCP traffic safety, dust, and road noise issues.
Significance	Not significant

Project phase	Operation and maintenance
LCP activity or physical works	Operation and maintenance related traffic along the TLH – Gull Island road to Churchill Falls
Nature	Neutral due to minimal project-related traffic along the TLH
Magnitude	n/a
Geographic extent	Local: Gull Island road to Churchill Falls
Duration/frequency	n/a
Reversibility	n/a
Ecological/ social context	Disturbed: existing highway and tributary roads
Level and degree of certainty of knowledge	High (given the amount of predicted traffic, and despite the lack of intensity data re. Innu land use and occupancy in this area)
Proposed effects	Standard mitigation measures

management	
Significance	Not significant

	Accidental events
LCP activity or physical works	Construction-related traffic along the TLH – Gull Island road to Churchill Falls including logging trucks from reservoir clearing zones
Nature	Adverse
Magnitude	Low: collisions between LCP-related vehicular and heavy equipment traffic along the TLH and its tributary roads and Innu engaged in harvesting activities adjacent to the road. Collisions with Innu children playing in the vicinity of the TLH and its tributary roads is also a concern.
Geographic extent	Local: Gull Island road to Churchill Falls
Duration/frequency	10 Years (Medium term) / continuous
Reversibility	Risk of serious injury and loss of life
Ecological/ social context	Disturbed: existing highway and tributary roads
Level and degree of certainty of knowledge	Low: given the data gaps mentioned previously, in particular, the lack of data concerning the frequency/intensivity of Innu LUO along the TLH, lack of data concerning traffic volumes and scheduling, and the inaccuracies in the cabin location database.
Proposed effects management	Include Innu LUO (e.g. cabin locations) in all emergency response planning, e.g. Nalcor's "Safety, Health and Environmental Emergency Response Plan." Compile accurate Innu cabin/camp location database. Evaluate TLH for traffic safety and need for safety signage.
Significance	Not significant

3. Access road from TLH Phase 3 to Muskrat Falls

Project phase	Construction
LCP activity or physical works	Access road from TLH Phase 3 to Muskrat Falls
Nature	Neutral: assuming that there is no damage to fish habitat in the lower reaches of Mekenitsheu-shippiss (McKenzie River) as a result of access road, bridge and borrow pit construction and use.
Magnitude	n/a
Geographic extent	Local: TLH Phase 3 to Muskrat Falls
Duration/frequency	10 Years (Medium term) / continuous
Reversibility	Reversible
Ecological/ social	Undisturbed: currently no easy access to Mush-nipi and no road

context	access to Mekenitsheu-shipiss (McKenzie River)
Level and degree of certainty of knowledge	High: given my knowledge of contemporary Innu LUO in this part of the Study Area (see Armitage, 2010).
Proposed effects management	Conduct research on potential salmon habitat on Mekenitsheu-shipiss (McKenzie River) and implement salmon management for the water body if salmon are found there.
Significance	Not significant

Project phase	Operation and maintenance
LCP activity or physical works	Access road from TLH Phase 3 to Muskrat Falls
Nature	<p>Adverse: should increased access to Mekenitsheu-shipiss (McKenzie River) and Mush-nipi lead to overharvesting of salmon and other fish in the river and at Mush-nipi, and increased competition between Innu and non-Innu hunters and fishers particularly in the Mush-nipi area.</p> <p>Positive: access roads to the dam and for commercial forestry operations could facilitate increased Innu LUO at Mush-nipi.</p>
Magnitude	Low
Geographic extent	Local: TLH Phase 3 to Muskrat Falls
Duration/frequency	Permanent / continuous
Reversibility	Irreversible
Ecological/ social context	Undisturbed: currently no easy access to Mush-nipi and no road access to Mekenitsheu-shipiss (McKenzie River)
Level and degree of certainty of knowledge	Moderate: given my knowledge of contemporary Innu LUO in this part of the Study Area, and expectation that Innu will erect camps and/or cabins at Mush-nipi should it become road-accessible (see Armitage, 2010). This expectation must be tempered, however, by the possibility that rapid cabin development there by non-Innu could make the lake unattractive for Innu occupancy.
Proposed effects management	Conduct research on potential salmon habitat on Mekenitsheu-shipiss (McKenzie River) and implement salmon management for the water body if salmon are found there.
Cumulative effects concerns	The cumulative effects of commercial forestry operations in the area, with its associated forest access roads, could exacerbate what by themselves are low magnitude adverse LCP effects of the operation and maintenance phase.
Significance	Not significant

	Accidental events
LCP activity or physical works	Access road from TLH Phase 3 to Muskrat Falls
Nature	Neutral
Magnitude	n/a
Geographic extent	Local: TLH Phase 3 to Muskrat Falls
Duration/frequency	n/a
Reversibility	n/a
Ecological/ social context	Undisturbed: currently no easy access to Mush-nipi and no road access to Mekenitsheu-shipiss (McKenzie River)
Level and degree of certainty of knowledge	High: given my knowledge of contemporary Innu LUO in this part of the Study Area (see Armitage, 2010), and assuming that there are no spills of harmful substances that negatively affect the biological productivity of this area (e.g. fish habitat near Mekenitsheu-shipiss [McKenzie River]).
Proposed effects management	Standard mitigation measures
Significance	Not significant

4. Gull Island construction site

Project phase	Construction
LCP activity or physical works	Gull Island construction site
Nature	Adverse: Innu will lose access to a spring water site which could also be destroyed by construction activities. They will also lose access to the cleared, flat expanses that are good for large gatherings, such as the Innu women's gathering held there in 2006.
Magnitude	Low: the spring water site is approximately 10 kilometres from the TLH and appears to be less known to the Innu than the two springs on the TLH, one on Pope's Hill, the other at the TLH-Gull Island road junction.
Geographic extent	Local: Gull Island construction site
Duration/frequency	10 Years (Medium term) / continuous / permanent
Reversibility	Reversible/irreversible
Ecological/ social context	Disturbed: existing construction camp site and access roads
Level and degree of certainty of knowledge	Moderate: given my knowledge of contemporary Innu LUO in this part of the Study Area (see Armitage, 2010).
Proposed effects	Thorough site decontamination, removal of unwanted construction

management	material, gas & oil drums, and any other hazardous materials. In consultation with Innu keep some areas open for future gathering/meeting purposes as part of a site reclamation strategy. Test water quality of fresh water springs, identify new springs, manage springs for safety.
Significance	Not significant

Project phase	Operation and maintenance
LCP activity or physical works	Gull Island construction site
Nature	Positive: Innu will be able to resume use of these areas for gathering/meeting purposes.
Magnitude	Low
Geographic extent	Local: Gull Island construction site
Duration/frequency	Permanent / continuous
Reversibility	Reversible
Ecological/ social context	Disturbed: existing construction camp site and access roads
Level and degree of certainty of knowledge	Moderate: given my knowledge of contemporary Innu LUO in this part of the Study Area (see Armitage, 2010). The attractiveness of the former construction sites in terms of future Innu gathering sites will depend on the spatial extent and quality of Nalcor's site reclamation efforts there, and the degree to which Innu must compete with non-Innu land users in this area.
Proposed effects management	Consult Innu re. keeping some areas open for future gathering/meeting purposes. Test water quality of fresh water springs, manage springs for safety.
Significance	Not significant

	Accidental events
LCP activity or physical works	Gull Island construction site
Nature	Neutral: Innu will be denied access to their former gathering sites for the duration of the construction period. ⁸⁸
Magnitude	n/a
Geographic extent	Local: Gull Island construction site
Duration/frequency	n/a
Reversibility	n/a
Ecological/ social context	Disturbed: existing construction camp site and access roads
Level and degree	Moderate: given my knowledge of contemporary Innu LUO in this

⁸⁸ Innu construction workers will have access, obviously, but only for work-related purposes.

of certainty of knowledge	part of the Study Area (see Armitage, 2010).
Proposed effects management	n/a
Significance	Not significant

5. Mishta-shipu (& future reservoirs)

Project phase	Construction
LCP activity or physical works	Mishta-shipu (& future reservoirs)
Nature	<p>Neutral: there are currently no cabins along the river, and only a few camps have been erected there during the contemporary period.</p> <p>Adverse: in relation to disrespecting other-than-human beings, flooding Assiuashiku-minishtik^u & other islands with Canadian yew. Loss of Kamitinishkau-shipiss area from the Sheshatshiu Innu inventory of productive land use territory. Loss of six Innu toponyms.</p>
Magnitude	<p>High (adverse): major negative effects will occur if ITKC members are correct about their predictions concerning the consequences of “wasting” animals, disrespecting their masters, and the powerful Uenitshikumishiteuat residents of Manitu-utshu, the hill located adjacent to Muskrat Falls. In terms of traditional Innu ethics, killing large numbers of animals for no reason, when the animals have not been given to humans through the normal methods of reciprocal exchange, constitutes a horrendous assault on the moral order. For the members of the ITKC, it is morally unacceptable to “waste” animals flooding/killing them, and to thereby invite retribution from the animal masters in the form of catastrophic weather events, suicides and fatal accidents.</p> <p>The effects on Innu LUO in the Kamitinishkau-shipiss area as a result of flooding cannot be mitigated. There is a high probability that the area will be lost from the Sheshatshiu Innu inventory of productive land use territory.</p>
Geographic extent	Regional: Mishta-shipu (& future reservoirs)
Duration/frequency	10 Years (Medium term) / continuous
Reversibility	Irreversible
Ecological/ social context	Disturbed: due to damming upstream re. Churchill Falls Project
Level and degree of certainty of knowledge	Low: the reaction of the animal masters and Uenitshikumishteu to the dam construction and flooding is hard to predict, particularly in the absence of any efforts on the part of the proponent to communicate with them. Timber clearing and access road

	construction activities could interfere with some Innu hunting and fishing activities in some places. While the documentary fieldtrip to Ushkan-shipiss may have successfully mitigated the loss of the historically important shaking tent site there, not enough Innu have been consulted on this matter to be able to judge the overall level of satisfaction with this measure. Some uncertainty re. the success of transplanting Canadian yew from flooded islands.
Proposed effects management	Completion of documentary film concerning the Ushkan-shipiss fieldtrip for Innu school curricula. Give Innu toponyms to project features such as the reservoirs. Nalcor CEO communicate with Uenitshikumishiteuat and animal masters. Actively involve Innu Elders in efforts to transplant Canadian yew, and attempt transplanting as soon as possible.
Significance	Significant

Project phase	Operation and maintenance
LCP activity or physical works	Mishta-shipu (& future reservoirs)
Nature	Positive: if Labrador Innu make use of the new reservoirs for hunting, fishing and other land use activities. E.g. the reservoirs could facilitate travel by motorboat and snowmobile up and down the Mishta-shipu valley through areas where some major rapids presently make mechanized travel difficult if not impossible.
Magnitude	Low (positive): assuming that Innu access the reservoirs for LUO purposes.
Geographic extent	Regional: Mishta-shipu (& future reservoirs)
Duration/frequency	Permanent / continuous
Reversibility	Irreversible
Ecological/ social context	Disturbed: due to damming upstream re. Churchill Falls Project
Level and degree of certainty of knowledge	Low: given the absence of data concerning Innu aesthetic evaluations of hydro reservoirs, and the difficulty of predicting how Innu will respond to the methylmercury issue in relation to their use of the reservoirs. This assumes that Innu will not experience high levels of competition and encroachment with respect to non-Innu LUO.
Proposed effects management	Careful communication of health “risks” of eating fish from reservoirs. Ongoing programme to routinely clear debris (navigational hazards) from the reservoirs. Maintain roads and ramps to reservoirs for boat access.
Significance	Not significant

	Accidental events
LCP activity or physical works	Mishta-shipu (& future reservoirs)
Nature	Neutral: given the low probability of a catastrophic event such as dam failure.
Magnitude	n/a
Geographic extent	Regional: Mishta-shipu (& future reservoirs)
Duration/frequency	n/a
Reversibility	n/a
Ecological/ social context	Disturbed: due to damming upstream re. Churchill Falls Project
Level and degree of certainty of knowledge	High: A failure of the Gull Island or Muskrat Falls dam, however, would obviously have major negative consequences for any Innu engaged in LUO activities on the reservoirs, along their shores, or downstream of the dam break. The huge foreshores created by an emptied reservoir could have a variety of negative effects on the biological productivity of these areas and Innu LUO there.
Proposed effects management	Standard mitigation measures
Significance	Not significant

6. Transmission lines and “access trails”

Project phase	Construction
LCP activity or physical works	Transmission lines & “access trails” to them
Nature	Adverse: there could be some disturbance to Innu who harvest berries and hunt partridge there during the construction of new transmission lines and “access trails.” Occupants of the cabin near the TLH-Orma Dyke road junction could well be disturbed as a result of new transmission line construction work. Furthermore, the health and safety of the occupants of this cabin, particularly children, are a concern during the construction phase.
Magnitude	Low: assuming that there are few Innu engaged in LUO in these areas.
Geographic extent	Regional: transmission line routes; Muskrat Falls to Churchill Falls & Labrador-Island link
Duration/frequency	10 Years (Medium term) / continuous
Reversibility	Reversible
Ecological/ social context	Disturbed: existing transmission line nearby to proposed routing of new lines. Undisturbed in Mush-nipi area south of Mishta-shipu.
Level and degree	Low: given the data gaps mentioned previously, in particular, the

of certainty of knowledge	lack of data concerning the frequency/intensivity of Innu land use along the existing transmission lines and their “access trails.” It is important to obtain accurate data on the locations of Innu cabins/camps so that we can thoroughly access the health and safety risks for all cabin occupants living close to transmission lines.
Proposed effects management	Obtain accurate data on the locations of Innu cabins/camps. Appraise contractors and their employees about potential interactions between their activities and Innu LUO in the vicinity of Innu cabins/camps. Alert Innu cabin holders to planned construction activities near their cabins.
Significance	Not significant

Project phase	Operation and maintenance
LCP activity or physical works	Transmission lines & “access trails” to them
Nature	<p>Adverse: there could be some disruption of Innu hunting and berry collecting during and shortly after the application of herbicides and other vegetation control measures.</p> <p>Positive: vegetation control measures will create additional berry habitat along the transmission line corridors. Labrador Innu are likely to build more cabins on the “access trails,” at least in the short term, until such time that provincial government regulation of Innu cabin-building along the TLH is applied.</p>
Magnitude	Low: assuming that there are few Innu engaged in LUO in these areas.
Geographic extent	Regional: transmission line routes; Muskrat Falls to Churchill Falls & Labrador-Island link
Duration/frequency	Permanent / continuous
Reversibility	Irreversible
Ecological/ social context	Disturbed: existing transmission line nearby to proposed routing of new lines. Undisturbed in Mush-nipi area south of Mishta-shipu.
Level and degree of certainty of knowledge	Low: given the data gaps mentioned previously, in particular, the lack of data concerning the frequency/intensivity of Innu land use along the existing transmission lines and their “access trails.” It is important to obtain accurate data on the locations of Innu cabins so that we can thoroughly access the health and safety risks for all cabin occupants living close to transmission lines. I assume that herbicides and other vegetation control mechanisms will be safely applied, particularly as far as the occupants of Innu cabins and camps situated within or close to the transmission line corridors are concerned.
Proposed effects management	Develop a vegetation management plan in conjunction with Innu authorities. Cautious public education re. health “risks” of collecting berries along transmission lines following herbicide application.

	Management of Innu cabin construction and camp establishment in transmission line right-of-ways. Appraise contractors and their employees about potential interactions between their activities and Innu LUO in the vicinity of Innu cabins/camps. Alert Innu cabin holders to planned maintenance activities near their cabins.
Significance	Not significant

	Accidental events
LCP activity or physical works	Transmission lines & “access trails” to them
Nature	Neutral
Magnitude	n/a
Geographic extent	Regional: transmission line routes; Muskrat Falls to Churchill Falls & Labrador-Island link
Duration/frequency	n/a
Reversibility	n/a
Ecological/ social context	Disturbed: existing transmission line nearby to proposed routing of new lines.
Level and degree of certainty of knowledge	Low: given the data gaps mentioned previously, in particular, the lack of data concerning the frequency/intensivity of Innu land use along the existing transmission lines and their “access trails.” Transmission line construction activities could pose a health and safety risk for Innu using “access trails” and the lines for harvesting purposes. The occupants of some cabins and camps within or close to the transmission line corridors are at risk of accidents involving transmission line construction vehicles, brush cutting equipment, etc. Construction and maintenance workers could also start forest fires with dire consequences for Innu cabin and camp occupants.
Proposed effects management	Obtain accurate data on the locations of Innu cabins so that we can thoroughly assess the health and safety risks for all cabin occupants living close to transmission lines. Appraise contractors and their employees about potential interactions between their activities and Innu LUO in the vicinity of Innu cabins/camps. Alert Innu cabin holders to planned construction and maintenance activities near their cabins.
Significance	Not significant

7. Reservoir clearing access roads & camps

Project phase	Construction
LCP activity or physical works	Reservoir clearing access roads & camps
Nature	<p>Neutral: the roads and camps appear not to interfere with contemporary Innu land use activities in any way, and reservoir clearing activities do not overlap with Innu cabins and camps.</p> <p>Adverse: as soon as these roads are built (before the completion of the LCP), they could lead to increased hunting pressure on the threatened <i>Penipuapishku-atikuat</i> (Red Wine Mountains caribou); and/or an expanded moose and wolf population with the associated risks of greater predation on the threatened caribou. Activities that jeopardize the future of these caribou will also affect negatively Innu caribou hunting in the future, which is a special concern given the cultural and dietary importance of these animals to the Innu.</p>
Magnitude	<p>Negligible: no interference with Innu LUO.</p> <p>Moderate (adverse): in relation to effects on <i>Penipuapishku-atikuat</i> (Red Wine Mountains caribou).</p>
Geographic extent	Regional: reservoir clearing access roads & camps & threatened <i>Penipuapishku-atikuat</i> (Red Wine Mountains caribou)
Duration/frequency	Permanent / continuous
Reversibility	n/a
Ecological/ social context	Undisturbed
Level and degree of certainty of knowledge	Moderate: given my knowledge of contemporary Innu LUO in the vicinity of the proposed access roads and reservoir clearing construction camps.
Proposed effects management	Close Innu/public access to the roads, monitor and enforce non-construction road access. Four access roads should not be built; namely the ones between Gull Island and the west end of Uinukupau (Lake Winokapau). However, if there is no alternative to building these roads, they must be decommissioned and re-vegetated immediately. Even then, in their decommissioned state, they are likely to provide greater access by people and wolves to the habitat of the <i>Penipuapishku-atikuat</i> (Red Wine Mountains caribou) with potentially dire consequences for the survival of that population and long-term Innu caribou hunting in this area.
Significance	Significant

Project phase	Operation and maintenance
LCP activity or physical works	Reservoir clearing access roads & camps
Nature	<p>Positive: new roads could provide access to the reservoirs for Labrador Innu and open other parts of the territory to Innu hunting, fishing and berry collecting.</p> <p>Adverse: new roads could lead to: (a) increased competition among Labrador Innu, Quebec Innu, and non-Innu for game and fish in the area between the TLH and the reservoirs; (b) increased hunting pressure on the threatened <i>Penipuapishku-atikuat</i> (Red Wine Mountains caribou); and/or (c) an expanded moose and wolf population with the associated risks of greater predation on the threatened caribou. Activities that jeopardize the future of these caribou will also affect negatively Innu caribou hunting in the future, which is a special concern given the cultural and dietary importance of these animals to the Innu.</p>
Magnitude	<p>Low (positive): regarding facilitating Innu hunting, fishing, berry collecting, cabin building and camp establishment along the roads or on the shores of the new reservoirs.</p> <p>Moderate (adverse): in relation to increased competition for game and fish, increased hunting pressure on <i>Penipuapishku-atikuat</i> (Red Wine Mountains caribou), and expanded moose and wolf population with the associated risks of greater predation on the threatened caribou.</p>
Geographic extent	Regional: reservoir clearing access roads & camps & threatened <i>Penipuapishku-atikuat</i> (Red Wine Mountains caribou)
Duration/frequency	Permanent / continuous
Reversibility	Irreversible
Ecological/ social context	Undisturbed
Level and degree of certainty of knowledge	Moderate: given the scientific evidence concerning the effects of linear transportation corridors with respect to hunting/angling pressure and moose-wolf-caribou interactions, my knowledge of contemporary Innu LUO in the vicinity of the proposed access roads and reservoir clearing construction camps, and the fact that Innu are increasingly focusing their LUO activities along roads and other linear transportation corridors.
Proposed effects management	Four access roads should not be built; namely the ones between Gull Island and the west end of Uinukupau (Lake Winokapau). However, if there is no alternative to building these roads, they must be decommissioned and re-vegetated immediately. Even then, in their decommissioned state, they are likely to provide greater access by people and wolves to the habitat of the

	<i>Penipuapishku-atikuat</i> (Red Wine Mountains caribou) with potentially dire consequences for the survival of that population and long-term Innu caribou hunting in this area.
Significance	Significant

	Accidental events
LCP activity or physical works	Reservoir clearing access roads & camps
Nature	Neutral
Magnitude	n/a
Geographic extent	Regional: reservoir clearing access roads & camps
Duration/frequency	n/a
Reversibility	n/a
Ecological/ social context	Undisturbed
Level and degree of certainty of knowledge	High: Innu and public access will be restricted during the construction phase. I assume no forest fires will be started that would negatively affect the biological productivity of the area between the TLH and the reservoirs. This is particularly important as far as the habitat of the threatened <i>Penipuapishku-atikuat</i> (Red Wine Mountains caribou) is concerned.
Proposed effects management	Standard mitigation measures
Significance	Not significant

3.5 Monitoring

The creation of a LUO baseline in the immediate future is necessary if monitoring is to be effective. It should be created as part of a proponent-sponsored “follow-up programme” that is negotiated and operated cooperatively with the responsible Innu authority. Data concerning the locations of cabins and camps, hunting, trapping, fishing and collecting areas, frequency of visits to camps and cabins, and amounts of country-food harvested could be documented to establish the baseline.⁸⁹

Given the health and cultural benefits of country food and living on the land (Armitage, 1990:79; Samson and Pretty, 2006), various levels of government (both Innu and non-Innu) may wish to encourage increased LUO in the road and boat accessible areas in the LCP footprint. However, measuring the effectiveness of this type of social policy initiative requires baseline data in addition to regular follow-up research to compare future states with the original baseline, and to ensure that localized overharvesting of

⁸⁹ See Usher and Weinstein (1991) for a discussion of issues related to the design of social impact assessment and monitoring methods with respect to subsistence hunting, trapping and fishing.

certain species does not occur. Innu and non-Innu agencies responsible for such monitoring work would have to demonstrate to the people of Sheshatshiu that their participation in the research would be to their benefit, given the fact that the culture of research in the community is not healthy⁹⁰ due to high levels of cynicism and other factors. In fact, the total burden of monitoring research and consultation for community members should be given careful consideration.

Three fresh water springs have been identified in the Tshiashkuenish (Gull Lake) area. One or more of these springs may be affected by the LCP, and additional springs may be created as a result of the project. The water quality of all of these springs should be tested on a regular basis, and measures should be developed quickly to ensure that they are not contaminated if Innu/public use of them is likely to continue.

With respect to methylmercury, I note Nalcor's plan to "establish a methylmercury exposure baseline for local residents prior to Project commencement for monitoring purposes and [to]...monitor methylmercury levels in fish as the Project becomes operational" (Nalcor, 2009, V3, p.4-57). Monitoring work such as this will require the close cooperation of responsible Innu authorities and the Innu public in general. The starting point must be building a good basis of trust with Innu community members and the careful communication of risk to them.

With respect to noise disturbance from LCP-related traffic and other vehicles using the TLH and its tributary roads, Nalcor and responsible provincial and Innu authorities should monitor traffic and construction noise in the vicinity of Innu cabins and camps along these linear transportation corridors and take steps to mitigate noise disturbance should it be a problem for Innu occupants of these sites. They should also monitor dust along unpaved portions of the TLH west of Gull Island and implement dust-control measures if necessary. At the same time, research into minimum thresholds of tolerance/disturbance regarding traffic noise and dust should be conducted among the Innu to use as a baseline for monitoring initiatives.

4. Conclusions and recommendations

In summary, LCP effects on Innu LUO are likely to range from negligible to adverse and positive, with low, moderate and high magnitudes depending on the type of project activity and its interaction with Innu LUO. Many of these interactions are localized and affect Innu whose LUO activities are focused on the TLH and its tributary roads. For that reason, the measures proposed in this study in order to mitigate LCP effects on

⁹⁰ A "cultural of research" refers to a "community's collective experience of applied research and its members' understanding of the benefits and risks of doing (or not doing) research. The culture of research largely determines people's willingness to contribute to the long-term data and information requirements of aboriginal governments" (Tobias. 2009:437).

Innu LUO are practical and targeted, but they require the close cooperation of Nalcor, responsible Innu authorities and the provincial and federal governments. A summary of the residual environmental effects of the LCP on Innu LUO is presented in Table 5.

Table 4. Summary of residual environmental effects of the LCP regarding Innu LUO.

Criteria	Construction Phase	Operation and Maintenance Phase
Nature	Neutral, Adverse & Positive	Neutral, Adverse & Positive
Magnitude	Negligible, Low, Moderate, High	Low & Moderate
Geographic extent	Local/Regional	Local/Regional
Duration/frequency	Medium-term to Permanent/continuous	Permanent/continuous
Ecological or social context	Undisturbed/disturbed	Undisturbed/disturbed
Reversibility	Reversible/irreversible	Irreversible
Certainty	Low, moderate, high	Low, moderate, high
Significance	Significant	Significant

There is one order of adverse effect, however, that probably cannot be mitigated and which has a high magnitude rating. This is the effect that dam building and reservoir creation will have in terms of disrespecting animal masters and the powerful Uenitshikumishteu beings who reside in Manitu-utshu, the rocky knoll beside Muskrat Falls. Disrespecting these beings could have catastrophic consequences, according to the *Tshishennuat* ('Elders') members of the ITKC, who see the flooding and killing of animals as a horrendous assault against the moral order. Disturbing the Uenitshikumishteu by attaching a dam structure to their residence at Manitu-utshu only magnifies the problem. The project's adverse effects are therefore highly significant for the *Tshishennuat* ('Elders').

Various recommendations have emerged from the assessment analysis presented above. The following is a summary of these recommendations.

Monitoring and accurate data

A. The Innu Nation cabin database is incomplete and inaccurate. Effective mitigation of LCP impacts and systematic monitoring of the effects of the LCP, other industrial developments in Labrador, and socio-economic and LUO trends in Sheshatshiu cannot be undertaken without an up-to-date database of accurately georeferenced cabin and camp locations along the TLH, its side roads, and other areas affected by the construction, operation and maintenance of the LCP. Therefore, Innu cabin locations should be documented and georeferenced as soon as possible. In addition, the Sheshatshiu Innu First Nation's data on camp locations and occupants

should be collected systematically (including accurate camp coordinates) and provided to Innu authorities responsible for LCP monitoring and mitigation in a timely manner (i.e. regularly). These are immediate and extremely high priorities for all involved in the LCP environmental assessment process and the mitigation and monitoring regimes that follow.

B. The creation of a LUO baseline in the immediate future is necessary if monitoring is to be effective. It should be created as part of a proponent-sponsored “follow-up programme” that is negotiated and operated cooperatively with the responsible Innu authority. Data concerning the locations of camps and cabins, hunting, trapping, fishing and collecting areas, frequency of visits to camps and cabins, and amounts of country-food harvested could be documented to establish the baseline.

C. Innu and non-Innu agencies responsible for such monitoring work should demonstrate to the people of Sheshatshiu that their participation in the research would be to their benefit, given the fact that the research culture in the community is not healthy due to high levels of cynicism and other factors.

D. Monitoring and mitigation research, whether social or natural science, should be methodologically robust and subject to independent scientific peer review.⁹¹

E. Various data gaps identified previously in this report need to be filled. A crucial one as far as traffic safety is concerned relates to the types and volumes of harmful or hazardous materials that may be transported along the TLH in close proximity to Innu cabins/camps.

F. Three fresh water springs have been identified in the Tshiashkuenish (Gull Lake) area. One or more of these springs may be affected by the LCP, and additional springs may be created as a result of the project. Road-accessible areas that experienced ground disturbance as a result of construction work should be surveyed to determine if new springs have been created. The water quality of all of these springs should be tested on a regular basis, and measures should be developed quickly to ensure that they are not contaminated if Innu/public use of them is likely to continue.

The water quality of the fresh water spring at the TLH-Gull Island road junction should be tested as soon as possible, given that one of the 2010 land use research respondents, who has training in mineral prospecting, is concerned about the safety of this water source.

⁹¹ The Institute for Environmental Monitoring and Research, based in Happy Valley-Goose Bay, Labrador, undertakes monitoring and mitigation research related to the effects of military flight training. It subscribes to scientific peer review mechanisms. See www.iemr.org

Gull Island road area

G. Any fresh water spring that is contaminated as a result of construction activities or accidental events should be decontaminated if possible, or terminated, and/or signed as a public health hazard.

H. Any contamination in the Gull Island road area should be mitigated thoroughly, and unwanted construction material, gas and oil drums, and any other materials that may pose a health hazard to future land users, including the Innu, be removed expeditiously.

I. Nalcor should consult with responsible Innu authorities regarding reclamation activities at the Gull Island construction site because Innu may wish to keep some areas open as future gathering places.

Reservoirs and dam construction

J. Methylmercury risks should be carefully communicated to Labrador Innu so that they are not unnecessarily discouraged from engaging in LUO activities on the new reservoirs and including fish in their diets given the health benefits of fish.

K. In order to facilitate safe navigation on the reservoirs, an ongoing programme to routinely clear debris from the reservoirs during the ice-free months should be adopted by Nalcor and maintained for long as is necessary, that is, until the quantity of debris falls to the levels expected on northern lakes of comparable size.

L. Nalcor should build boat ramps and maintain access to reservoirs in areas where enhanced LUO by Innu and non-Innu will not adversely affect threatened *Penipuapishku-atikuat* (Red Wine Mountains caribou).

M. In order to mitigate the effects of erasing Innu place names as a result of flooding, Nalcor and the Government of Newfoundland and Labrador should give Innu names to the new reservoirs and other project features.

N. The high definition video material from the documentary fieldtrip in 2006 to the last shaking tent ceremony location at Ushkan-shipiss should be used in the near future to produce a quality educational/cultural product while the witnesses to the event are still alive to provide expert advice, provide supplementary information, and enjoy the finished product.

O. Nalcor and the Innu Nation should try to transplant the *assiuashik*^u (Canadian yew) to new locations as soon as possible to see if it will grow there. Innu *Tshishennuat* ('Elders') should be involved in all aspects of the transplant efforts.

P. Nalcor's Chief Executive Officer (CEO) should communicate with the Uenitshikumishiteuat and animal masters to ask them not to engage in retaliatory actions in response to dam construction and the killing of many animals as a result of reservoir creation. The CEO could consult with Innu *Tshishennuat* ('Elders') concerning the best methods of communication.

Reservoir clearing access roads

Q. Given the status of the threatened *Penipuapishku-atikuat* (Red Wine Mountains caribou), and their presence in the area between the TLH and Mishta-shipu (west of Gull Island), four proposed reservoir clearing access roads from the TLH to the Mishta-shipu should not be built. The proposed access roads #1, #2, #3, and #4 on Map 21 above are the ones that should not be built. They cannot be decommissioned ("rehabilitated") quickly enough to prevent enhanced human access to this area, including by snowmobile during the winter, which could result in significantly greater hunting pressure on *Penipuapishku-atikuat* (Red Wine Mountains caribou).

R. Should no alternative be found to building these particular access roads, then the following measures should be given serious consideration:

- i. the roads should be decommissioned immediately by removing stream crossings, erecting numerous barriers to vehicular traffic, physical treatment of the roadbed, etc.;
- ii. they should be re-vegetated immediately with black spruce, while fir and deciduous trees and other vegetation preferred by moose should be actively suppressed. In other words, every effort should be made to prevent the expansion of moose habitat in the area, given the known ecological relationship between moose, wolves and caribou;
- iii. responsible authorities should adopt moose management policies that encourage extensive and intensive moose hunting in this area so as to minimize prey densities that act as attractants for wolves;
- iv. the above measures should be developed in cooperatively between Nalcor and responsible Innu and provincial government authorities without delay, using the best caribou, moose and wolf management science available. For example, the type of habitat selected for the access roads could influence directly moose-wolf-caribou interactions in the area (James, et al., 2004), and measures to inhibit human access will not always be enough to limit that of predators (Dzus, et al. 2010).

Transmission lines

S. Appraise contractors and their employees working on new transmission lines should be appraised about the potential interactions between their activities and Innu

LUO in the vicinity of Innu cabins/camps. Innu cabin holders should be alerted to planned construction activities near their cabins.

T. A vegetation management plan should be developed in conjunction with responsible Innu authorities. It should contain the following provisions:

- i. an effective community awareness programme about the health risks of berry picking along transmission lines in advance of, and during, vegetation management activities in any given year. Public education measures should point out that berry collecting can resume after a period of 28 days (?) or so, depending on the herbicide used, and other factors;
- ii. alert Nalcor's employees or contractors responsible for spraying herbicides along transmission lines to the presence of berry pickers along the lines in the lead-up to chemical application;
- iii. exercise great caution concerning the way in which the health risks of herbicide use along transmission lines are communicated to the Innu public, keeping in mind that the health effects of not eating nutritious berries could be worse than not eating berries from transmission line corridors, or not eat berries at all. Innu may also be employed in vegetation management along the lines, so they, too, need a clear understanding of these risks.

U. One Innu cabin has been built in the existing transmission line right-of-way near the TLH-Orma Dyke road junction, and a temporary tent camp has been established virtually under the line beside the cabin. The health implications of spraying herbicides in the immediate vicinity of this cabin at certain times of the year should be addressed.

V. Responsible authorities should discourage Innu from building cabins in transmission line right-of-ways given possible health and safety concerns. Planning guidelines and regulations with respect to cabin development along transmission lines should be enforced.

TLH 3 to Muskrat Falls access road

W. Apart from specific measures to prevent construction, borrow pits, a bridge crossing, construction camps, and other activities from damaging fish habitat on Mekenitsheu-shipiss (McKenzie River), more research should be conducted on whether *utshashumek*^u (Atlantic salmon) make use of it. Some type of salmon management may be necessary if salmon are confirmed for that water body, given the greater access to the river that would result from the construction of the proposed TLH Phase 3 to Muskrat Falls access road.

Traffic safety, noise and dust along the TLH and tributary roads

X. Include Innu LUO in all emergency response planning such as Nalcor's proposed "Safety, Health and Environmental Emergency Response Plan" (Nalcor, 2009, V3, p.4-38). Such plans should be devised in close cooperation with responsible Labrador Innu authorities.

Y. With respect to traffic safety, consideration should be given to the following by Nalcor and responsible provincial and Innu authorities, particularly since travelling speeds are now a concern with the recent paving of the TLH between Goose Bay and the Gull Island road:

- i. reducing speed limits in the vicinity of Innu cabins. This will require appropriate enforcement by the RCMP based in Happy Valley-Goose Bay;
- ii. erecting cautionary road signage by Innu cabins warning motorists, truck drivers and heavy equipment operators that there may be children playing in the vicinity, etc.;
- iii. closing access roads to borrow pits/quarries to the public, including the Innu, during the construction period to eliminate the possibility of collisions between construction vehicles and Innu land users;
- iv. restrict construction traffic along the TLH and its tributary roads, in particular in the vicinity of occupied Innu cabins/camps, to day-time hours so as to minimize noise and sleep disturbance during the night.

Z. With respect to noise disturbance, and dust from LCP-related and other vehicles using the TLH and its tributary roads, Nalcor and responsible provincial and Innu authorities should:

- i. monitor traffic and construction noise along the TLH particularly in the vicinity of Innu cabins and camps and take steps to mitigate noise disturbance should it be a problem for Innu occupants of these sites;
- ii. monitor dust along unpaved portions of the TLH west of Gull Island and implement dust-control measures if necessary.
- iii. conduct research into minimum thresholds of tolerance/disturbance for Innu occupants of cabins and camps regarding traffic noise and dust to use as a baseline for monitoring initiatives.

5. References

- AMEC Earth & Environmental. 2009. Interconnecting Transmission Line Constraint Mapping Atlas. Report to Nalcor Energy. Component Studies. Air Quality, Timber Resources and Other. Report 4 of 5. January.
- Anderson, T.C. 1985. *The Rivers of Labrador*. Ottawa: Department of Fisheries and Oceans. Canadian Special Publication of Fisheries and Aquatic Sciences 81.
- Armitage, Peter. 2010. Innu of Labrador Contemporary Land Use Study. Report to Innu Nation. Sheshatshiu and Natuashish. October 29th.
2008. Report on the fieldtrip to Ushkan-shipiss, October 14, 2006. Report to Innu Nation and Newfoundland and Labrador Hydro. 6 February 2008.
- 2007a. An Inventory of Candidate Places of Religious Significance to the Innu of Labrador. Report to the Innu Nation, Natuashish and Sheshatshiu, Labrador.
- 2007b. Innu Kaishitshissenitak Mishta-shipu: Innu Environmental Knowledge of the Mishta-shipu (Churchill River) Area of Labrador in Relation to the Proposed Lower Churchill Project. Report of the work of the Innu Traditional Knowledge Committee to the Innu Nation. June 20th.
2006. "The Labrador Toponymy Project and its Relevance to Archaeologists." *Provincial Archaeology Newsletter*. Provincial Archaeology Office, Government of Newfoundland and Labrador. Vol. 4, pp.47-51.
2001. Innu Land Use in Relation to the Proposed PTA Safety Template. Report to Goose Bay Office, Department of National Defence.
1991. The Persistence of Domestic Production Among the Innu of Utshimassit and Sheshatshit. Report to Innu Nation. February 8th.
1990. Land Use and Occupancy Among the Innu of Utshimassit and Sheshatshit. Report to the Innu Nation, Sheshatshit and Utshimassit, July.
- Armitage, Peter and Marianne 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 to Department of Works, Services and Transportation, Government of Newfoundland and Labrador. Innu Environmental Limited Partnership, Happy Valley-Goose Bay. January 29th.

- Bartlett, Richard H. 1990. "Hydro-electric Dams on the Saskatchewan River: the Impact and Settlement at Cumberland House." In C.E. Delisle and M.A. Bouchard (eds.). *Managing the Effects of Hydroelectric Development*. Collection environnement et géologie. Proceedings of a symposium sponsored by the Canadian Society of Environmental Biologists, April 6-7, 1989, Université de Montréal. pp.599-614.
- Bennett, A.F. 1991. "Roads, Roadsides and Wildlife Conservation: a Review." In Denis A. Saunders and Richard J. Hobbs (eds.). *Nature Conservation 2: The Role of Corridors*. Chipping Norton, Australia: Surrey Beatty & Sons Pty Ltd. pp.99-117.
- Berger, Thomas R. 1977. *Northern Frontier, Northern Homeland*. Toronto: James Lorimer & Company, Publishers.
- Bergerud, Tom. 1994. Abundance and distribution of sedentary caribou in the Ungava. Unpublished manuscript.
- Berkes, Fikret. 1990. "Impacts of James Bay Development." In C.E. Delisle and M.A. Bouchard (eds.). *Managing the Effects of Hydroelectric Development*. Collection environnement et géologie. Proceedings of a symposium sponsored by the Canadian Society of Environmental Biologists, April 6-7, 1989, Université de Montréal. pp.623-636.
1988. "The Intrinsic Difficulty of Predicting Impacts: Lessons from the James Bay Hydro Project." *Environmental Impact Assessment Review*. 8:201-220.
1981. "Some Environmental and Social Impacts of the James Bay Hydroelectric Project, Canada." *Journal of Environmental Management*. 12: 157-172.
- Brody, Hugh. 1982. *Maps and Dreams*. New York: Pantheon Books.
- Charest, Paul. 1982. "Hydroelectric dam construction and the foraging activities of eastern Quebec Montagnais." In E. Leacock and R. Lee (eds.). *Politics and History in Pand Societies*. Cambridge: Cambridge University Press.
1980. "Les barrages hydro-électriques en territoire Montagnais et leurs effets sur les communautés amérindiennes." *Recherches amérindiennes au Québec*. 9(4):323-337.
- Davidson-Hunt, Iain J., Phyllis Jack, Edward Mandamin, and Brennan Wapioke. 2005. "Iskatewizaagegan (Shoal Lake) Plant Knowledge: An Anishinaabe (Ojibway) Ethnobotany of Northwestern Ontario." *Journal of Ethnobiology*. 25(2):189-227.
- de la Cadena, Marisol. 2010. "Indigenous Cosmopolitics in the Andes: Conceptual Reflections Beyond 'Politics'." *Cultural Anthropology*. 25(2):334-370.

(DeLCan) Environmental Systems Group of DeLCan. 1986. Ross Bay Junction – Churchill Falls Tote Road Environmental Impact Statement. Report prepared for the Newfoundland Department of Transport.

Dzus, Elston, Justina Ray, Ian Tompson, and Chris Wedeles. 2010. Caribou and the National Boreal Standard: Report of the FSC Canada Science Panel. Report to Forest Stewardship Council Canada. July 26th.

Eason, G., E. Thomas, R. Jerrard and K. Oswald. 1981. "Moose Hunting Closure in a Recently Logged Area." *Alces*. 17:111-125.

Eriksen, Ane, et al. 2009. "Encounter Frequencies Between GPS-collared Wolves (*Canis lupus*) and Moose (*Alces alces*) in a Scandinavian Wolf Territory." *Ecological Research*. 24(3):547-557.

Euler, David. 1985. "Moose and Man in Northern Ontario." *The Forestry Chronicle*. April. pp.176-179.

Feit, Harvey A. and Robert Beaulieu. 2001. "Voices from a Disappearing Forest: Government, Corporate, and Cree Participatory Forestry Management Practices." In Colin H. Scott (ed.). *Aboriginal Autonomy and Development in Northern Quebec and Labrador*. Vancouver: UBC Press. pp.119-148.

Folinsbee, John, Stephen Wetmore, and Eugene Mercer. 1973. Proposal for the Establishment of the Lac Joseph Wilderness Area in Western Labrador. Report prepared by the Wilderness and Travel Restricted Areas Committee, Newfoundland Wildlife Division.

Garrido, Sara Russo and Jason Stanley. 2002. Labrador Road Study: Local Knowledge on the Social and Environmental Impacts of the Newly Constructed Trans-Labrador Highway in South-eastern Labrador. Coasts Under Stress Working Paper. Memorial University. October.

Gill, Don and Alan D. Cooke. 1975. "Hydroelectric Developments in Northern Canada: A Comparison with the Churchill River Project in Saskatchewan." *The Musk-ox*. 15:53-56.

Goulet, Keith. 1988. The Sandy Bay Cree and Hydro Development 1927-67: the Story as told to Keith Goulet by the Elders of Sandy Bay. Paper presented at the Canadian Indian Teacher Education Program Conference, LaRonge, Saskatchewan, April 7th.

Government of Canada and Government of Newfoundland and Labrador. 2008. Environmental Impact Statement Guidelines. Lower Churchill Hydroelectric Generation Project, Newfoundland and Labrador Hydro. July.

<http://www.ceaa.gc.ca/050/documents/28050/28050E.pdf>

Government of Newfoundland and Labrador. 2008. Submission to the Joint Review Panel Assessing the Romaine Complex Hydroelectric Project November 27th.

<http://www.bape.gouv.qc.ca/sections/mandats/La%20Romaine/documents/DM62.pdf>

Griffiths, Leslie. 2001. Churchill River/Mista-Shipu Power Project: Potential Residual Environmental Effects on Innu and Innu Communities. Report of Workshop held October 25-26, 2001.

Gucinski, Hermann, Michael J. Furniss, Robert R. Ziemer, and Martha H. Brookes. 2001. Forest roads: a synthesis of scientific information. Gen. Tech. Rep. PNWGTR-509. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.

Harris, Reed and David Hutchinson (Tetra Tech Inc.). 2008. Lower Churchill Hydroelectric Generation Project Environmental Baseline Report: Assessment of the Potential for Increased Mercury Concentrations. Report to Nalcor Energy. March 4th. http://www.ceaa.gc.ca/050/documents_staticpost/26178/31993/ae2-mc-01.pdf

Hayeur, Gaëtan. 2001. *Summary of Knowledge Acquired in Northern Environments from 1970 to 2000*. Montreal: Hydro-Quebec.

Hydro-Québec. 1993a. Grande-Baleine Complexe. Feasibility Study. Part 2. Hydroelectric Complex. Book 6. Mercury. August.

1993b. Grande-Baleine Complexe. Feasibility Study. Part 2. Hydroelectric Complex. Book 5. Assessment of Impacts. Volume 3. Impacts on Human Environment. August.

Hydro-Québec Production. 2007. Complexe de la Romaine. Étude d'impact sur l'environnement. Volume 6: Milieu humain, Communautés innues et archeology. December.

Indian Claims Commission. 1998. Athabasca Chipewyan First Nation Inquiry: WAC Bennett Dam and Damage to Indian Reserve 201. <http://24583.vws.magma.ca/pdf/AthabascaChipEng.pdf>

Jacques Whitford. 2006. Statistical Analysis of Mercury Data from Churchill Falls (Labrador) Corporation Reservoirs. Report to Newfoundland and Labrador Hydro. Report No. 1005158. October 30th. http://www.ceaa.gc.ca/050/documents_staticpost/26178/31993/ae2-mc-04.pdf

(JWEL) Jacques Whitford Environment Ltd. 1998. Trans Labrador Highway (Red Bay to Cartwright) Environmental Assessment. Report for Newfoundland Department of Works, Services and Transportation.

1996. Star Lake Hydroelectric Development Environmental Impact Statement. Report prepared for Abitibi-Price Inc., Grand Falls-Windsor Division and CHI Hydroelectric Company Inc.

Jalkotzy, M.G., P.I. Ross, and M.D. Nasserden. 1997. The Effects of Linear Developments on Wildlife: A Review of Selected Scientific Literature. Prepared for the Canadian Association of Petroleum Producers. Calgary: Arc Wildlife Services Ltd.

James, Adam R.C., Stan Boutin, Daryll M. Herbert, and A. Blair Rippin. 2004. "Spatial Separation of Caribou from Moose and its Relation to Predation by Wolves." *Journal of Wildlife Management*. 68(4):799-809.

Johansson, Karin. 2008. Inuit Safety Culture and its Potential Influence on Management Practices in Auyuittuq National Park, Nunavut. Master of Natural Resources Management thesis. Natural Resources Institute. University of Manitoba. Winnipeg.

Keeper, J.I. 1990 "The Northern Flood Agreement as an Instrument for Social and Economic Equity." In C.E. Delisle and M.A. Bouchard (eds.). *Managing the Effects of Hydroelectric Development*. Collection environnement et géologie. Proceedings of a symposium sponsored by the Canadian Society of Environmental Biologists, April 6-7, 1989, Université de Montréal. pp.615-621.

Kneeshaw, Daniel D., Mario Larouche, Hugo Asselin, Marie-Christine Adam, Marie Saint-Arnaud, and Gerardo Reyes. 2010. "Road Rash: Ecological and Social Impacts of Road Networks on First Nations." In Marc G. Stevenson and David C. Natcher (eds.). *Planning Co-existence: Aboriginal Issues in Forest and Land Use Planning*. Edmonton: CCI Press. pp.171-184.

Linklater, Eva Mary. 1994. The Footprints of Wasahkacahk: The Churchill River Diversion Project and Destruction of the Nelson House Cree Historical Landscape. MA Thesis. Department of Archaeology, Simon Fraser University.

Loney, Martin. 1995. "Social Problems, Community Trauma and Hydro Project Impacts." *The Canadian Journal of Native Studies*.15(2):231-254.

1987. "The Construction of Dependency: the Case of the Grand Rapids Hydro Project." *The Canadian Journal of Native Studies*. 7(1):57-78.

Loring, Stephen, Moira T. McCaffrey, Peter Armitage and Daniel Ashini. 2003. "The Archaeology and Ethnohistory of a Drowned Land: Innu Nation Research Along the Former Michikamats Lake Shore in Nitassinan (Interior Labrador)." *Archaeology of Eastern North America*. 31:45-72.

- Lovisek, Joan. 1998. "The Lac des Mille Lacs Tragedy: Anatomy of a Century of Flooding." In J. Oakes, et al. (eds.) *Sacred Lands: Aboriginal World Views, Claims, and Conflicts*. Edmonton: Canadian Circumpolar Institute, University of Alberta.pp.129-140.
- Lysyk, Kenneth, W. Phelps and E. Bohmer. 1977. Alaska Highway Pipeline Inquiry Report. Ottawa: Department of Supply and Services.
- Mailhot, José. 1997. *The People of Sheshatshiu: In the Land of the Innu*. St. John's: ISER.
- 1988a. Innu Life Histories Documenting Land Occupancy Patterns in Eastern Quebec-Labrador. Report to the Naskapi Montagnais Innu Association, Sheshatshiu.
- 1988b. Labrador Map Project. Summary of Data for all Records. Report to the Naskapi Montagnais Innu Association, Sheshatshiu.
- Manore, Jean L. 1999.*Cross-currents: Hydroelectricity and the Engineering of Northern Ontario*. Waterloo: Wilfrid Laurier University Press.
- McCutcheon, Sean. 1994. Mitigation at the La Grande Complex: A Review. Great Whale Environmental Assessment: Background Paper No. 8, Great Whale Public Review Support Office.
1991. *Electric Rivers: The Story of the James Bay Project*. Montreal: Black Rose Books.
- McLellan, Bruce N. and J. Douglas Martin. 1991. "Managing Forest Access Roads to Meet Wildlife and Fisheries Objectives." WILDFOR 91 Proceedings, Wildlife and Forestry: Towards a Working Partnership. Jasper, Alberta, October 7-10. pp.59-62.
- Minaskuat Inc. 2009. The Lower Churchill Hydroelectric Generation Project Environmental Baseline Report: Caribou (*Rangifer tarandus caribou*). Final report to Newfoundland and Labrador Hydro. LCP 588577. January 26th.
- Mychasiw, Len and Manfred Hoefs. 1988. Access-related Impacts of Backcountry Roads to Wildlife and Management Approaches to Mitigate Them. Whitehorse, Yukon. Department of Renewable Resources, Government of Yukon.
- Nabokov, Peter. 2006. *Where the Lightning Strikes: The Lives of American Indian Sacred Places*. New York:Viking.
- Nadasdy, Paul. 2005. "Transcending the Debate over the Ecologically Noble Indian: Indigenous Peoples and Environmentalism." *Ethnohistory*. 52(2):291-331.
2003. *Hunters and Bureaucrats: Power, Knowledge, and Aboriginal-State Relations in the Southwest Yukon*. Vancouver: UBC Press.

Nalcor Energy. 2009a. Lower Churchill Hydroelectric Generation Project Environmental Impact Statement. Volume 1, Part A. Project Planning and Description. February. St. John's, NL.

2009b. Lower Churchill Hydroelectric Generation Project Environmental Impact Statement. Volume 1, Part B. Project Planning and Description. February. St. John's, NL.

Northern Flood Committee Inc. and Patricia A. Cobb. 1993. The Northern Flood Agreement: History of Negotiation and Implementation, and Recommendations for Improvement. Report to the Royal Commission on Aboriginal Peoples. September 29th.

Northland Associates Ltd. 1996. Upper Humber/Main River Wood Harvesting Operation Environmental Impact Statement. Report prepared for Corner Brook Pulp and Paper Ltd. Volume 1.

1994. The Ptarmigan Trail: Environmental Preview Report. Prepared for The Eagle River Development Association.

O'Neil, J., B.D. Elias, A. Yassi, C. Fletcher, B. Cohen. 1997. A Study of the Social and Cultural Construction of Environmental Health Risks in Aboriginal Communities. Centre for Aboriginal Health Research. Winnipeg: University of Manitoba.

Penn, Alan. 2003. Memorandum to Peter Armitage Regarding Social and Ecological Issues Arising from the Construction of Highways in the James Bay Territory. January 7.

2000. The Permanent Access Road to the Community of Waskaganish: the Monitoring of Social and Economic Impacts. A discussion paper on possible strategies for implementing a socio-economic impact monitoring programme for the Waskaganish access road. Cree Regional Authority.

Penn, Alan and Harvey Feit. 1974. The Northward Diversion of the Eastmain and Opinaca Rivers as Proposed: An Assessment of Impacts on the Native Community at Eastmain Village. Unpublished manuscript.

Petch, Virginia. 1998. In J. Oakes, et al. (eds.) *Sacred Lands: Aboriginal World Views, Claims, and Conflicts*. Edmonton: Canadian Circumpolar Institute, University of Alberta. pp.189-195.

Rosenberg, D.M., F. Berkes, R.A. Bodaly, R.E. Hecky, C.A. Kelly, and J.W.M. Rudd. 1997. "Large-scale impacts of hydroelectric development." *Environmental Reviews*. NRC Canada. 5:27-54.

Samson, Colin and Jules Pretty. 2006. "Environmental and Health Benefits of Hunting Lifestyles and Diets for the Innu of Labrador." *Food Policy*. 31:528-553.

Scott, Colin H. 1995. Monitoring Programme for the Social Impacts of Roads in the James Bay Cree Territory. Report to the James Bay Advisory Committee on the Environment, Ministère de l'Environnement du Québec.

Scott, Colin H. and Jeremy Webber. 2001. "Conflicts between Cree Hunting and Sport Hunting: Co-management Decision Making at James Bay." In Colin H. Scott (ed.). *Aboriginal Autonomy and Development in Northern Quebec and Labrador*. Vancouver: UBC Press. pp.149-174.

Scott, Richard T. 2001. "Becoming a Mercury Dealer: Moral Implications and the Construction of Objective Knowledge for the James Bay Cree." In Colin H. Scott (ed.). *Aboriginal Autonomy and Development in Northern Quebec and Labrador*. Vancouver: UBC Press. pp.175-205.

Shkilnyk, Anastasia M. 1985. *A Poison Stronger Than Love: The Destruction on an Ojibwa Community*. New Haven and London: Yale University Press.

Simard, Jean-Jacques, et al. 1996. *Tendances Nordiques: les changements sociaux 1970-1990 chez les Cris et les Inuit du Québec, une enquête statistique exploratoire*. Québec: Gétic, Université Laval.

Simon, N.P.P., F.E. Schwab, M.I. LeCoure, F.R. Phillips, and P.G. Trimper, 1999. "Effects of trapper access on a marten population in central Labrador." *Northeast Wildlife*. 54:73-76.

Smith, A.C. 2001. Home range size, movement, and spatial scale: the American marten (*Martes americana*) in southeastern Labrador. M.Sc. thesis, Trent University.

Spaven, Malcolm, Peter Armitage and Scott Ennis. 1997. Goose Bay Avoidance Programme Feasibility Project – II. Report to the Innu Nation. Sheshatshiu, Labrador. August.

Staples, Lindsay and Nick Poushinsky. 1997. Determining the Impact of the Tulsequah Chief Mine Project on the Traditional Land Use of the Taku River Tlingit First Nation. NorthWest Resources Consulting Group. Whitehorse, Yukon. Report to Environmental Assessment Office, Government of British Columbia. August.

Stopp, Marianne P. 2002b. Land Use Interviews in Happy Valley-Goose Bay, Mud Lake, Cartwright, and Paradise. On file, Provincial Archaeology Office, Government of Newfoundland and Labrador, St. John's.

Tanner, Adrian. 2009. "From Fur to Fir: In Consideration of a Cree Family Territory System of Environmental Stewardship." In Marc G. Stevenson and David C. Natcher (eds.). *Changing the Culture of Forestry in Canada: Building Effective Institutions for Aboriginal Engagement in Sustainable Forest Management*. Edmonton: CCI Press and Sustainable Forest Management Network.

1979. *Bringing Home Animals: Religious Ideology and Mode of Production of the Mistassini Cree Hunters*. St. John's: ISER.

1977. Land Use and Occupancy Among the Sheshatshiu Innu of Labrador. Report for the Naskapi Montagnais Innu Association. Sheshatshiu and Utshimassit.

Tanner, Adrian and Peter Armitage. 1986. Environmental Impact Assessment, Ross Bay Junction – Churchill Falls Tote Road: Native Resource Use Study. With Project Consultant, Hardy Associates, St. John's, Newfoundland.

Timmerman, H.R. and R. Gollet. 1983. "Age and Sex Structure of Harvested Moose Related to Season Manipulation and Access." *Alces*. 19:301-328.

Tobias, Terry N. 2000. *Chief Kerry's Moose: A Guidebook to Land Use and Occupancy Mapping, Research Design and Data Collection*. Vancouver: Ecotrust Canada and Union of B.C. Indian Chiefs.

Trombulak, Stephen and Christopher A. Frissell. 1999. "Review of Ecological Effects of Roads on Terrestrial and Aquatic Communities." *Conservation Biology*. 14(1): 18-30.

Usher, Peter. 1992. Affidavit. Submitted to the Federal Court of Canada, Trial Division, in the case of Louis Benoanie, et al. and Her Majesty the Queen in Right of Canada, et al. No. T-3201-91.

1976. "Evaluating country food in the northern native economy." *Arctic*. 29 (2): 105–120.

Usher, Peter, Patricia Anderson, Hugh Brody, Jennifer Keck, and Jill Torrie. 1979. The Economic and Social Impact of Mercury Pollution on the Whitedog and Grassy Narrows Indian Reserves, Ontario. Report to the Anti-Mercury Ojibwa Group, c/o Grand Council Treaty no.3, Kenora, Ontario; The Chief, Islington Band, Whitedog, Ontario; The Chief, Grassy Narrows Band, Grassy Narrows, Ontario. P.J. Usher Consulting Services. Ottawa.

Usher, Peter and Martin Weinstein. 1991. Towards Assessing the Effects of Lake Winnipeg Regulation and Churchill River Diversion on Resource Harvesting in Native Communities in Northern Manitoba. Canadian Technical Report of Fisheries and Aquatic Sciences, Report 1794. Ottawa: Dept. Fisheries and Oceans.

Vale INCO. 2008. Environmental Impact Statement : Long Harbour Commercial Nickel Processing Plant. Table of Concordance for 2007 EIS Submission Review Comments." April.

Waisberg, Leo and Tim Holzkamm. 1998. "From Ojibway Homeland to Reservoir: Flooding the Lake of the Woods Anishinaabeg." In J. Oakes, et al. (eds.) *Sacred Lands: Aboriginal World Views, Claims, and Conflicts*. Edmonton: Canadian Circumpolar Institute, University of Alberta.pp.117-128.

Waldram, James B. 1988. *As Long as the Rivers Run: Hydroelectric Development and Native Communities in Western Canada*. Winnipeg: University of Manitoba Press.

1985. "Hydroelectric Development and Dietary Delocalization in Northern Manitoba, Canada." *Human Organization*. 44(1):41-49.

Wanner, Stanley. 1999. "The Cree People of James Bay: Assessing the Social Impact of Hydroelectric Dams and Reservoirs." In James F. Hornig (ed.). *Social and Environmental Impacts of the James Bay Hydroelectric Project*. Montreal: McGill-Queen's University Press. pp.93-120.

World Commission on Dams. 2000. *Dams and Development: A New Framework for Decision-making*. London: Earthscan Publications Ltd. November.

Appendix 1. Excerpts from Armitage and Stopp (2003) - the effects of roads on land use - comparative data

Many environmental impact statements (EIS) have predicted effects related to road construction and operation, be they primary transportation routes, hydro dam or forest access roads, or snowmobile trails, but such effects predictions cannot be readily verified due to the lack of monitoring research. Highways and other transportation corridors have been subjected to environmental assessment (EA) in other Canadian provinces and throughout the United States. The following discussion is based upon a small sample of this EA literature.

Corner Brook Pulp and Paper Ltd.'s 1986 EIS predicted a range of possible effects resulting from the construction of forest access roads including increases in moose and small game hunting, trapping, and fishing trout and salmon in the company's wood harvesting areas. With respect to salmon, the "potential impact on fish resources of the Main River and Upper Humber River watersheds may result from both the access road and the actual forest harvesting operations....the projected possible angling catch could result in a decline in the salmon resource and require closer management of salmon stocks in the river" (Northland Associates Ltd., 1986:267-268).

In the Star Lake Hydroelectric Development EIS (JWEL, 1996:201), the authors predicted that "During operation of the project, increased accessibility will lead to an increase in angling (and possibly poaching) pressure." Such effects had been observed at the Cat Arm and Baie D'Espoir reservoirs. However, in the authors' professional judgment, "Increased angling pressure, on a scale experienced at the other reservoirs, will produce a minor impact on the brook trout population and negligible impact on the Arctic char population" (ibid.:201). This effects prediction was quickly proven wrong. The federal Department of Fisheries and Oceans (DFO) closed Star Lake to anglers in 2001 because of concerns about fish stocks in the lake.⁹² Road access to Star Lake was also predicted to increase harvesting pressure on caribou, moose, black bear aquatic furbearers and migratory birds, but the effects were predicted to be minor to negligible (ibid.:205).

⁹² DFO's area manager, Morley Knight, was quoted saying "the amount of fishing on the lake has risen dramatically in the past couple of years, since a new road was built. Knight says the department doesn't have any concrete figures on how many fish have been taken out of the lake. But he says there's sufficient concern to close the lake for the next few months" (CBC Regional News - Thursday, January 25, 2001, evening news). Berkeley Slade, DFO Staff Officer with DFO's Resource Management Division in St. John's, said the department estimated that on one weekend alone, at one point in the summer of 2000, there were 500 anglers on the lake including many non-residents. 12,000 to 15,000 fish could have been removed from the lake that summer – all through legal fishing (personal communication).

The 1994 Environmental Preview Report for the proposed Ptarmigan Snowmobile Trail (running parallel to the preferred route for Phase III of the TLH, between Sandwich Bay and Goose Bay) predicted that the “principal negative impact here is the potential increase in fishing, hunting and trapping pressure (legal and illegal) on these particular resources because of the improved access” (Northland Associates Ltd., 1994:144). The report’s authors noted that in the context of public consultations, the Sheshatshiu Innu expressed concerns that

the trail will open the country to large numbers of people and perhaps encourage the establishment of additional commercial outfitting camps. This increased competition for the resources of the land is something the Innu wish to prevent, and could prevent, or at least regulate, if negotiations resulted in some degree of control over the land and its resources. Unless a land claims settlement is achieved, or unless some degree of interim control is awarded to them, the Innu (while not totally negative to the project otherwise) will oppose the development of the Ptarmigan Trail (ibid.:155).

In the end, the trail was routed to *Atatshuinipek*^U (Lake Melville) to the east of *Akaneshau-shipu* (English River) rather than across the Eagle River plateau. This alleviated concerns about increased access to the wildlife and fish resources of the plateau by way of a snowmobile trail.

The 1998 EIS for the Phase II of the TLH from Red Bay to Cartwright (JWEL., 1998) also predicted possible effects as a result of increased human access and harvesting efforts including:

- a decline in waterfowl density in the vicinity of the road (p.109);
- an increase in trapping and snaring snowshoe hares (p.129);
- an increase in recreational cabin use (pp.129, 197-198);
- a decline in marten populations or changes in their distribution in the vicinity of the road (p.129);
- improved access to watercourses with a resultant increase in fish harvesting (pp.149, 156);
- an increase in competition for prime resource use areas such as waterfowl habitat and fishing pools (pp.197-198);
- an increase in illegal hunting and fishing (p.198);
- increased potential for outfitting and tourist lodge development (p.276).

It is not possible to determine the accuracy of any of the effects predictions in the aforementioned environmental impact studies due to the lack of monitoring research along the road. With the exception of a short-term marten study, no other environmental effects monitoring was recommended (ibid.:vi).

Harry Martin, a conservation officer with the Department of Forest Resources and Agrifoods (DFRA) in southern Labrador, says it is still too soon to tell what effects on wildlife and fish the road will bring, as the final section was only completed in November 2002. Martin says conservation officers spent a fair bit of time on completed sections of the highway last summer, but encountered few harvesters. Nonetheless, they anticipate a great deal of highway traffic next summer, and they are very concerned about poaching and over-harvesting (personal communication).

Outside of Newfoundland and Labrador, predictions and concerns about the effects of highways and other linear transportation corridors mirror those stated for domestic projects. In his 1977 report of the Mackenzie Valley Pipeline Inquiry, Justice Tom Berger considered the possible effects of the Dempster Highway, winter roads, seismic lines and other access routes on the Porcupine Caribou Herd, predicting that unrestricted access “would lead to intolerable pressure on the herd.” He advocated controls on hunting on all access routes not just the Dempster Highway (1977:42).

The Alaska Highway Pipeline Inquiry Report (Lysyk, et al., 1977) did consider the relationship between access and Aboriginal land use in predicting that the Dempster highway would result in increased wildlife harvesting, in particular caribou from the Porcupine Herd, and increased competition between Aboriginal and non-Aboriginal users of wildlife resources. The Inquiry found that the pipeline would probably have a “significant adverse effect on the people whose existence is dependent on the land....competition for renewable resources, such as game and fish, will come from pipeline workers and from the increased population” (ibid.:67).

Available monitoring data and analysis with respect to transportation corridors come more from focused government agency or university research (and anecdotal information) than research initiated directly as a result of environmental assessment, but such research is conducted on a limited range of biophysical effects resulting either from the physical characteristics of the corridor or its operation. The latter includes primarily cumulative effects associated with increases or changes in human harvesting activities that follow the opening of formerly remote areas to human access. For example, in Ontario, wildlife biologists studied the effects of forest access roads on declines in moose populations. They linked these declines to increased harvest pressure which was, in turn, the result of increased road access in recently logged areas with extensive road networks and where cover for moose had been greatly reduced (Eason, et al., 1981; see also Euler, 1985; Timmerman and Gollet, 1983).

In the Yukon, the territorial Department of Renewable Resources published a report in the 1980s concerning access-related effects of backcountry roads on wildlife (Mychasiw and Hoefs, 1988). The report noted that wildlife can be affected not only by increased harvest pressure facilitated by roads but also by traffic disturbance referring to the

“avoidance response of wildlife to vehicles and others forms of human activity associated with roads” (ibid.:6).⁹³ Two of the case studies referenced by the authors are of particular interest. The first concerns a mine access road, the “Nahanni Range Road,” built in 1965 across part of the Nahanni caribou herd’s range.

By 1973, caribou were seen only occasionally in this part of the Hyland Valley and hunting activity focused on two large mineral licks near the road. The practice was to wait at the roadside until some caribou came to the lick. Road access into the upper Hyland resulted in a harvest (including poaching by mine workers and legal hunting by Native people of the Watson Lake Area) between 1956 and c. 1973 that exceeded the recruitment rate of the herd, causing it to decline in numbers (ibid.:15).

The second case study concerns the construction of another mine access road, this time a road built by Morengo Resources Inc. in 1987 into mountain goat habitat. The Yukon Department of Renewable Resources,

was aware of the presence of a small goat population (of 9 to 12 animals) in this area, but had no means of imposing hunting restrictions, as the hunting season had already begun. The Department opposed the construction of any form of overland access, anticipating that hunters would quickly respond to the new road. Morengo Resources personnel subsequently informed the Department that a hunting party practically followed the caterpillar tractor being used to construct the road. Three goats were reportedly shot in this area, one of them less than 100m from the drill pad (ibid.:16).

Further south, McLellan and Martin (1991:60-61) studied the effects of commercial forestry on grizzly bear populations in southeastern British Columbia. They concluded that forest roads increase legal and illegal hunting in remote areas. Furthermore, as roads increase in number, the efficiency of enforcement officers declines so that it is increasingly easy for poachers to escape detection and control. In their view, “for species such as caribou and grizzly bears that are both vulnerable to illegal killing and have low reproductive rates, access is an important factor that may determine their continued existence in some locations” (ibid.:60-61). The extrapolation to be made from these findings is that increases in harvest pressure (whether by Aboriginal or non-Aboriginal peoples) can lead to significant declines in wildlife abundance. The law of diminishing returns is thereby launched meaning that the more unrestricted harvesting occurs, the less wildlife remains to be harvested. Harvesting effort may increase in the short term to offset declining wildlife abundance, but sooner or later, even this cannot compensate for the scarcity of game caused by collective over-harvesting.

⁹³ The report’s authors say that road access “to formerly inaccessible areas can have beneficial effects if it redirects hunting pressure away from wildlife populations in danger of over-harvest or already undergoing decline. However, there can be no lasting benefit if the harvest rate in the near area escalates to a level where the overhunting/decline cycle is repeated” (Mychasiw and Hoefs, 1988:10).

The effects of roads in British Columbia was summarized by Sean Sharpe, the [former] Research Manager for the Institute for Environmental Monitoring and Research in Happy Valley-Goose Bay (letter to Peter Armitage, 10 January 2003).⁹⁴ In his experience, the greatest effects of roads

are almost always related to resource depletion of areas near new access. In northern systems, there tends to be a rush into newly accessible areas, resulting in a rapid and unsustainable harvest of wildlife and fish. This is particularly a great risk if roads are near wintering areas of moose and caribou, or populations of trout and salmon in low productivity lakes and rivers that previously had limited or no access. Effects are not limited to the road footprint: the growing prevalence of ATV and snowmobile access expands the impacts of road corridors substantially.⁹⁵

In cases where new roads are opened through formerly inaccessible territory without adequate regulation and increased enforcement, poaching is a significant risk to wildlife and fish. Aboriginal harvests can also result in wildlife population declines if they are not regulated through Aboriginal government mechanisms (ibid.).

In southern Labrador, Garrido and Stanley (2002) surveyed residents concerning their perceptions of the effects of the Red Bay – Cartwright section of the TLH, which at the time of the research had not yet been completed. Respondents reported no change in the abundance of the region's wildlife and fish resources. However, "there is widespread fear that the influx of fishers and hunters from outside will result in the rapid depletion of animal and fish resources in the region, particularly in areas where the road travels closely alongside rivers, such as near Paradise River. This fear is stoked by the heightened presence of outsiders engaged in harvesting activities (mostly freshwater fishing) in and near communities" (p.14).⁹⁶ Similarly, Settler/Metis trappers from Happy Valley-Goose Bay expressed concern for existing trap lines that will be traversed by the highway between *Tshenuamiu-shipu* (Kenamu River) and the bridge over *Mishta-shipu* (Churchill River) (Stopp, 2002b).

Also in Labrador, Smith (2001) conducted masters degree research into marten populations in the vicinity of the Red Bay-Cartwright TLH. One objective was to examine the spatial effects of trapping on the study population. His research showed that "Half

⁹⁴ Trained in biology, Sharpe worked on comprehensive resource planning in northern Ontario, managed park resources in Northern B.C., worked as the provincial carnivore specialist for the B.C. government, and acted as the Regional Wildlife Section Head for the Skeena Region in northeastern B.C.

⁹⁵ See also Bennett's (1991:111) generalization, "Road systems provide hunters, poachers and trappers with access to areas inhabited by wildlife, and so increase their efficiency in exploiting wild populations."

⁹⁶ Research into local citizen perceptions/observations of road impacts could be an important component in monitoring work to determine if impact predictions are accurate and mitigation measures are working. More on this point below.

of the marten whose home ranges came within 5 km of the trap line were removed. Trapping in this study removed animals whose home ranges were up to 7.4 km away from the trap line. The two week trapping effort effectively removed all marten whose movements within their home range brought them into contact with the trap line” (ibid.:36). Having noted that the TLH would lead to increasing trapping pressure on marten, he concluded that the sustainability of marten harvests in the area would depend largely on source populations more distant from the road dispersing to the road’s vicinity (ibid.:37).⁹⁷

This review of some of the literature concerning the effects of roads and increased human access to wildlife populations is cursory to say the least, but its purpose is to suggest that biophysical effects on wildlife harvested by the Innu could have direct effects on Innu harvesting success and land use in general. The key points to be understood from existing comparative literature on linear transportation corridors are:

- species depletion along the road corridor, and in areas accessible from it, are highly probable;
- Innu will have to compete with others in their traditional harvesting areas;
- any increase in either temporary camps or more permanent cabins (by Innu and non-Innu alike) will further serve to affect resource stability and alter the natural environment; and,
- environmental monitoring programmes can potentially provide the only meaningful statements on effects, yet are absent elements of the majority of environmental impact studies.

The discussion of possible biophysical effects of the TLH from Cartwright to Goose Bay is presented in greater detail in other components of the EIS (JWEL/IELP, 2003) that this component study contributes to.

5.2 The social effects of roads – comparative data from the James Bay area of Quebec

The social effects of road development in James Bay, Quebec, are a useful comparison with the Labrador situation. Road construction in that region was associated with the James Bay Hydroelectric Project and other developments such as commercial forestry. Roads from Matagami in the south to the northern Hydro-Quebec town of Radisson, and the Cree communities of Chisasibi, Wemindji, Eastmain and Waskaganish have had significant effects, both good and bad.⁹⁸ Using numerous electricity generating

⁹⁷ Simon, et al. (1999) found that marten populations in a relatively accessible area in central Labrador showed signs of over-harvest, while those in an inaccessible area did not. Trapping access was by way of Grand Lake forest access roads and the TLH between Goose bay and the Pinus River.

⁹⁸ The evaluation of whether impacts are good or bad often depends on whether an individual benefits from the road or experiences negative impacts – in the balance. Therefore, opinion on road impacts among the James Bay Cree is mixed.

facility and dam and dyke service roads, both Cree and non-Aboriginal people have gained considerably greater access to hunting and fishing areas in northern Quebec. With respect to Cree land use,

The new road network has had a major effect on resource harvesting methods. Trucks, all-terrain vehicles and snowmobiles are more practical and economical than planes for travelling inland. Winter roads, logging roads and reservoirs have become the preferred routes for reaching fishing, hunting and trapping grounds. Whereas the most favorable sites for resource harvesting used to determine where camps were located, it is now proximity to roads and reservoirs that serves as the main criterion. The improvement in means of transport has improved the geographical distribution of activities (Hayeur, 2001:73).

Alan Penn, Science Advisor to the Cree Regional Authority, supports these observations. In his view,

[t]he roads specifically built for hydro-electric project construction have generally reinforced Cree use of inland hunting territories. It is true that there has been a dramatic rise in the capital and operating costs associated with running hunting camps – or a network of camps, but on the other hand individual families with access to land (and the income required to support hunting) benefit from the possibilities of being able to move easily and sometimes weekly between their home communities and their family hunting territories. There has been an undeniable increase in the frequency of travel to the deep inland hunting territories in the case of Chisasibi, and in the time spent at hunting camps. The inland hunting territories themselves have acquired important characteristics of family property, and become a basis for diversification, e.g. into outfitting. A substantial number of Cree ‘tallymen’ are now retired Cree administrators or political figures who now use their territories as a source of family income (Penn, 2003:2).⁹⁹

In the days prior to hydroelectric development and road construction, rivers and lakes were the primary conduits of travel for the Cree to inland camps and harvesting locations. These natural travel corridors have been supplanted in large measure by roads which allow Cree harvesters to maintain both a semi-sedentary life in the communities as well as a presence at bush camps in order to meet the requirements of the Guarantee Annual Income Programme under the terms of the James Bay and Northern Quebec Agreement.¹⁰⁰

⁹⁹A tallyman is a senior, male hunting group leader – an *utshimau* – who, at least theoretically, exercises a custodial role in relation to his hunting territories and the wildlife resources present there (see Tanner, 1979:182-202).

¹⁰⁰Scott (1995:6) also notes that main roads and highways in addition to “access roads to borrow pits, dikes and reservoirs, trails for ATV access to lakes, roads for logging, and new snowmobile corridors....are associated with new patterns of access to land and resources by both Cree and outsiders, patterns that are still very much in a process of trial, adaptation and evolution. Some outcomes have been quite positive; others decidedly negative. Roads, clearly, are viewed by Cree as one of the more powerful sources of cumulative impacts.”

While the available evidence suggests, then, that roads have had a significant effect on Cree social structure, economy, land use and land tenure, some of which have been positive, they have also brought a variety of negative effects. Scott (1995:7-11) enumerated these effects in the context of interviews with Cree people in the early 1990s.¹⁰¹ They include:

- the influx of thousands of recreational hunters and fishers each year who compete with Cree for wildlife resources in particular in areas adjacent to the roads;¹⁰²
- construction of temporary and permanent cabins and camps by recreational hunters, some of whom establish more distant structures by transporting construction materials on ATVs;
- disruption of the customary Cree wildlife management system (based on the leadership of “tallymen”) by non-Aboriginal hunters who fail to respect Cree hunting territory custodianship;¹⁰³
- public safety problems due to the frequent discharge of firearms near roads;
- disrespect for Cree religious beliefs and contamination of drinking water and fishing sites due to the improper disposal of animal carcasses;
- a dramatic increase in theft from and vandalism of Cree camps and equipment;
- increase in inter-community “poaching,” e.g., harvesting of beaver from lodges on individual hunting territories by Cree from other communities.

Problems of competition with non-Cree harvesters were exacerbated once the Quebec Government removed restrictions on highway access north of Matagami in the mid-1980s and actively promoted a “free” hunt by “southern sport hunters who would gain access by road, without the use of guides or other services” (Scott and Webber, 2001:153).

Forestry and forest access roads raise different kinds of problems compared to the transportation infrastructure for hydroelectric generation. Penn’s main concern is with the loss of Cree ability or authority to control access to their hunting territories as a result of forestry roads. Large numbers of leases for hunting camps have been issued to non-Cree so that in the southern parts of the James Bay territory, “Cree families may be outnumbered perhaps by ten to one by these non-native hunting camps. In such situations, competition for access to land and resources is a tangible and omnipresent issue, superimposed as it were on the more direct ecological impacts of forestry operations” (Penn, 2003:3).

¹⁰¹ Scott (1995:6) warns us that this list is not an exhaustive summary and that a more systematic investigation of Cree perceptions of road impacts might be a first step in a monitoring programme.

¹⁰² “Access roads to electrical transmission lines, and other roads, are used to reach areas; hunting usually takes place within a few kilometres either side of the road. All watercourses accessible by road that have potential for fishing are harvested” (Hydro-Quebec. 1993b:40).

¹⁰³ Based on the idea of people receiving invitations to use a territory from the tallyman.

Feit and Beaulieu (2001:131) report that while forest access roads have improved access for Cree to their hunting camps, the downside is that the roads also improve access for non-Cree. In such cases, vandalism and theft have at times been so serious that Cree hunters are obliged to transport snowmobiles and other equipment back and forth between their communities and their camps due to the insecurity of leaving equipment at unattended camps. Theft, vandalism and increased transportation requirements have added to the monetary cost of harvesting activities for some Cree people. Such problems appear not to have existed prior to the construction of roads into the region.

5.3 Existing road effects on Labrador Innu land use

In 1986, the provincial Department of Transportation commissioned an EIS on the section of the TLH referred to at the time as the Ross Bay Junction – Churchill Falls Tote Road (DeLCan, 1986; Tanner and Armitage, 1986). A variety of possible effects on land use were predicted including:

- increased tourist traffic (DeLCan, 1986:5-16);
- the establishment of restaurant stops, motels and other facilities at key points on the route (ibid.:5-16);
- new cabin construction (ibid.:5-16);
- an increase in trap lines operated by non-Innu both along the highway and subsidiary roads (ibid.:5-16);
- more recreational sports fishing and hunting (ibid.:5-18);
- increased winter recreational vehicle use (ibid.:5-14);
- competition between Innu and non-Innu for wildlife resources (ibid.:5-14);
- increased use of wildlife and fish resources by non-Innu leading to the restriction of traditional Innu land use patterns and hence conflict and significant social-cultural effects (ibid.:5-18).

No systematic monitoring work was undertaken to verify these predictions. However, it would appear that the assessment failed to predict certain positive benefits of road construction for Innu land use, namely, increased access to hunting and fishing areas by Labrador and Quebec Innu, even in the face of resource competition with non-Innu. Harvesting success in the face of such competition is unknown. Moreover, in recent years, Labrador Innu have built a dozen or so cabins along the road from Goose Bay to Churchill Fall and from there to Esker. More attention is devoted to this matter below. In the absence of systematic monitoring of the effects of existing roads in Labrador, we are obliged to comment on such effects on the basis of anecdotal evidence and limited data from provincial government and Innu sources. We have neither conducted systematic research into the effects of existing Labrador roads on the Innu nor attempted to sample their opinion about such effects.

Nonetheless, the available evidence suggests that the TLH from Goose Bay to Labrador City and other roads such as the secondary road off the TLH to Esker, the Orma Dyke and Lobstick Lake roads maintained by CFLCo, Grand Lake forest access roads, the road to *Uhuniau* (North West Point), and even the 32 km stretch of highway between Goose Bay and Sheshatshiu have altered Labrador Innu land use patterns. Innu from Sheshatshiu and Davis Inlet/Natuashish, as well as Innu from Sept-Iles/Maliotenam, Betsiamites, and the Quebec Côte-Nord use the TLH to harvest caribou, porcupine, beaver, ptarmigan and other species that may be encountered opportunistically in the vicinity of the road.¹⁰⁴

¹⁰⁴Even La Romaine Innu who are not currently connected to the Quebec road network access the TLH using vehicles parked in the neighbouring village of Natashquan.