



SAHTU RENEWABLE RESOURCES BOARD

Key Harvesting Issues Pertaining to the Proposed Mackenzie Gas Project.

Prepared for
Sahtu Renewable Resources Board

Submitted by
Gartner Lee Limited

August 2005



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Resources Board**

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**SAHTU RENEWABLE
RESOURCES BOARD**



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Executive Summary

The Sahtu Renewable Resources Board (SRRB) is the main instrument for wildlife and forest management in the Sahtu. It gets its authority from Article 13 of the Sahtu Dene-Métis Land Claim Agreement. The SRRB mandate includes:

- the need to ensure effective management of fish and wildlife in the Sahtu by the SRRB and government;
- determine the Sahtu Basic Needs Level¹ of Dene and Métis so that their harvesting traditions on the Land can be protected;
- assess the potential impact of new or existing developments (e.g., oil, mining, tourism) on harvesting; and
- determine damage or loss to harvesting caused by development or disaster.

In preparing this report to the Joint Review Panel for the Mackenzie Gas Project, the SRRB chose to concentrate on potential impacts that would affect harvesters and harvesting practices in the Sahtu. They acknowledge that many other agencies will address concerns for direct impacts to the wildlife.

In preparing this report, the SRRB conducted a survey of its and the Renewable Resources Council members and held a workshop to review findings and develop a course of action. The SRRB also conducted a literature survey to determine if their concerns reflected those in other regions where oil and gas development took place. They did. After concluding its research, the SRRB determined that cumulative and induced impacts would likely have the greatest impact on harvesting and harvesting practices in the Sahtu. The SRRB feels that the means to limit long-term impacts requires immediately utilizing management practices based on an ecosystem approach in order to avoid or mitigate as best as possible, cumulative impacts. The SRRB noted that the harvesters in the Fort Good Hope and Colville Lake regions are already feeling the impacts of multiple activities.

In keeping with the land claim and its mandate for wildlife and forest management, the SRRB's primary recommendation is the establishment of development densities based on the habitat and recruitment needs of wildlife in order to sustain the "Basic Needs Levels" in the Sahtu, and then some, for non-beneficiary harvesters. A similar density development approach has already been proposed in the draft Dehcho land use plan. In addition, the SRRB makes specific recommendations about the project and its impacts and how to reduce those impacts in the Sahtu.

¹ Basic needs are the total allowable harvest for Sahtu Dene and Métis when there is a requirement to limit harvest in order to allow animals to recover from disease, habitat loss and / or over-harvesting. The basic need can never be set below the number of animals required to feed all Sahtu households each year.



1. Background

1.1 The Sahtu Renewable Resources Board

The Sahtu Renewable Resources Board (“SRRB” or the “Board”) was established in Article 13² of the Sahtu Dene and Métis Comprehensive Land Claim Agreement (“LCA”), signed in 1993, and the Sahtu Dene and Métis Land Settlement Act (Bill C-16). The SRRB is the main instrument of wildlife and forest management in the Sahtu Settlement Area (“SSA”) and aims to protect, conserve, and manage all renewable resources in the region. The SSA includes approximately 283,000 square km of land and the communities of Colville Lake, Deline, Fort Good Hope, Norman Wells, and Tulita (Figure 1.0). The Board is a regional co-management board and represents the beneficiaries, non-beneficiaries and non-aboriginal populations of the SSA.

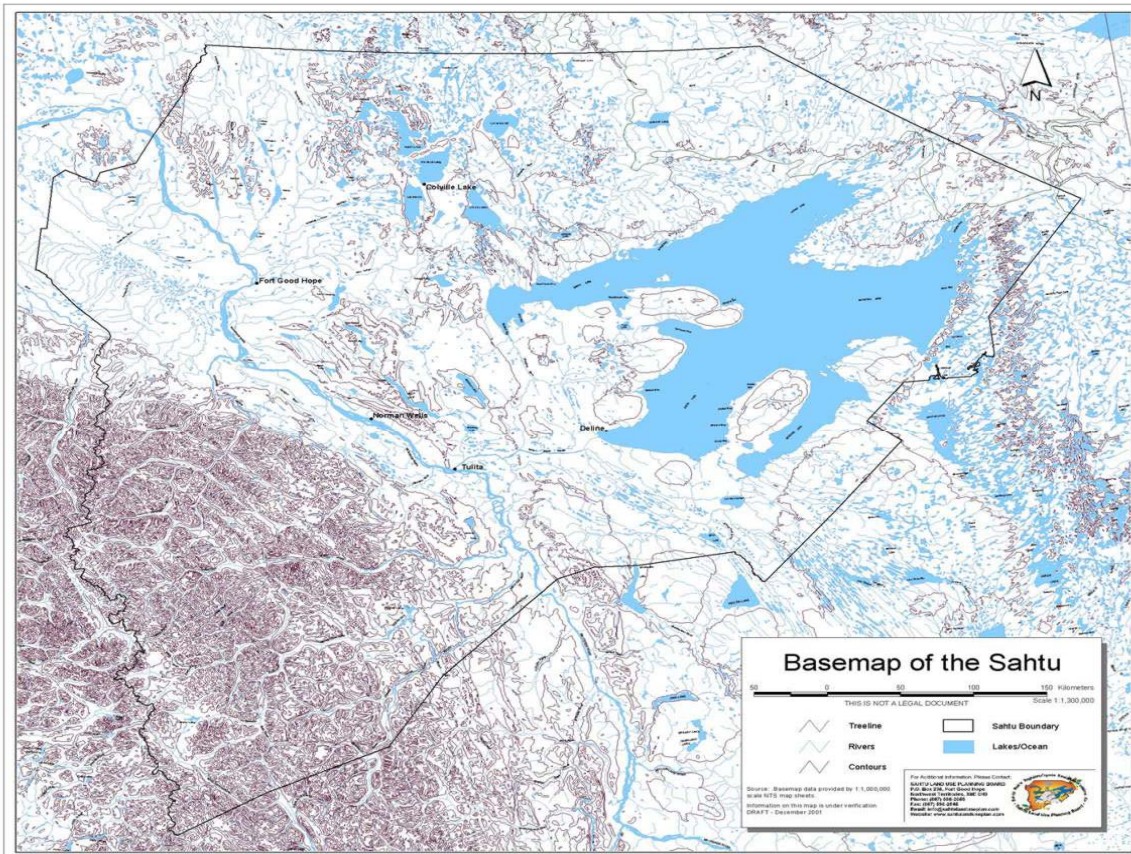


Figure 1. Map of the Sahtu (<http://209.146.197.178/gis.html>)

² Wildlife Harvesting and Management



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The SRRB has a long-term sustainable development mandate that guides its decision-making processes. The health and prosperity of environmental resources and wildlife in the Sahtu are coupled with concern for the well being of the Sahtu's human residents. Community concerns over wildlife and health are central in Board decisions.

The Board's mission statement is:

*To assist communities with the management of wildlife and habitat for the benefit of the people of the Sahtu Region.*³

The mission statement continues to state that:

*It is the responsibility of the SRRB and all other affected parties to unite to protect, conserve, and manage, in a cooperative spirit, all renewable resources within the Sahtu Settlement Area in a sustainable manner to meet or exceed the needs of the public today and in the future for generations to come.*⁴

Management of renewable resources in the SSA is therefore based on a more holistic balance between regional community concerns, wildlife needs, and traditional management styles. The sustainable mandate for the Board is consultation-based and community oriented.

The SRRB conducts and funds research in the SSA in the areas of wildlife, fisheries, forestry and other resources that are valuable to claimants and non-claimants (13.8.38). The research allows the Board to provide input into Government and other agencies' policies, regulations, legislation, and initiatives, and to assist in the development and review of renewable resources management plans for the SSA.

One such study is the Sahtu Settlement Harvest Study, which counts the number of mammals, fish and birds harvested by Sahtu Dene and Métis beneficiaries over a five-year period. Information from the study will be key for the SRRB, other Sahtu co-management boards, SSA communities, government agencies and industry for the assessment, mitigation and monitoring of hydrocarbon and pipeline projects or mining projects. Specifically, the study will help to:

- ensure effective management of fish and wildlife in the Sahtu by the SRRB and government;
- determine the Sahtu Basic Needs Level⁵ of Dene and Métis so that their harvesting traditions on the Land can be protected;
- assess the potential impact of new or existing developments (e.g., oil, mining, tourism) on harvesting; and

³ Sahtu Renewable Resources Board. 1999. Strategic Plan – Draft.

⁴ Sahtu Renewable Resources Board. Mission Statement. <http://www.srrb.nt.ca/index/mstate.html>. Site referenced on April 20, 2005.

⁵ Basic needs are the total allowable harvest for Sahtu Dene and Métis when there is a requirement to limit harvest in order to allow animals to recover from disease, habitat loss and / or over-harvesting. The basic need can never be set below the number of animals required to feed all Sahtu households each year.



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- determine damage or loss to harvesting caused by development or disaster.

Full details on the SRRB can be found at www.srrb.nt.ca. The Harvest study is currently continuing until 2006.

Long-term studies are invaluable to the SRRB in achieving its mandate as they provide reference points in time for important indicators. Through the harvest study and other similar reports, the SRRB is able to monitor the induced effects of development projects in the Sahtu, and gain a more informed picture of the cumulative impacts resulting from changes to wildlife and wildlife habitat in the SSA.

1.2 Renewable Resources Councils

Wildlife management in the SSA is facilitated by the Renewable Resource Councils (“RRC”). The RRCs are the local eyes and ears of the SRRB, and have offices in each of the Sahtu communities. The purpose of the RRCs is to encourage and promote local involvement in conservation, harvesting studies, research, and wildlife management in the community (13.9.1). The RRCs are established under the Land Corporations. The RRC is also responsible for allocating the Needs Level (minimum basic need) for their community, managing community harvesting rights and trapping needs, and advising the SRRB with respect to harvesting and matters of local concern. Any activities that may result in changes to harvesting and harvesting practices in the SSA are of direct relevance to the RRCs. The involvement of RRCs in resource negotiations is necessary to ensure community concerns are addressed and that disturbances are mitigated. The RRCs and SRRB work together for optimal wildlife and resource management in the SSA.

1.3 Definitions

"Conservation" means the management of wildlife populations and habitat to ensure the maintenance of the quality and diversity including the long-term optimum productivity of those resources, and to ensure a sustainable harvest and its efficient utilization;

"Conservation area" means game reserves, sanctuaries, migratory bird sanctuaries, national wildlife areas, and similar areas for the protection of wildlife and wildlife habitat established under federal or territorial legislation except national parks;

"Forest conservation" means the management of forest resources to ensure the maintenance of the quality and diversity, including the long-term optimum productivity of those resources, and to ensure a sustainable harvest and its efficient utilization;



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"Forest management" includes forest conservation, forest firefighting, timber management, reforestation and silviculture;

"Fur bearers" means the following species endemic to the settlement area: Castor including beaver; Alopex including white fox or arctic fox; Lutra including otter; Lynx including lynx; Martes including martens and fishers; Mephitis including skunk; Mustela including weasel and mink; Ondatra including muskrat; Vulpes including red, cross, black and silver fox; Gulo including wolverine; Canis including wolves and coyotes; Marmota including marmots; Tamiasciurus including red squirrels;

"Harvesting" means gathering, hunting, trapping or fishing in accordance with this agreement or applicable legislation;

"Impact on the environment" includes effects on air, land and water quality, on wildlife and wildlife harvesting, on the social and cultural environment and on heritage resources;

"Migratory game birds" has the same meaning as in the Migratory Game Birds Convention Act, R.S. 1985, c.M-7;

"National park" means lands described in the schedules to the National Parks Act, R.S. 1985, c. N-14, that lies within the settlement area;

"Plants" means all flora, other than trees, in a wild state;

"Protected area" means all areas and locations of land set apart and protected by government in the settlement area including historic parks and sites, national wildlife areas, migratory bird sanctuaries, territorial parks, conservation areas and archaeological sites but does not include national parks;

"Tree" means a woody, perennial plant generally with a single well-defined stem and a more or less definitively formed crown which is found in a wild state in the Northwest Territories, including Pinus species including Jack Pine and Lodge Pole Pine; Larix species including Tamarack; Picea species including White Spruce and Black Spruce; Abies species including Alpine Fir; Salix species including Beaked Willow and Pussy Willow; Populus species including Trembling Aspen and Balsam Poplar; Betula species including White Birch, Alaska Birch and Water Birch; Alnus species including Speckled Alder and Mountain Alder; and Prunus species including Choke Cherry and Pin Cherry;

"Wildlife" means all ferae naturae in a wild state including fish, mammals and birds.



1.4 Purpose of the Report

The SRRB has received funding from Indian and Northern Affairs Canada (“INAC”) to assess the impacts of the Mackenzie Gas Project (“MGP”) on harvesting in the SSA. Portions of these funds were distributed to the RRCs in order to prepare reports from a community perspective on the impacts of the MGP. With this report, the SRRB does not intend to duplicate the work of the RRCs, but rather would like to build upon the work of the RRCs and present information from a regional perspective. Finally, the SRRB has selected to concentrate primarily on **impacts to wildlife harvesting resulting from changes to wildlife and wildlife habitat** in the SSA. That is, the indirect effects over the long-term and potential cumulative effects. The SRRB is particularly interested in cumulative effects because of its role in maintaining basic needs levels for Dene and Métis so that their harvesting traditions on the Land can be protected. The SRRB accepts that there will be many Parties to this process commenting on the direct impacts to wildlife and wildlife habitat. It hopes with this report to provide the Joint Review Panel (JRP) with its perspective for establishing thresholds of change and significance of impacts.

1.4.1 Methodology

The preparation of this report was completed through interviews of SRRB and RRC members (Appendix A and B), a workshop involving SRRB and RRC members (Appendix C), and a literature review. It also involved reviewing the relevant contents of the EIS submitted to the Joint Review Panel (JRP).

2. Project Description: The Mackenzie Gas Project

2.1.1 Project description within the Sahtu

As proposed, the Mackenzie Gas Project pipeline will run for 1381 km from the Beaufort Delta Region, on the Arctic coast, to northern Alberta. The amount of pipeline in the SSA, 498km, represents 36% of the total pipeline length, and the SSA is the largest single area of jurisdiction that the pipeline will pass through.

Two pipelines have been identified for the SSA. A 10-inch diameter natural gas liquids pipeline would extend from the Gwich’in Settlement Area (GSA) to the north of the Sahtu to Norman Wells where it will tie into the existing Enbridge pipeline. A larger, 30-inch diameter, natural gas pipeline will extend from the GSA south through the SSA. The two pipelines will share a 50m wide right-of-way to Norman Wells. South of Norman Wells, the natural gas pipeline will follow a 40m wide right-of-way.



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Many facilities would be required within the SSA to support the transfer of gas over such a long distance. Three compressor stations have been proposed along the total pipeline route, two of which would be in the SSA. The compressor stations⁶ are proposed to be located at Loon River, and Great Bear River. Block valves⁷ will be placed throughout the SSA as safety points and to help regulate gas flow.

A future expansion of the pipeline from 1.2 billion cubic feet per day (BCFD) to 1.8 BCFD would result in four more compressor stations being built in the SSA (located at Little Chicago, Chick Lake, Norman Wells, and Little Smith Creek South).

From the amount of gas in the reservoir, the pipeline would have an expected lifetime of 25 years, from 2010-2035. This number is expected to be adjusted as newer information and technologies become available. Due to the large amount of infrastructure required for such a project, construction would begin in the 2006-2007 season, finishing in 2009-2010. The four-year construction period will be the most significant period for the SSA in terms of the project's social, environmental and economic impacts on the region. In an effort to keep negative impacts to a minimum, construction on the right-of-way and pipeline will be done in the winter. Building of the facilities will be done year-round.

Construction of the pipeline will be done in stages and facilitated by moving work crews. Six camps will be located within the SSA, with a combined workforce of 5,240 people. The bulk of these workers will be located in large winter-camps of 1,350 people. One of these camps will be located within the city limits of Norman Wells, with the second and third camps based near Little Chicago and Fort Good Hope. A medium sized winter-camp of 950 workers will be located near Little Smith Creek. Year round camps of 120 workers will be stationed at each of the compressor stations. All camps will be self-sufficient. Due to a lack of capacity for skilled labour in the SSA, only 367 project employees are expected to be local residents; 190 of these will be labourers.

Barges along the Mackenzie River will ship most of the equipment and supplies needed for the construction. Fuel and equipment storage and pipe stockpile sites will be placed at numerous locations along the river, and 44 borrow sites will be set up in the SSA for project use. The freight and personnel demands will result in significant increases to air, land and water transport needs and traffic levels. Community airstrips, barge landings and roadways will be upgraded and reinforced as part of the early construction phase.

⁶ A facility containing equipment that is used to increase pressure to compress natural gas for transportation in a pipeline.

⁷ A device positioned at intervals along a pipeline that controls the rate of flow in the pipeline opens or shut off the pipeline completely or serves as an automatic or semi-automatic safety device.



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SECTION 1: INTRODUCTION EIS FOR MACKENZIE GAS PROJECT VOLUME 1: OVERVIEW AND IMPACT SUMMARY

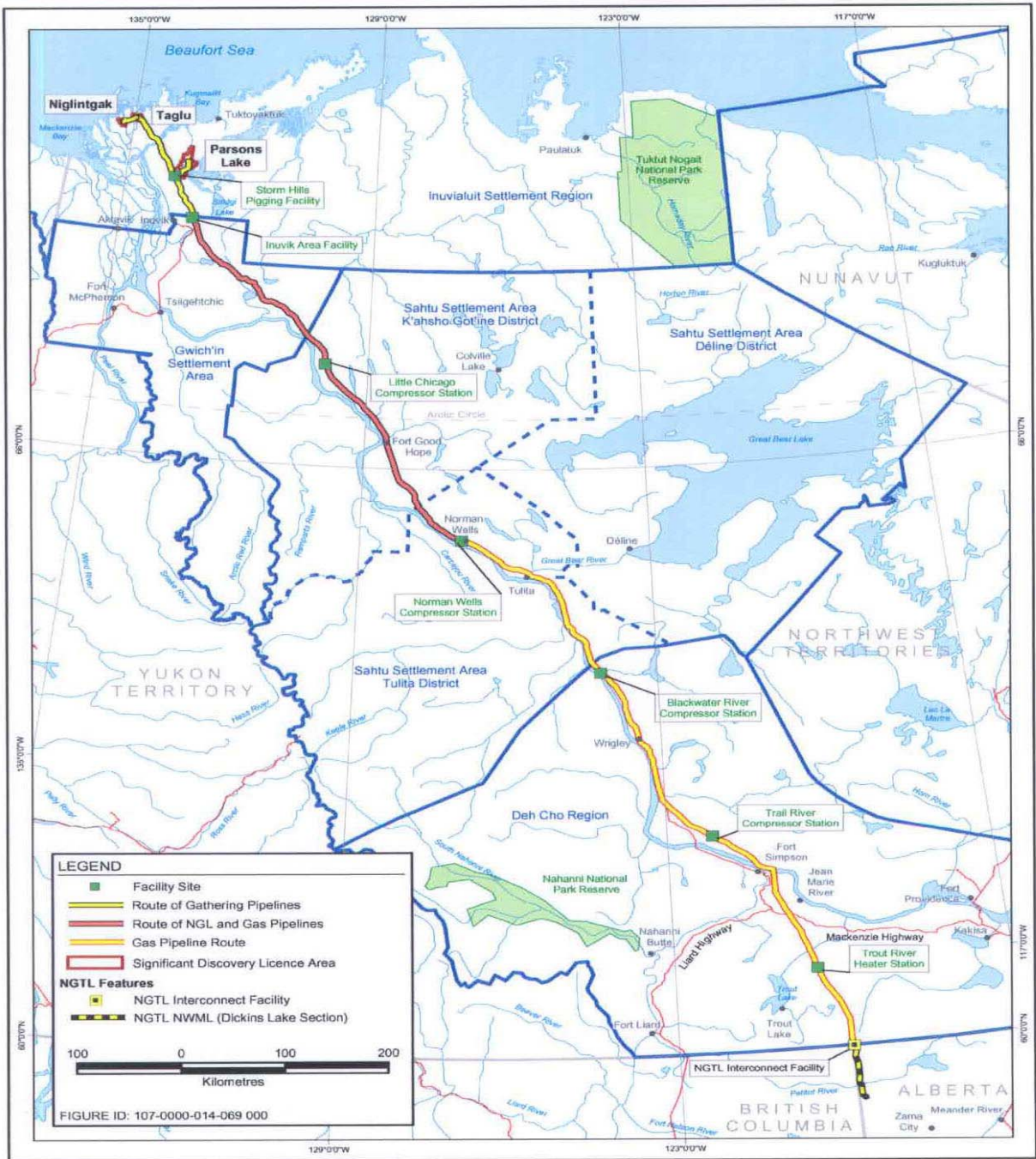


Figure 1-1: Project Location

Figure 2. Mackenzie Gas Project in the Sahtu



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SECTION 2: ASSESSMENT METHOD EIS FOR MACKENZIE GAS PROJECT
VOLUME 1: OVERVIEW AND IMPACT SUMMARY

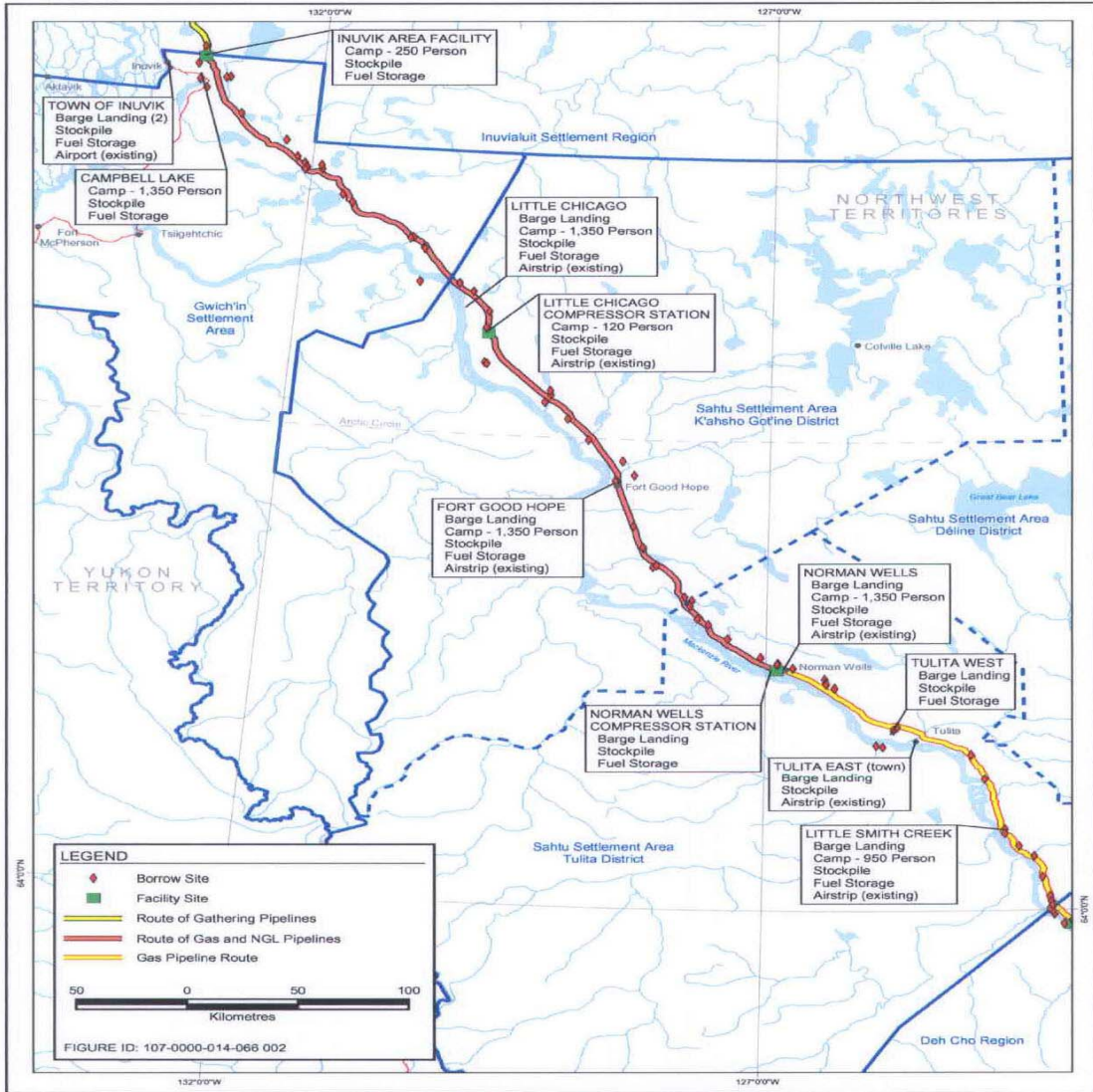


Figure 2-3: Pipeline Corridor – North

Figure 3. Detailed Mackenzie Gas Project in the Sahtu



3. Harvesting patterns in the Sahtu

3.1 Background⁸

The Sahtu Dene are an Athapaskan-speaking group of Dene or Northern Athapaskan Indians who traditionally occupied an area including Great Bear Lake and its borderlands, the Mackenzie Valley lowlands between Blackwater River and Travaillant River, large portions of the Anderson Plain north of the Mackenzie River and west of Great Bear Lake, and the Mackenzie Mountains and foothills, well into the Yukon Territory. The Sahtu Métis are descended from the intermarriage between Sahtu Dene and Euro-Canadians who began to move into the region with the fur trade in the early nineteenth century. Today the Sahtu Dene and Métis reside in five communities— Déline, Tulita, Fort Good Hope, Colville Lake, and Norman Wells—with a population of approximately 2600⁹. As a result of the land claim, the Sahtu region is organized into three administrative districts: Kasho Got'ine District, including the communities of Fort Good Hope and Colville Lake; Tulita District, including the communities of Tulita and Norman Wells; and Déline District, centred on Great Bear Lake, and including the community of Déline.

For centuries the Sahtu Dene and Métis have traveled and used the traditional resources distributed over the Sahtu region. Moose, woodland and barren ground caribou, Dall's sheep, beaver, marten, muskrats, waterfowl and other birds, fish, hare, and other small game continue to be critical subsistence resources. Caribou are of prime importance to life in the Sahtu region. Caribou are hunted in all seasons, providing critical sources of food. Caribou also traditionally provided hides for clothing and shelter, sinew for sewing, and bones and antler for tools and implements. Consequently, caribou occupy an important position in Sahtu Dene and Métis culture and history, and many heritage places are linked to this 'giver of life'.

Living off the land requires an intimate knowledge of the local environment and the seasonal distribution of food resources. Hunting and trapping requires special knowledge of animal behaviour, as well as the cultural rules governing these activities. It requires great skill in the manufacture of tools and equipment, which, in traditional times, were made from local resources. Knowing how to travel safely, and when to make decisions about moving camp in order to take advantage of widely distributed food resources were also necessary.

⁸ Excerpted from *Report of the Sahtu Heritage Places and Sites Joint Working Group. Rakekée Gok'é Godi: Places we take care of*. Prince of Wales Northern Heritage Museum, January 2004. URL Address: <http://pwnhc.learnnet.nt.ca/research/Places/theland.html>. Last Updated May 30, 2005.

⁹ Statistics Canada 2001 Census



The land itself is of particular importance in transmitting knowledge from one generation to the next. Elders know the Sahtu Dene and Métis landscape intimately. Trails, used year-round, provide access to a vast harvesting region, and like beads on a string, the trails link thousands of place names, each with a story, sometimes many, bound to the place. Names and narratives convey knowledge, and in this way Sahtu Dene and Métis culture is tied directly to the landscape. Travel across the Sahtu landscape can be easily and clearly described by reference to these names and indeed travel narratives often appear as no more than long lists of place names. The network of interconnecting trails provides access to a Sahtu land use area encompassing some 300,000 km².

3.2 Sahtu Settlement Harvest Study

The Sahtu Settlement Harvest Study is an important project required under the Sahtu Dene and Métis Comprehensive Land Claim Agreement (13.5.6). This is a study of Sahtu Dene and Métis hunters, trappers, and fishers. The Study was designed to count the number of mammals, birds and fish harvested by Sahtu Dene and Métis between 1998 and 2005. The communities of Colville Lake, Fort Good Hope, Norman Wells, and Tulita began participating in the Study in April 1998. The community of Déline began participating in January 1999. The Study is confidential; harvester names will not be released and information collected cannot be used to prosecute harvesters. As of January 2004, the SRRB has decided to continue the study for an additional two years in all Sahtu communities. Data collection will be done quarterly rather than monthly. Table 1.0 is an example of the species harvested in the Sahtu.

Harvest data was collected on a monthly basis by a community field-worker using a census approach, i.e., interview every eligible harvester in the Sahtu¹⁰. To be eligible for the count, a harvester must have met ALL the following conditions:

- is a Sahtu Dene, Métis or a non-beneficiary under the claim but who provides for their Sahtu Dene-Métis family;
- currently lives in the Sahtu Settlement Area;
- is an adult who is 16 years of age or over; and
- MUST currently do one or more of the following harvesting activities: hunt, fish, and/or trap.

Finally, the collection of information from the harvesters will be used for several purposes:

- to provide information on harvesting in order to ensure effective management of fish and wildlife in the Sahtu by the SRRB and government;
- to determine the Sahtu Basic Needs Level of Dene and Métis so that their harvesting traditions on the Land can be protected;

¹⁰ It should be noted that not all beneficiaries chose to participate.



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- to assess the potential impact of new or existing developments (e.g., oil, mining, tourism) on harvesting; and
- to determine damage or loss to harvesting caused by development or disaster.

The SRRB hopes to continue with the harvest studies and other wildlife related research after 2006 when its implementation funding runs out. It believes that it is essential that data collection continue to capture information about subsistence harvest through pipeline construction and hydrocarbon development. Information collected will be a powerful tool for communities and the SRRB, as well as, other Sahtu co-management boards, government agencies and industry, for assessment, mitigation and monitoring purposes through all hydrocarbon and pipeline stages.

Table 1. Species harvested in the Sahtu Settlement Region (1998 -1999)¹¹

	STANDARD NAMES	COMMON/LOCAL NAMES	SCIENTIFIC NAMES	NORTH SLAVEY NAMES
MAMMALS	Black Bear		<i>Ursus americanus</i>	saht'ea/sah dénntáé/bædæzi
	Grizzly Bear	Brown Bear	<i>Ursus arctos</i>	sahcho/sahsho
	Barren-Ground Caribou		<i>Rangifer tarandus groenlandicus</i>	ekwçwá/Ækwç wá gow' i æfdɛ
	Woodland Caribou	Mountain Caribou	<i>Rangifer tarandus caribou</i>	Tôdzi
	Dall's Sheep		<i>Ovis dalli</i>	do/doge
	Mountain Goat		<i>Oreamnos americanus</i>	shúhta do
	Moose		<i>Alces alces</i>	îts' é/Æits' ç
	Muskox		<i>Ovibos moschatus</i>	gokw' i æjiré/gokw' i æjire ææjire yõné
	White-tailed Deer	Deer	<i>Odocoileus virginianus</i>	
	Muskrat	Rat	<i>Ondatra zibethicus</i>	tehk' áe/dzê
	Mink		<i>Mustela vison</i>	tehwá
	Weasel	Ermine	<i>Mustela erminea</i>	Nôba

¹¹ Please note that some species were combined into groups to make it easier for people to report their harvests. Fourteen additional categories (Squirrel spp., Fox spp., Hare spp., Grouse spp., Ptarmigan spp., Goldeneye spp., Merganser spp., Scaup spp., Scoter spp., Teal spp., Duck spp., Goose spp., Swan spp., Loon spp., Fish spp.) were created to accommodate harvesters who could not recall the species of small mammals, birds or fish they harvested. Several fish species were combined (dolly varden char & bull trout, walleye & pickerel, white sucker & longnose sucker, and cisco & herring), as most harvesters are unable to distinguish the slight differences between these species (<http://www.srrb.nt.ca/publications/reports/HarvestStudyReport98-99rv1.pdf>).



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	STANDARD NAMES	COMMON/LOCAL NAMES	SCIENTIFIC NAMES	NORTH SLAVEY NAMES
	Northern River Otter	Otter	<i>Lontra Canadensis</i>	nábſæ/rábæ
	Marten	Sable	<i>Martes Americana</i>	nôhwhæ/zo
	Fisher		<i>Martes pennanti</i>	nôhwhæcho/zosho
	Wolverine		<i>Gulo gulo</i>	Nôgha
	Marmot	Gopher	<i>Marmota flaviventris</i>	Tsele
	Arctic Ground Squirrel	Gopher	<i>Spermophilus parryii</i>	dléa/sele
	Red Squirrel	Gopher	<i>Tamiasciurus hudsonicus</i>	Dléa
	Red Fox	Cross, Silver, Black Fox	<i>Vulpes vulpes</i>	nôgére dekwo/depoi yehfe defo
	Arctic Fox	White, Blue Fox	<i>Alopex lagopus</i>	nôgére dek'ale
	Coyote		<i>Canis latrans</i>	Dígatsele/belé lñç
	Wolf		<i>Canis lupus</i>	díga/bele
	Cougar	Mountain Lion	<i>Felis concolor</i>	shúhta æwódzi
	Lynx	Cat	<i>Lynx lynx</i>	Nôda
	Porcupine		<i>Erethizon dorsatum</i>	ch' ûâ/ch' ô
	Snowshoe Hare	Rabbit	<i>Lepus americanus</i>	Gah
	Arctic Hare	Rabbit	<i>Lepus arcticus</i>	gahcho/gahsho
BIRDS	Ruffed Grouse	Chicken	<i>Bonasa umbellus</i>	dih/æhseré
	Sharp-tailed Grouse	Chicken	<i>Tympanuchus phasianellus</i>	?ehtale/etsele
	Spruce Grouse	Chicken	<i>Dendragapus canadensis</i>	dih/æhtále
	Rock Ptarmigan	Chicken	<i>Lagopus mutus</i>	k' áhba' cho
	Willow Ptarmigan	Chicken	<i>Lagopus lagopus</i>	k' ahba
	American Widgeon	Whistling Duck	<i>Anas americana</i>	zashishi
	Bufflehead		<i>Bucephala albeola</i>	tutsele
	Canvasback		<i>Aythya valisineria</i>	dahgare cho
	Barrows Goldeneye		<i>Bucephala islandica</i>	



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	STANDARD NAMES	COMMON/LOCAL NAMES	SCIENTIFIC NAMES	NORTH SLAVEY NAMES
	Common Goldeneye		<i>Bucephala clangula</i>	
	Ring-Necked Duck		<i>Aythya collaris</i>	nōhta
	Harlequin		<i>Histrionicus histrionicus</i>	
	Mallard		<i>Anas platyrhynchos</i>	chuhō/túriw'élé
	Common Merganser	Fish Duck, Pie Duck	<i>Mergus merganser</i>	kw'ole/fole
	Red Breasted Merganser	Fish Duck	<i>Mergus serrator</i>	kw'ole
	Northern Pintail	Long Tailed Duck	<i>Anas acuta</i>	nagorak'ale/chīhdúwe/yéhxāi
	Northern Shoveler	Spoon Bill	<i>Anas clypeata</i>	dayéchare
	Oldsquaw		<i>Clangula hyemalis</i>	Āiléa
	Greater Scaup		<i>Aythya marila</i>	dāihgare
	Lesser Scaup		<i>Aythya affinis</i>	dāihgare tsele
	Black Scoter	Black Duck	<i>Melanitta nigra</i>	tēnakeo
	Surf Scoter	Black Duck	<i>Melanitta perspicillata</i>	chuk'ē
	White-Winged Scoter	Black Duck	<i>Melanitta fusca</i>	tēnakeo/yawileho dé
	Blue-Winged Teal		<i>Anas disors</i>	chutsele
	Green-Winged Teal		<i>Anas crecca</i>	chutsele/fík'ōne
	Brant Goose		<i>Branta bernicla</i>	dat'ē/gogaht'ē
	Canada Goose		<i>Branta canadensis</i>	Xah
	Greater White-Fronted Goose	Yellow legs, Speckle Belly	<i>Anser albifrons</i>	dahk'ē
	Snow Goose	Wavy, Blue, Grey Goose	<i>Chen caerulescens</i>	gogarek'ale/gogah



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	STANDARD NAMES	COMMON/LOCAL NAMES	SCIENTIFIC NAMES	NORTH SLAVEY NAMES
	Trumpeter Swan		<i>Cygnus buccinator</i>	
	Tundra Swan		<i>Cygnus columbianus</i>	degao
	Arctic Loon		<i>Gavia arctica</i>	bedárega/w'ihbé
	Common Loon		<i>Gavia immer</i>	tútsi/túsi
	Pacific Loon		<i>Gavia pacifica</i>	p'ñbe
	Red-Throated Loon		<i>Gavia stellata</i>	yanōhæa
	Yellow-Billed Loon		<i>Gavia adamsii</i>	tútsio/túsi
	Sandhill Crane		<i>Grus canadensis</i>	deleho/dæleho
	Snowy Owl		<i>Nyctea scandiaca</i>	bɛhdzīga/bɛhdzi dek'ale
FISH	Arctic Char	Red Fish, Silver Trout	<i>Salvelinus alpinus</i>	Åuededele/luge dedéle
	Sucker	Longnose, White Sucker	<i>Catostomus catostomus</i> <i>Catostomus commersoni</i>	dehdele
	Arctic Grayling	Grayling, Blue Fish	<i>Thymallus arcticus</i>	t'áe/t'áa
	Broad Whitefish		<i>Coregonus nasus</i>	áúé wá
	Lake Whitefish	Crookedback, Humpback	<i>Coregonus clupeaformis</i>	Åu
	Burbot	Loche, Lingcod	<i>Lota lota</i>	nōhkwɛ/nōhfœ
	Walleye	Pickerel, Dore, Perch	<i>Stizostedion vitreum</i> <i>Perca flavescens</i>	Æéhch'ñâ/t'á
	Chum Salmon	Dog Salmon	<i>Onchorhynchus keta</i>	geo sahba
	Bull Trout/Dolly Varden Char		<i>Salvelinus malma</i> <i>Salvelinus confluentus</i>	dehgá sahba
	Cisco	Herring, Least Cisco, Arctic Cisco	<i>Coregonus autumnalis</i> <i>Coregonus sardinella</i>	áuehya/lugeya
	Inconnu	Coney	<i>Stenodus leucichthys</i>	siho/sih
	Northern Pike	Jackfish	<i>Esox lucius</i>	Æōhda
	Lake Trout	Trout	<i>Salvelinus namaycush</i>	sahba



3.3 Harvesting activities and patterns in the Sahtu

The SRRB understands that the Panel is looking for information on current and historic harvesting, with special attention to subsistence and commercial harvesting. To help the Panel understand the nature of harvesting in the Sahtu and ultimately the impact on harvesters, the SRRB completed the following brief profile.

3.3.1 Profile

While harvesting activities and patterns have been changing in the Sahtu for several generations, the residents of the Sahtu still rely heavily on wildlife (Table 2) in their diet and for income.

Table 2. Reliance on wildlife by community inclusive for beneficiaries, non-beneficiaries, and non-aboriginal residents of the Sahtu (NWT Bureau of Statistics 2003)

	Colville Lake	Fort Good Hope	Norman Wells	Tulita	Deline	NWT
Hunted & Fished %	58.8	47.1	45.6	52.1	42.6	36.7
Trapped %	27.5	9.8	2.9	17.0	12.5	5.9
Households Consuming Country Food (half or more)	90.9	58.9	27.3	72.9	71.1	28.4

Maintaining access to wildlife has been an issue for the Sahtu since 1921 when oil and gas development came to the Sahtu. It was also an issue during the development of the Norman Wells (Enbridge) pipeline as well. Below are excerpts taken from reports prepared at the time. By all accounts, reliance on country foods has not changed dramatically. The reliance on country foods while fluctuating appears to be largely unchanged from 1985 when the Enbridge pipeline was constructed (Bone 1985).

From Report 3-85; Changes in Country Food Consumption

...subsequent increase in use of country foods by households... increased involvement in the wage economy during the Norman Wells Project did not reduce the level of consumption of country food (Stewart and Bone 1986a, pg 11).



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...harvesting of renewable resources by native peoples is “...at the base of the economy for local people,” (Nellie Cornoyea, in DeLancey 1985).

The 1982 survey results indicate the existence of a wide range in the proportion of country foods in native diets. Range shows that most native households consume equal amounts of store bought and country foods, but that some families derive nearly all of their diet from store bought while others derive nearly all of their diet from country foods.

Seven reasons for popularity of country food with Dene, Inuit and Métis families (pg 1-2):

- 1. harvesting country food by natives is a traditional activity with powerful cultural connotations;*
- 2. a preference for wild game and fish by natives over similar store products;*
- 3. the satisfaction and sense of independence derived from being in command of a useful enterprise;*
- 4. the high cost of fish, meat and poultry products in the local stores coupled with low incomes for the average native family;*
- 5. the practice of living off the land when trapping or residing at a bush camp;*
- 6. the central role of country food in the practice of “sharing”; and*
- 7. the pleasure and prestige of hunting big game/mammals.*

“...Since the nutritional value of these northern foods is considered to be high, their value to the physical well-being of native peoples is recognized (Schaefer et al 1985, p.28). Equally important, the very act of hunting and sharing of country food represents a powerful “social bonding” unique to native peoples. In this way, one of their cultural traditions is maintained which in turn supports the notion of a continuity of an autonomous way of life for native peoples (Asch 1984, p.21).”

“The close relationship of native peoples in the Mackenzie Valley to the land has always been a basic element of Dene culture. Even after several decades of village living, the harvesting of country food by Dene and Métis families in the four study communities remains the most enduring link to the land and country food continues to be heavily used by most of these Dene and Métis families.” (pg3)

“In the not so distant past, wild game provided not only food but also clothing, equipment, shelter and tools for the land-based Métis and Dene....Even though many store foods are extensively used by native families, country food still remains an important source of meat and fish.”



3.3.2 The portrait of the Sahtu harvester from the survey

Several SRRB and RRC members have noticed that serious harvesters in the Sahtu now tend to belong to the older generation. These individuals are declining in numbers and are not being replaced by younger harvesters. They also note that young people are not as interested in learning traditional activities and many of the elders are no longer teaching the skills and much of the knowledge held by elders is not being passed on. It is more difficult for youth to develop the skills to become an experienced harvester because of the time needed to spend in school getting an education and the lure of wage based jobs. Elders and youth, therefore, have to rely on programs to bring them together in order to maintain the cultural links to the land.

There are far fewer people harvesting as a profession than there used to be. More people are partaking in the wage economy (more incentive), which in the Sahtu means exploration work and related oil and gas activities. This involvement in the wage economy has resulted in a shift in the time spent harvesting and the means by which harvesting is done. Harvesting has been shifting from a daily activity to a weekend activity. This shift is possible because of the change in technologies i.e., snowmobiles, ATVs, helicopters, float planes, etc. This allows harvesters to still provide country foods for their families but spend less time doing it. The impact to the land because of year round access and technologies has not gone unnoticed by SRRB and RRC members. The widespread use of ATVs during the spring and summer has impacted soils, with permanent scarring of the sensitive active layer. Ultimately, the feeling is that if the anticipated rate of development takes place, it may be necessary to eventually restrict hunting to aboriginal peoples if wildlife populations dwindle.

Harvesters in the Sahtu travel with the wildlife and to areas of importance. Harvesters consider the entire ecosystem and how changes in one area may have an effect on the adjacent ecosystem. For example, harvesters in Fort Good Hope (FGH) travel to Great Bear Lake for barren-ground caribou because caribou that once were found near FGH are no longer present. Harvesters in the Sahtu are finding the need to travel further afield because of development activities. They have observed that animals are becoming disturbed by noise and other activities.

To summarize, full-time harvesters are the older members of the Sahtu. Part-time harvesters are increasing in number because of their involvement in the wage economy. These harvesters still rely heavily on country foods in their diets, but because of new technologies what once may have taken days can now be done on weekends.



4. Concerns of the SRRB and the RRCs

The impacts of pipelines and other linear projects are well documented (DIAND, 2004; National Research Council, 2003). The SRRB concerns with respect to impacts on wildlife and wildlife harvesting are consistent with those documented in other regions. This section of the report summarizes the concerns of the SRRB and RRC with the MGP and potential cumulative impacts. These issues and concerns have been classified according to the land claim obligations of the SRRB.

4.1 Direct Impacts to Wildlife

4.1.1 Distribution, movement and activity patterns for wildlife

Changes in distribution

- The members are concerned for changes to the distribution, movement and activity patterns of wildlife. They have noted from other development activities that there has been a change in species compositions around towns and development centres, e.g. camps. Bears, foxes and wolves are now more common around towns as scavengers.

Changes in behaviour due to habitat changes

- Moose: There has been an observed increase in moose and moose use of the Norman Wells pipeline corridor. The moose like the new forest growth (willow shrubs) and their numbers have become denser in these disturbed areas.
- Caribou: Changes in caribou migration patterns have been noted. It is speculated that the change may be due to the creation of seismic corridors and other changes resulting from development. Within the last 10 years the ability to harvest around FGH has decreased dramatically with no known reasons. As a result, FGH residents have to travel further and further to get caribou for their diets e.g., Déline or north of Colville Lake.

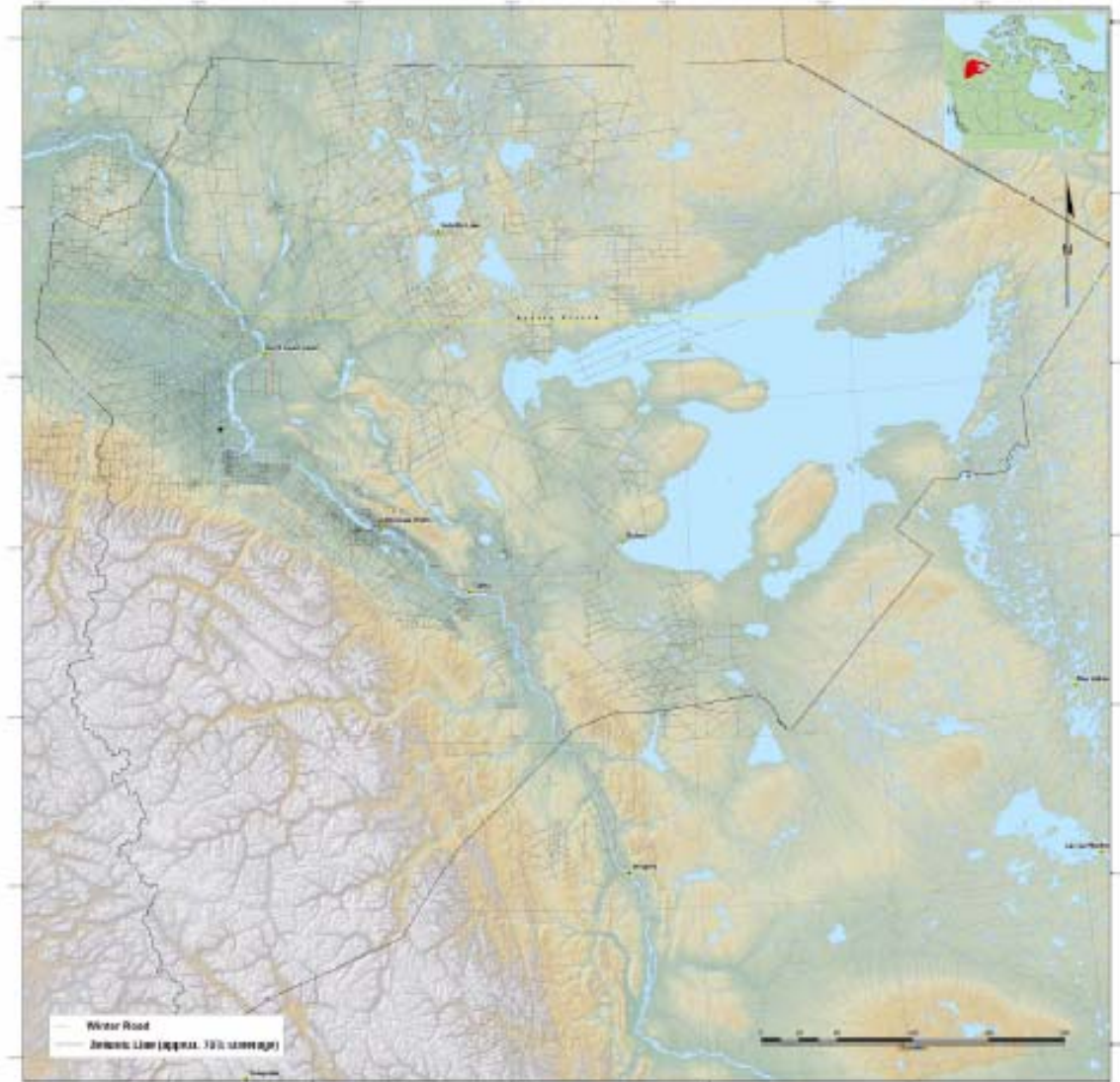
Concern was expressed by the members for increased access to caribou herds i.e., roads and seismic corridors make it easier to travel to hunt. Already, people are traveling from communities in the Dehcho and Tlicho to hunt the Bluenose-East Caribou Herd. This will affect herd stability and health. Extent of seismic lines is epidemic. Mapping of the Sahtu show that approximately 85% of boreal caribou habitat has been disturbed already by seismic, road, fire, and other disturbances (Fig. 4). Figure 4¹² features 70-75% of the existing seismic lines dating from the 1960s to 2001.

¹². The map was developed from information provided by the National Energy Board.



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Figure 4. Map of existing seismic lines in the Sahtu, 1960s to 2001



Changes in behaviour due to noise

- Caribou and other wildlife: Caribou prefer peace and quiet and will move around to find it (e.g., when the winter road opens up to vehicle use, the caribou begin moving elsewhere). In the past, Dene would hunt caribou seasonally, and caribou never had to alter their migration patterns due to harvesting pressures. Now, however, with a switch in harvesting methods and lots of noise disturbances from helicopters and maintenance work, the herds are more constantly disturbed.

Compressor stations are very loud and scare away wildlife. Compressor stations represent the second largest noise disturbance (next to air traffic) and are potentially the most disturbing aspect of the project on a localized level. Of particular concern are the compressor stations that will be constructed near Fort Good Hope (FGH) and Norman Wells. The FGH facility will be situated near a known migratory bird spring staging area near Little Chicago. The effects of the noise on bird populations are not known and have not been adequately addressed within the EIS. The MGP has proposed to develop a compressor station near the site, which could significantly impact the birds, which are sensitive to noise disturbances. Harvesters, who must follow their animal prey, will also be affected by longer travel periods and costs in pursuit of waterfowl.

There is also concern for encroachment and auditory/visual disturbances. On the river, increases in barge activity are expected to disturb fish activity (increased turbulence and wave action may disrupt spawning grounds and alter water quality), and thereby compromise the numerous fish camps along the Mackenzie River. There is also concern for fish habitat especially watercourses crossed by the pipeline e.g., Bear River and the extent of the impact.

Of further concern are the proposed construction camps¹³ that fall within the SSA territory and the attendant large populations that will result in noise disturbances, and localized pollution and garbage.

4.1.2 Exotic species

- New species are arriving into the Sahtu and the reason for this is not clear e.g., white-tailed deer & white/yellow sweet clover. One explanation for plant species may be that they are being brought in with construction equipment. As well, access corridors provide a perfect travel corridor for exotic plant species to expand across and exotic wildlife species to travel along. The SRRB is not convinced that best practices are being followed to stop/limit this threat (e.g., seeding river crossing banks with southern grass species as opposed to local NWT variants).

¹³ Some members were also concerned about the potential increased burden on community social systems resulting from a rapid increase in population as well as through increases in social pressures.



4.1.3 Re-vegetation of rights-of-way

- The SRRB is concerned with the lack of re-vegetation of native grasses and shrubs on the Norman Wells pipeline and on seismic lines. This means an endemic loss of habitat.

4.1.4 Changes to water courses

- The SRRB has observed changes to water levels associated with the construction of winter roads. Water drawn from rivers and lakes to construct the ice road is both depleting water in fish-bearing and beaver-inhabited waters, and at the same time creating a stream from the runoff extending the full course of the road, effectively creating an artificial river during spring melt.

4.2 Direct impacts to Harvesters

The SRRB also identified concerns with respect to impact on harvesters from development. Of particular concern the need to maintain the basic needs levels of harvested wildlife for the Sahtu Dene and Métis and matters that might affect the ability to meet basic needs.

4.2.1 Access to country foods

- Harvesting grounds are not static, but shift according to the time of year and the species being sought. The Dene shifted their activities as the resource shifted. There is concern that there may be a tendency to isolate or compartmentalize the Sahtu residents into different “preferred” sections. In other words, there is concern that they will be isolated from their preferred grounds and will need to harvest in areas where they have not traditionally harvested.
- There has been a radical change in hunting over the last 40 years. Hunting and trapping is far more technical now. This means that hunters are now able to hunt/fish much further afield through their (dependence) on motorized vehicle access to wilderness areas (snow-machine, all-terrain vehicles, helicopters, float plane, motorboat).

4.2.2 Changes to hunting and trapping activities

- Areas of traditional harvesting and territorial ranges of wildlife do not recognize isolated boundaries (e.g., the corridor). The entire area of the pipeline corridor fits into the larger ecosystem and therefore is of concern to the Sahtu. Any impact to one area can have potential consequences on other areas. Accordingly, change and impacts will be felt variously across the



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SSA, and collectively will affect all beneficiaries. For example, harvesters in Déline can hunt to the other side of the Mackenzie River for moose and woodland caribou.

- Seismic lines, winter roads, and other means of opening up the area will allow easier hunting access by skidoo and ATV. These other means of access are used in addition to traditional trails. This has caused increased level of competition among hunters, but so far without bad consequences. A number of the activities directly and indirectly related to the proposed project will have the potential to cause wildlife to alter their behaviour. Although the hunting grounds have increased through access, the number of animals taken has not increased because there are fewer people harvesting nowadays as they shift to a wage economy. The Sahtu harvest data shows a decline in all species harvested over the span of the Study especially where oil and gas exploration has increased around FGH and Colville Lake as community members go and work for companies rather than harvesting.
- Winter access by vehicle to remote areas has also substantially increased hunting pressures on regional caribou groups. The winter road around Déline has become a popular hunting area for people from the SSA, the Dehcho, and the southern part of the NWT.
- Hunting along cut lines increases in the years following their construction (especially for small fur-bearers). However, it has been observed, following the Chevron project that animals did not come back to the same level of abundance, but animals were using it as a wildlife corridor. Along the Enbridge pipeline, corridor use is mostly limited to small mammals.
- Ongoing developments are pushing trappers/harvesters further and further away from their hunting grounds. Around Fort Good Hope, caribou can no longer be found near the town (barely even spotted from the air). Animals and harvesters are staying away from areas being used by researchers and explorers, as too much noise disturbance (generally from helicopter traffic). Harvesters have to travel further to find the animals now. The high cost of gas and transportation has resulted in fewer saving for harvesters, who have been doing less well economically in the last few years.
- Development activities in the Sahtu have resulted in a decrease in the number of trappers. However, harvesters employed by these other projects can afford to buy better equipment, and some hunters reported better harvesting yields following their work period.
- Workers that are brought in from outside of the Sahtu to live and work compete for harvesting resources. This was seen in Norman Wells and resulted in large increases in fishing and hunting of large game in the Mackenzie Mountains. There were also increases in charter flights to remote regions, and increases in nuisance animals (e.g., black bears) because of poor garbage management.



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- There have been widespread changes to harvesting travel patterns as a result of the wage economy, and there is now a problem of overuse of traditional hunting grounds.

4.2.3 Social change

- Drugs and alcohol take away from traditional activities and harvesting. With the increased participation of people in the wage economy, there is a corresponding increase in social problems (drugs and alcohol being of highest concern). The level of social change that was seen in Norman Wells was shocking to some residents. Communities like Déline and Colville Lake have been spared this transformation but can now expect to go through the same experience. The most concern is how youth will respond to the rapid change. Within the Sahtu, there is not the capacity to deal with increased social problems. The recent Chevron project in Fort Good Hope is a good example of this social turning point as reflected by the structure and social problems it now has to deal with.

4.3 Cumulative impacts

- Through workshop discussions, it was concluded that the induced effects of the Mackenzie Gas Project (MGP) were the main concern for the people of the Sahtu and posed the largest threat to the maintenance of harvesting and traditional practices in the Sahtu Settlement Area (SSA). In particular, the potential for spin-off developments in the corridor between Fort Good Hope and Colville Lake where harvesters are already dealing with distribution to wildlife. The same concern for induced development was also summarized in Cizek and Montgomery (2005), and Holroyd, P. and H. Retzer (2005). In the latter report, the authors conclude from development models run that, “*gas developments in the north are expected to increase rapidly, with an associated large linear and surface area footprint*”. Overall, the authors predict industrial development to “increase significantly over a period of 10 to 20 years and then, unless more reserves are found, decline”. Irrespective, of whether the rate of development happens as cited in the above reports, the SRRB noted that there were already a considerable number of activities in the Sahtu each of which had its own zone of influence, not to mention the communities themselves (Appendix).



5. Recommendations/ Rationale

In considering its concerns with respect to the Mackenzie Gas Project, the SRRB has prepared a series of recommendations that they would like the JRP to consider. These recommendations are supported by rationale for the recommendations and are ordered accordingly:

- direct project impacts;
- cumulative impacts;
- follow-up and monitoring; and
- research / baseline.

5.1 Direct Project Impact Recommendations

5.1.1 Harvesting / Wildlife Compensation

The SRRB recommends the involvement of the community Renewable Resource Councils in the negotiations related to harvest compensation (Ch. 18 S D-M LCA). The primary contact for the Proponent is the district land corporations. There is no indication in the EIS that the impact and benefit agreements are including matters related to harvest compensation.

The SRRB recommends that the MGP project not be allowed to proceed with construction without the completion of the harvest compensation agreements. The SRRB is aware in other parts of the Mackenzie Valley (i.e., Kakisa) where compensation agreements were not reached before the project was constructed and that these agreements are still outstanding three years later.

The SRRB recommends that the RRCs and Land Corporations actively work on a consistent approach to harvesting compensation arrangements. The SRRB recommends that a regional harvesting compensation arrangement be taken i.e., all the communities use the same approach.

The SRRB recommends that members of the respective RRCs be allowed to participate as observers of the construction and operational process to ensure that the impact to harvesting is kept minimal and within the conditions of the harvesting agreement.

The SRRB recommends that the harvesting compensation arrangements include training programs/activities for youth to stave off cultural loss. Proponent should fund these programs.



5.1.2 Pipeline / Rights-of-Way management

The SRRB recommends that any rights-of-way should be allowed to regrow to the width of a vehicle that may be required for access purposes. It is the SRRBs understanding that there are no minimum standards for regrowth of rights-of-way and that it is at the discretion of the regulatory agencies and the proponent (J-P. Lennie-Misgeld, MVLWB, pers. comm.; L. Matthews, NEB, pers. comm.) to establish the amount of required regrowth and revegetation. As the main instrument for wildlife and forest management, and for concerns of cumulative impacts, the SRRB recommends that the rights-of-way should be as narrow as possible, taking into account safety and legal concerns (also see cumulative effects later).

The SRRB recommends that rights-of-way be designed with appropriate blind corners to reduce the site lines and reduce travel corridors for predators in particular. This will reduce the anxiety of prey species needing to cross these areas. It should also assist, though, probably not eliminate the possibility of southern species migrating northward along these new “corridors” as has been happening in other parts of the NWT (see the range extension of bison to Rae-Edzo).

The SRRB recommends that revegetation should be done with native plant species. The SRRB has already noted invasive species in the Sahtu as a result of other development activities. The SRRB does not want to promote the spread of invasive species. As well, prior to bringing equipment into the Sahtu for construction purposes, the SRRB expects that the equipment will be thoroughly cleaned to reduce the possibility of exotic species being transported into the area.

The SRRB recommends that ice roads be constructed for ease of traversing. The embankments should not be an impediment to crossing.

5.1.3 Proponent Wildlife Management Plan

The SRRB recommends that they be involved in the final preparation and review of the wildlife management plan to be prepared and to be implemented in the Sahtu including the bear, fox, wolverine and other scavenger animals’ management plans. These plans should cover garbage, defensive kills, feeding animals, harassing animals, etc.

5.1.4 Air Traffic

The SRRB recommends that air traffic movement be kept to a minimum. The SRRB would like to see air traffic restrictions be developed and enforced for low-flying aircraft, helicopters, etc. These restrictions should be included in Wildlife Management Plans.



5.1.5 Best Practices

The SRRB recommends taking a holistic approach to the application of any “best practices” where the ecosystem is managed versus its individual components. Therefore, the SRRB recommends the establishment of ‘Best Practices’ approaches that will reduce the potential for cumulative impacts especially loss of wildlife habitat and loss of access to preferential harvesting areas. Included in these measures should be the establishment of thresholds or limits to acceptable change for corridor densities, habitat availability, patch sizes, stream crossing densities, special habitat features, and other environmental features. Also see cumulative impacts next and Appendix D.

The SRRB recommends that the approach for cumulative effects assessment in the EIS be reconsidered on a regional planning basis as described in the above documents. This will establish a reference point for future development and give an indication of proximity to the change that can be tolerated by the species. The SRRB sees this as the only means by which they can track basic needs and ensure that impacts to wildlife and harvesters never reach critically low levels that would require drastic conservation measures.

5.2 Cumulative Impacts

5.2.1 Establishment of a basic needs level for wildlife

The SRRB recommends the establishment of basic or minimum needs levels for wildlife as an initial indicator and threshold of change against which to measure current and future impacts. The basic needs information can be used to determine habitat size and quality necessary to maintain wildlife species at critical levels for the Sahtu Dene-Métis. The SRRB feels that the use of basic needs levels is an appropriate measure for the conservation of wildlife species. The SRRB may establish, modify or remove total allowable harvest levels if required for conservation and to the extent necessary to achieve conservation (Section 13.5 SDMLCA).

To assist the JRP, the basic needs levels have been calculated for barren ground caribou, moose, marten, broad whitefish, lake whitefish, and scoter (black duck species) (Table 3). The SRRB recommends using these values to determine habitat size and quality. The SRRB also recommends that appropriate adjustments be made for wildlife harvesting undertaken by outfitters, non-beneficiaries and non-Sahtu residents.

We also expect that there be put in place mandatory reporting of harvest stats for GNWT residents and non-beneficiaries who harvest in the Sahtu. This would have to be done in collaboration with the GNWT.



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Table 3. Basic Needs Levels¹⁴

	Colville Lake	Deline	Fort Hope	Good	Norman Wells	Tulita
Barren Ground Caribou	304	1603	608		83	250
Moose	11	22	101		27	82
Marten ¹⁵	175	639	1029		50	104
Broad Whitefish	14	48	4215		63	37
Lake Whitefish	2512	2173	1170		712	1490
Scoters	230	727	897		50	156

5.2.2 A development density plan is established for the SSA to be included in the Sahtu Land Use Plan

The SRRB recommends the immediate completion and acceptance of the Sahtu Land Use Plan by all levels of government. As already mentioned, the SRRB and the RRCs are concerned for induced effects and it is their opinion that one means of managing for uncontrolled induced effects is through the Sahtu Land Use Plan where sound conservation principles and thresholds to change have been incorporated. The SRRB will continue to work with the SLUPB to prepare development density criteria similar to those found in the Dehcho land use plan.

The SRRB recommends the rapid amendment of the *Mining Regulations* administered by Indian Affairs and Northern Development. In the absence of these amendments to “free access” provisions, the land use plan cannot be fully implemented.

¹⁴ When the study described in 13.5.6 has been completed, the Sahtu Minimum Needs Level for a species or population of wildlife shall be equal to one half of the sum of the average annual harvest by participants over the first five years of the study and the greatest amount taken in any one of those five years, which calculation is expressed mathematically as:

$$\left[\frac{h_1+h_2+h_3+h_4+h_5}{5} + h_{max} \right] \times 1/2$$

- h1 = harvest in year 1
- h2 = harvest in year 2
- h3 = harvest in year 3
- h4 = harvest in year 4
- h5 = harvest in year 5
- hmax = greatest amount taken in years 1-5

¹⁵ The average annual marten take in the Sahtu between 02/03 and 04/05 was 2448 animals. This figure reflects all the harvesting, and not just the participants in the harvesting study.



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The SRRB recommends the rapid completion of candidate Protected Areas (Sahyoue/?ehdacho, Ts’ude’hliline-Tuyetah, & Begadeh) for long-term land withdrawal by sponsoring government agencies. The SRRB will continue to support community initiatives to nominate areas through the Northwest Territories Protected Areas Strategy.

The SRRB recommends the completion of the *Wildlife Act* and the completion of forest management plans. Without these two instruments, the ability for the SRRB to manage natural resources in the Sahtu is limited.

5.2.3 Thresholds of change

The SRRB recommends that thresholds to change be developed to manage future assessments and future developments. The SRRB suggests using an approach similar to that of the Dehcho Land Use Planning Committee and the percent habitat change that can be tolerated by designated species. The reference is *Cumulative Effects Management in the Dehcho Territory: Preliminary Assessment and Results* report (http://www.dehcholands.org/reports_cumulative_effects_report.htm). By way of example, we have inserted a table from this report in Appendix D. We further recommend that the values defined in the table be adjusted to the circumstances in the Sahtu.

5.3 Follow-up and Monitoring

The SRRB recommends that a follow-up and monitoring agency be established for this project and that the agency be established for the lifespan of the project and spin-off projects. The agency should be composed of members of wildlife management boards, community members, elders, and government scientists.

- The Agency should report its findings to the SRRB, RRCs, SLWB, and the enforcement officers (see below).
- The Agency should have the ability to audit the effectiveness of mitigation measures and make changes to those measures.
- The members of the Agency should be independent of their nominating bodies.
- The Agency should have field monitors provided with specific enforcement powers and abilities (see below). The SRRB has observed on other projects in the Sahtu that not all mitigation measures are being enforced and that there are insufficient means to get measures enforced. They have been advised that not all infractions are considered a priority. These field monitors should be trained and local to the Sahtu.

The SRRB recommends the creation of a single contact point on all enforcement matters coordinated through the Follow-up and Monitoring Agency. This single contact point would have jurisdiction and authority over all other officers/departments for the duration of the project.



SRRB – Key Harvesting Issues Pertaining to MGP

- The purpose of the position would be to ensure that all monitoring and inspection programs are being implemented and that enforcement of environmental conditions or permit conditions are dealt with summarily.
- All other regulatory officers would be required to report directly to the single contact
- The single contact point should with sufficient documented reason have the authority to halt operations until the infraction is corrected.

The SRRB recommends the establishment of a Sahtu based Department of Fisheries and Oceans Office to undertake enforcement, biological research and licensing.

5.4 Research / Baseline

5.4.1 Long-term baseline and effects analysis study program

The SRRB recommends the establishment of a long-term baseline and effects analysis study program administered through its offices. The SRRB anticipates long-term exploration and development of oil and gas reserves in the Sahtu if the MGP proceeds. This requires the need to develop good quality baseline data and understanding of impact effects, especially cumulative effects and land use planning. The SRRB is aware that such initiatives have been undertaken for other frontier land developments where concern for cumulative effects has been expressed e.g., West Kitikmeot Slave Study.

The SRRB recommends the development of a program similar to the West Kitikmeot Slave Study (see Table 4.0) program or the NWT Biophysical Studies Program. Characteristics of the program include:

- management by the SRRB as the main instrument of wildlife and forest management in the Sahtu to avoid the need to establish another “board”;
- funding for the Board to be provided by government and industry (possibly in the form of levies accrued from resource developers operating in the Sahtu similar to the ESRF but targeted exclusively to the Sahtu). Every development project in the SSA would have to make a financial contribution including non-oil and gas developments;
- the results of the research studies would be available to all;
- the program would be overseen by the SRRB and a committee of elders;
- traditional knowledge would be a critical component of the program;
- the program would consider baseline type studies and effects analysis type studies;
- the information would feed into the existing CEAMF program established post the Diavik Diamond Mine Comprehensive Study; and
- the program should operate at least 25 years.



SRRB – Key Harvesting Issues Pertaining to MGP

Table 4. Strengths and weaknesses of various research and monitoring programs in the NWT.

Program	Strengths	Weaknesses
NWT Biophysical Study	<ul style="list-style-type: none"> - Comprehensive studies - Publicly available - Baseline information gathering relating to cumulative effects assessment - Collaboration and support with other monitoring / research programs 	<ul style="list-style-type: none"> - Short term funding provided by the Government of the Northwest Territories (1million per year for 5 years (2003-2004, 2007-2008). - No promise of continuation - Focus on oil and gas projects in the ISR, Sahtu, Dehcho, and Gwich'in
WKSS	<ul style="list-style-type: none"> - Partner driven and prioritized - Good regional representation - Not oriented around development projects - Information publicly available - Traditional and scientific knowledge crucial part of program - contribute to the understanding of cumulative effects assessment and management 	<ul style="list-style-type: none"> - No long term study ability. Full time funding ended in 2001. Funding arrangements shared between Governments of Canada and the NWT, industry and aboriginal groups and NGOs - interim aspect to operations
ESRF	<ul style="list-style-type: none"> - Solid scientific research on specific topics; identifies project-specific gaps of knowledge and concerns - Assist in the decision-making process related to oil and gas exploration and development on Canada's frontier lands 	<ul style="list-style-type: none"> - Lack of regional representation - Regional funding tied to amount of development activity in a particular area



SRRB – Key Harvesting Issues Pertaining to MGP

Program	Strengths	Weaknesses
	<ul style="list-style-type: none"> - Purpose is to finance environmental and social studies relating to the manner in which and to the terms and conditions under which petroleum exploration, development, and production activities on frontier lands should be conducted 	
Cumulative Effects of Beaufort Offshore (conceptual)	<ul style="list-style-type: none"> - Localized program to the Beaufort near shore and off-shore - mapping information gaps from archived and present studies - managed through CEAMF 	<ul style="list-style-type: none"> - Limited to development-based information gaps - no long-term funding in place

5.4.2 Standards be developed for research and studies conducted in the Sahtu

The SRRB recommends that standardized approaches be developed for the collection of baseline data and effects analysis work. The SRRB expects that there will be induced or spin-off developments from the MGP. They are concerned that each project will take a unique approach to collect data and analyze effects as has already been taking place with the different mining projects in the West Kitikmeot / Slave Geological province. Lack of standardized approaches makes it difficult to analyze for cumulative effects. The SRRB would like the JRP to address this issue and provide direction to federal and territorial departments and agencies.

5.4.3 Integration of TK into the final pipe/project design

The SRRB recommends that the traditional knowledge research for the Sahtu be completed and incorporated into the design and implementation of the MGP prior to construction to ensure that the siting of the temporary and permanent facilities will not have any adverse effects on harvesting practices.



5.5 Other general observations

5.5.1 Communication

The SRRB has observed that the use of language in public meetings and written documents is still too complicated. More effort needs to be made on the planning and conduct of meetings. In particular, more time is required to explain technology, ideas and concepts.



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Appendices

Appendix A

Interview Questions: SRRB Board Members

SRRB – Key Harvesting Issues Pertaining to MGP

Interview Questions for the Sahtu Renewable Resources Board (SRRB)

Gartner Lee Ltd. (GLL) is an environmental consultancy company that has been contracted by the Sahtu Renewable Resource Board (SRRB) to do an interview on the impacts that the Mackenzie Gas Pipeline (MGP) will have on harvesting and harvesting practices in the Sahtu Settlement Area (SSA).

The basis of this study is to ensure that harvesting impacts are kept to a minimum through the course of the pipeline development, and to ensure that the SRRB is aware of all of the harvesting concerns within the Sahtu. The results of the study will be given to the Board for their use in approaching the Joint Review Panel. GLL is neither for nor against the project- our goal is to record the concerns of the Sahtu and deliver the information to the SRRB.

For the purposes of this study we consider harvesting to include animals (birds, fish and mammals) and plants (berries, edibles and medicinal plants), while impacts to harvesting include any activities or consequences that affect the richness, distribution, or health of plants, animals, or harvesters

In reviewing the interview questions, please bear in mind the overall goal of identifying your concerns – based on your personal or professional experiences- that the MGP presents to harvesting and harvesting practices in the SSA.

Interview Participants:

Walter Bayha- *Chairperson*
Jody Snortland- *SRRB Executive Director*
Russell Hall- *DFO nominee*
Keith Hickling- *GNWT nominee*
Ronald Pierrot- *SSI nominee*
Norman Simmons- *CWS nominee*
Leonard Kenny- *SSI nominee*
Paul Latour- *CWS nominee*
Rosa Etchinelle- *SSI nominee*

1. General Harvesting Questions

- a) What do you harvest?
- b) How many preferred harvesting areas are near the proposed pipeline corridor or other parts of the project? How far away? How concerned are you about the impacts of the project? What have you heard others say?

SRRB – Key Harvesting Issues Pertaining to MGP

- c) How much of the daily nutritional intake is met through harvesting activities in the Sahtu? What proportion of the regional economy does harvesting make up?

2. Pipeline Projects:

- a) Enbridge Pipeline or any other projects: [understanding the effects of linear projects]
- What has been your experience / observations of changes that have happened to harvesting and access to harvesting areas in the Sahtu because of past projects in the region (i.e., Enbridge Pipeline or any other linear corridors (i.e., seismic lines))? How have past projects in the Sahtu affected harvesting and access?
 - What types of harvesting concerns have you had because of these other projects?
 - How have harvesting activities been affected or helped by these other projects?
 - Have any of the concerns been long-term? short-term? Which of these issues have been present since the beginning of the project and which ones started later on?
 - Have there been any economic concerns such as loss of revenue or source of livelihood as a result of these other projects?
 - Did you have any concerns such as reduced connection to the land, loss of hunting grounds / food sources, etc.?
- b) Mackenzie Gas Project
- What have you been told about the Mackenzie Gas Project and what is happening in the Sahtu?
 - Did you attend any meetings sponsored by the proponent or others that explained the project? Were these meetings helpful in explaining the project? What would have made it easier to understand the project?

3. Concerns related to the Mackenzie Gas Project

- a) Have you read the environmental impact statement prepared by the proponent? If so,
- Did the proponent cover your issues and concerns? If not, what was missing?
 - Did the proponents of the project offer satisfactory measures to minimize changes specific to harvesting practices?
 - How did you find the mitigation suggestions? What did you think of the suggested mitigation?
 - Are there parts of the Sahtu that will be more heavily affected than other parts as a result of the project? Has this been addressed within the EIS?
- b) If you have not read the environmental impact statement.
- c) Do you have any concerns for harvesting as a result of the Mackenzie Gas Project? What are they? [*issue scoping, impact identification*]

SRRB – Key Harvesting Issues Pertaining to MGP

- d) What kind of effects do you think a pipeline, camp, borrow pits, etc. might have on harvesting in the Sahtu? How do these effects change over the lifetime of a project? That is, are there different kinds of effects during construction versus operation versus decommissioning?
- e) How will the Sahtu be affected by the cumulative impacts of the project and from past developments?
- f) Have there been wide spread changes in harvesting travel patterns as a result of past projects? If so, are more changes anticipated as a result of the pipeline development and its related facilities?
- g) What plants and animals do you think needed to be studied as part of the research related to understanding the impacts of the project [valued ecosystem component]? Were there plants and animals that were not studied and should have been?
- h) How can projects impacts be kept to a minimum?
- i) How do the people think this project will benefit or impact harvesting practices (short-term? long-term?)
- j) How much change to harvesting and harvesting practices do you think can be handled in the Sahtu? What would you like to see not happen to harvesting and harvesting practice? How much change to harvesting has already happened in the Sahtu as a result of different projects in the past 50 years? Has there been an increase in competition among harvesters due to these projects and how has it affected the communities?
- k) Is the project expected to significantly impact the cost of harvesting to people of the Sahtu?
- l) How much impact to harvesting would you be willing to allow?
- m) Can you suggest how that “limit” could be measured? For example, if the project in combination with other projects displaces more than 10 trappers from their trap lines.
- n) How do the cumulative effects of the MG Pipeline and the amassed concerns of the RRCs affect the scope of impact of the MG Pipeline and risk of livelihood for the local residents?

Thank you very much for your time and comments. If you have any additional comments or concerns, please feel free to contact Ruari Carthew, at Gartner Lee Ltd.'s Yellowknife Office.

Ruari Carthew, BSc
Gartner Lee Ltd.
PO Box 98, 4912-49th St.
Yellowknife, NT
X1A-2N1
Tel: (867)-873-5808, Ext. 24
Fax: (867)-873-4453
rcarthew@gartnerlee.com

Appendix B

Interview Questions: RRC Members

SRRB – Key Harvesting Issues Pertaining to MGP

Interview Questions for the Renewable Resource Council (RRC)

Gartner Lee Ltd. (GLL) is an environmental consultancy company that has been contracted by the Sahtu Renewable Resource Board (SRRB) to do an interview on the impacts that the Mackenzie Gas Pipeline (MGP) will have on harvesting and harvesting practices in the Sahtu Settlement Area (SSA).

The basis of this study is to ensure that harvesting impacts are kept to a minimum through the course of the pipeline development, and to ensure that the SRRB is aware of all of the harvesting concerns within the Sahtu. The results of the study will be given to the Board for their use in approaching the Joint Review Panel. GLL is neither for nor against the project- our goal is to record the concerns of the Sahtu and deliver the information to the SRRB.

For the purposes of this study we consider harvesting to include animals (birds, fish and mammals) and plants (berries, edibles and medicinal plants), while impacts to harvesting include any activities or consequences that affect the richness, distribution, or health of plants, animals, or harvesters

In reviewing the interview questions, please bear in mind the overall goal of identifying your concerns – based on your personal or professional experiences- that the MGP presents to harvesting and harvesting practices in the SSA.

Interview Participants:

Wilfred Lennie Sr.- Tulita RRC President
Roger Boniface- Fort Good Hope RRC President
Frank T'seleie- Fort Good Hope RRC member
Lisa McDonald- Norman Wells Vice President

1. RRC Submission to the Panel

- a) What issues will your submission to the panel include?
- b) Will the submission include concerns or impact to local harvesting?
- c) Will it lay the groundwork for or detail any compensation measures to be awarded under section 18 (Harvesting Compensation) of the SDMCLCA?

SRRB – Key Harvesting Issues Pertaining to MGP

2. General Harvesting Questions

- a) How many harvesters do you currently have registered with the RRC? What is the demographic breakdown of the harvesters (age and gender)?
- b) Is your preferred harvesting area near the corridor? How much concern do you have that it will be impacted by the project? Does your preferred harvesting area fall within 10km² of the corridor or other parts of the pipeline project?
- c) What is the key species harvested by these individuals?
- d) How much of your daily nutrition is met through harvesting activities? What proportion of your income is derived from harvesting (i.e. how reliant are you on harvesting practices)?

3. Pipeline Projects:

Enbridge Pipeline or any other projects: [understanding the effects of linear projects]

- a) What has been your experience / observations of changes that have happened to harvesting and access to harvesting areas in the Sahtu as a result of past projects in the region (i.e., Enbridge Pipeline or any other linear corridors (i.e., seismic lines))? How have past projects in the Sahtu affected harvesting and access to harvesting areas?
- b) What types of harvesting concerns have you had because of these other projects?
- c) How have harvesting activities been affected or helped by these other projects?
- d) Have any of the concerns been long-term? short-term? Which of these issues have been present since the beginning of the project and which ones started later on?
- e) Have there been any economic concerns such as loss of revenue or source of livelihood as a result of these other projects?
- f) Did you have any concerns such as reduced connection to the land, loss of hunting grounds / food sources, etc.?
- g) Past projects in the region have resulted in easier access to wilderness areas. Have you seen a corresponding increase in activity to hunting grounds? Has this created more competition among harvesters? How has the change in landscape and access affected the distribution of predators and prey in your region? What type of changes have you witnessed (i.e., new animals, changes in species composition, etc.)?2. Mackenzie Gas Project: Knowledge of the Project
- h) What have you been told about the Mackenzie Gas Project and what is happening in the Sahtu?
- i) Did you attend any meetings sponsored by the proponent or others that explained the project? Were these meetings helpful in explaining the project? What would have made it easier to understand the project?

4. Concerns related to the Mackenzie Gas Project

- a) Have you read the environmental impact statement prepared by the proponent? If so,
- b) Did the proponent cover your issues and concerns? If not, what was missing?
- c) Did the proponents of the project offer satisfactory measures to minimize changes specific to harvesting practices?

SRRB – Key Harvesting Issues Pertaining to MGP

- d) How did you find the mitigation suggestions? What did you think of the suggested mitigations?
- e) If you have not read the environmental impact statement.
- f) Do you have any concerns for harvesting as a result of the Mackenzie Gas Project? What are they? [issue scoping, impact identification]
- g) What kind of effects do you think a pipeline, camp, borrow pits, etc. might have on harvesting in the Sahtu? How do these effects change over the lifetime of a project? That is, are there different kinds of effects during construction versus operation versus decommissioning?
- h) Will you be personally affected? How?
- i) Has there been a change in your harvesting travel patterns as a result of past projects? If so, do you anticipate more changes as a result of the pipeline development and its related facilities?
- j) What plants and animals do you think needed to be studied as part of the research related to understanding the impacts of the project [valued ecosystem component]? Were there plants or animals that were not studied and should have been?
- k) How can project impacts be kept to a minimum?
- l) How do the people think this project will benefit or impact harvesting practices (short-term? long-term?)
- m) How do you think you this project will affect the cost (money, time, effort) of harvesting for you?

Thank you very much for your time and comments. If you have any additional comments or concerns, please feel free to contact Ruari Carthew, at Gartner Lee Ltd.'s Yellowknife Office.

Ruari Carthew, BSc
Gartner Lee Ltd.
PO Box 98, 4912-49th St.
Yellowknife, NT
X1A-2N1
Tel: (867)-873-5808, Ext. 24
Fax: (867)-873-4453
rcarthew@gartnerlee.com

Appendix C

Norman Wells Workshop Attendees, July 26-28, 2005

SRRB – Key Harvesting Issues Pertaining to MGP

SRRB

Walter Bayha- *Chairperson*
Jody Snortland- *SRRB Executive Director*
Russell Hall- *DFO nominee*
Keith Hickling- *GNWT nominee*
Rosa Etchinelle- *SSI nominee*
Ronald Pierrot – *SSI nominee*

RRC

Andrew John Kenny- *Déline RRC member*
Wilfred Lennie Sr.- *Tulita RRC President*
Alexis Blanco- *Colville Lake RRC member*
Roger Boniface- *Fort Good Hope RRC President*
Frank T'seleie- *Fort Good Hope RRC member*
Harry Harris-*Fort Good Hope RRC member*
Gabe Kochon- *Fort Good Hope RRC member*
Michel Lafferty- *Fort Good Hope RRC member*

Gartner Lee Limited

Heidi Klein- *facilitator*
Ruari Carthew- *assistant*

Other

Alasdair Veitch – *GNWT ENR*
Boyan Tracz- *GNWT ENR*
Bella T'seleie- *Sahtu Land Use Planning Board*

Appendix D

Example of Land and Water Activities in the Sahtu Region

SRRB – Key Harvesting Issues Pertaining to MGP

Surface disposition	Number noted by Sahtu Land and Water Board (source)	Number noted by Department of Indian Affairs and Northern Development (source)
Oil and gas drilling (producing)	13	3
Cottages		2
Trapping cabins		
Commercial fish plants		
Navigational aids		191
Values at risk (unregistered cabins)		5
Other		333
TOTAL	13	534
Land Use Permits and Types (Active)		
Seismic	8	14
Quarrying	1	7
Exploration (mining, oil and gas)	2	19
Roads (public construction)	10	8
Roads (private construction)	1	4
Fuel storage sites	10	
Pipelines	1	2
Soil testing	2	1
Staging areas	2	3
Misc.	9	7
TOTAL	59	65
Land Use Permits (Expired)		
Oil and gas drilling	7	3
Quarry	1	
Staging Area	1	
Misc.	3	80
TOTAL	12	83
Mineral Leases		
Active		10
Pending		0
Inactive		0
TOTAL	--	10

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Mineral Claims		
Active		123
Pending		60
Inactive		102
TOTAL	---	265
Prospecting permits		
Active		645
Pending (relinquished)		24
Inactive (expired)		1
TOTAL	---	670
Coal exploration	---	---
Other activities (not necessarily requiring license, permit or authorization)		
Territorial parks		1
National wildlife areas		
Wildlife sanctuaries		
Migratory bird sanctuary		
National park		1
Sahtu land claim parcels		
Cutlines (exploration)		
Camping – recreational/ traditional		1
Fishing and hunting – recreational/ traditional		7
Trapping – recreational/ traditional		
Berry picking – recreational/ traditional		
TOTAL	---	10

Appendix E

Development Densities

SRRB – Key Harvesting Issues Pertaining to MGP

Cumulative Impacts Indicators and Thresholds

Indicator	Thresholds	Species	Zone	Land Use
Corridor Road Density	Critical: 1.5 km/km ² , Target: 1.2 km/km ² Cautionary: 1.0 km/km ²	Boreal Woodland Caribou	Special Management	All
	Critical: 1.8 km/km ² , Target: 1.5km/km ² Cautionary: 1.0 km/km ²	Boreal Woodland Caribou	General Use	All
	0.6 km/km ² in Winter range	Mountain Woodland Caribou	Special Management	All
	1.61 km/km ²	Moose	Special Management	All
	0.6 km/km ²	Grizzly Bear	Special Management	All
Habitat Availability	<10% loss of Habitats for all VEC species EBA, 2003	All VEC's	Dehcho Wide	All
	<5% of available habitat disturbed	Boreal Woodland Caribou	Special Management	All
	<3% of moderate to high capability habitat disturbed	Moose	Special Management	All
	<30% of available habitat cleared	Marten	Special Management	All
	<10% of available habitat disturbed	Grizzly Bears	Special Management	All
Minimum Core Area	Critical: >65% large areas (>1,000 Ha and 500m Wide); Target: >75% large core areas Cautionary: > 85% large core areas	All	Special Management	All
	Critical: >40% medium core areas (>200 Ha and 350m Wide); Target: >50% medium core areas Cautionary: > 65% medium core areas	All	General Use	All
Minimum Patch Size	>5 ha	Moose	Special Management	All
	>515 ha	Boreal Woodland Caribou		
	>1,000 ha of suitable habitat	Grizzly Bears		

SRRB – Key Harvesting Issues Pertaining to MGP

Indicator	Thresholds	Species	Zone	Land Use
	>200 ha suitable habitat	Marten		
Special Habitat Features	No disturbance (minimum 250m buffer)	All VECs	Special Management	All
	No Net loss (with mitigation or compensation)		Special Management	All
Significant Environmental Features	No disturbance	N/A	General Use	All
	No Net loss (with mitigation or compensation)	Fish	Special Management	All
Stream Crossing Density	<0.32/km ²	Fish	General Use	All