

ENVIRONMENTAL IMPACT STATEMENT
for the
MACKENZIE GAS PROJECT

Volume 4: Part B

Socio-Economic Baseline

**Norman Wells
Community Report**

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1 INTRODUCTION

1.1 Background and Purpose

The purpose of this report on Norman Wells is to present the response to the Joint Review Panel (JRP) request for a community-specific organization of the environmental impact statement (EIS) socio-economic baseline data. For consistency and ease of use, the document is similar in structure to, and has been assembled largely on the basis of, the regional-level material contained in the existing Volume 4 of the EIS. This report (hereinafter referred to as Volume 4B) presents a community focus on a stand-alone basis with the intent of meeting the needs of, and facilitating review by, each community without substantial reference to other EIS documentation. A corresponding document, Volume 6C, has been prepared to present the effects assessment on a community-specific basis.

1.2 How to Use this Report

Typical socio-economic material is presented in this report as follows:

- Section 2 – People and the Economy
- Section 3 – Infrastructure and Community Services
- Section 4 – Individual, Family and Community Wellness
- Section 5 – Traditional Culture

This volume also contains the following discussions:

- Section 6 – Nontraditional Land and Resource Use
- Section 7 – Heritage Resources

In order to help the reader locate content which may be of particular interest and to allow linkages for a given topic between the baseline information in Volume 4B and the effects assessment in Volume 6C, as well as to the existing Volumes 4 and 6 of the EIS, the following concordance table provides cross-references for the topics in each volume (see Table 1-1). Note that although the titles of sections match those found in the existing EIS Volumes 4 and 6, the numbering has changed in Volume 6C to accommodate new sections.

Table 1-1: Environmental Impact Statement Topic Areas

Topic	EIS, Volume 4	Volume 4B	EIS, Volumes 6A and 6B	Volume 6C
Introduction	1.0	1.0	1.0	1.0
Geographic Area of Interest	–	–	–	2.0
Public Participation	–	–	–	3.0
Project Expenditures	–	–	2.0	–
National Economic Effects	–	–	3.2	–
Population Composition and Dynamics (Demography)	2.2.1, 2.3.1, 2.4.1, 2.5.1, 2.6.1, 2.7.1, 2.8.1, 2.9.1	2.2	3.3	4.2
Economic Activity	2.2.2, 2.3.2, 2.4.2, 2.5.2, 2.6.2, 2.7.2, 2.8.2, 2.9.2	2.3	3.1	4.1
Labour Force	2.2.3, 2.3.3, 2.4.3, 2.5.3, 2.6.3, 2.7.3, 2.8.3, 2.9.3	2.4		
Income Sources and Amounts	2.2.4, 2.3.4, 2.4.4, 2.5.4, 2.6.4, 2.7.4, 2.8.4, 2.9.4	2.5		
Cost of Living	2.2.5, 2.3.5, 2.4.5, 2.5.5, 2.6.5, 2.7.5, 2.8.5, 2.9.5	2.6		
Transportation Infrastructure	3.2.1, 3.3.1, 3.4.1, 3.5.1, 3.6.1, 3.7.1, 3.8.1, 3.9.1	3.3	4.1	5.2
Utilities, Energy and Communications	3.2.2, 3.3.2, 3.4.2, 3.5.2, 3.6.2, 3.7.2, 3.8.2, 3.9.2	3.4	4.2	5.3
Housing	3.2.3, 3.3.3, 3.4.3, 3.5.3, 3.6.3, 3.7.3, 3.8.3, 3.9.3	3.5	4.3	5.4
Recreation	3.2.3, 3.3.3, 3.4.3, 3.5.3, 3.6.3, 3.7.3, 3.8.3, 3.9.3		4.4	5.5
Governance	3.2.4, 3.3.4, 3.4.4, 3.5.4, 3.6.4, 3.7.4, 3.8.4, 3.9.4	3.2	4.5	5.1
Health Conditions	4.2.1, 4.3.1, 4.4.1, 4.5.1, 4.6.1, 4.7.1, 4.8.1, 4.9.1	4.2	5.3	6.2
Health Care Facilities and Services	4.2.2, 4.3.2, 4.4.2, 4.5.2, 4.6.2, 4.7.2, 4.8.2, 4.9.2	4.3	5.2	6.1

Table 1-1: Environmental Impact Statement Topic Areas (cont'd)

Topic	EIS, Volume 4	Volume 4B	EIS, Volumes 6A and 6B	Volume 6C
Family and Community Conditions (Community Well-Being)	4.2.3, 4.3.3, 4.4.3, 4.5.3, 4.6.3, 4.7.3, 4.8.3, 4.9.3	4.4		
Human Health Risks	–	–	5.4	6.3
Accidents and Malfunctions	–	–	–	6.4
Social and Protection Facilities and Services	4.2.4, 4.3.4, 4.4.4, 4.5.4, 4.6.4, 4.7.4, 4.8.4, 4.9.4	4.5	5.5	6.5
Education and Training	4.2.5, 4.3.5, 4.4.5, 4.5.5, 4.6.5, 4.7.5, 4.8.5, 4.9.5	4.6	5.6	6.6
Traditional Harvesting	5.2.1, 5.3.1, 5.4.1, 5.5.1, 5.6.1, 5.7.1, 5.8.1, 5.9.1	5.2	6.2	7.1
Trapping	5.2.2, 5.3.2, 5.4.2, 5.5.2, 5.6.2, 5.7.2, 5.8.2, 5.9.2	5.3		
Aboriginal Language	5.2.3, 5.3.3, 5.4.3, 5.5.3, 5.6.3, 5.7.3, 5.8.3, 5.9.3	5.4	6.3	7.2
Nontraditional Land and Resource Use	6.0	6.0	7.0	8.0
Heritage Resources	7.0	7.0	8.0	9.0
Cumulative Effects	–	–	9.0	–
Monitoring and Follow-Up	–	–	10.0	10.0
References, Glossary	end	end	end	end
NOTE: – = not included, or not discussed				

1.3 Study Area

The socio-economic study area includes all of the communities in the Northwest Territories in which the direct or indirect effects of gas production and pipeline construction may affect permanent residents.

The socio-economic study area also includes northwestern Alberta, where, in an ancillary project, NOVA Gas Transmission Ltd. (NGTL) is proposing to construct the Northwest Mainline (Dickins Lake and Vardie River Sections) and the NGTL interconnect facility.

Figure 1-1 illustrates the study area communities.

The nontraditional land and resource use, and heritage resources portions of the socio-economic impact assessment (SEIA) identify specific local study areas (LSAs) and regional study areas (RSAs) in relation to project component locations and activities.

1.4 Summary of the Socio-Economic Baseline for Norman Wells

Norman Wells, the largest community and the regional centre for the SSA, is the barge and air transport hub for the other four surrounding SSA communities. With an estimated population of almost 800 persons, Norman Wells is the only community in the SSA with more non-Aboriginal than Métis or Dene people. Although Norman Wells is located in the Tulita District, which was set up as part of the Sahtu Dene and Métis Land Claim agreement, a Mayor and Council govern the community.

With its history as both an oil production and regional centre, Norman Wells had the highest SSA labour force participation and employment rates and the lowest unemployment rate in 2001. However, because of its isolated location, the cost of living in Norman Wells is about 50% higher than in Edmonton.

Norman Wells is generally comparable, in terms of utilities, quality of housing and recreation facilities, with most territorial communities of similar size. However, recently housing has been reported to be in short supply. The regional social and health services administration centres are located in Norman Wells. When compared to the regional wellness rates, Norman Wells has a higher rate for infectious and parasitic diseases, but lower rates for sexually transmitted infections, respiratory diseases, and cases of accidents, injuries and poisonings. Although the only liquor store and licensed premises in the region are located in Norman Wells, indicators of alcohol abuse and of spousal violence are relatively low when compared with other communities in the region.

High school and post-secondary training attainment levels are well above those for the region, in part because of the many professional opportunities offered by the territorial government and the private sector. Norman Wells has a school that offers kindergarten to Grade 12, but is operating at only two thirds of its maximum capacity.

Both because of the numbers of non-Aboriginal people, and the extent of commercial and industrial employment among Norman Wells residents, participation in hunting and fishing, and consumption of predominantly country foods is substantially lower in Norman Wells than in the Aboriginal communities in the SSA. As residents in Norman Wells generally communicate in English, fluency in an Aboriginal language is also at a lower level than in the other SSA communities.

Traditionally, the land users in the area were Mountain Dene, Slavey and, to a lesser extent, Métis. Although there are no very old sites within the Norman Wells area that have been scientifically dated, artifacts similar to those from prehistoric occupations, dated from 9,000 to 6,000 before present (BP), have been recorded in the neighbouring K'ahsho Got'ine District.

1.5 Approach

This SEIA is designed to focus on how the project may affect the wellness of a community. Wellness is often the most highly valued aspect of community life, and depends on the well-being of individuals, families and the community as a whole. Community wellness may be significantly enhanced by project benefits, and be vulnerable to adverse effects.

The effects assessment is focused on addressing community concerns, with the aim of designing and implementing the project using procedures that optimize beneficial effects and reduce effects the communities believe to be undesirable.

A community-driven approach requires:

- knowledge about the characteristics of the communities that may be affected
- understanding of the interests and concerns of these communities

Knowledge of community characteristics has been obtained by collecting information from administrative data and residents who are informed about a particular circumstance. Information on interests and concerns was gained in the meetings and community consultations held with residents of Norman Wells and the other communities in the SSA.

1.5.1 Why the Baseline is Important

The baseline conditions provide the context for assessing the potential effects of the project. The data presented in this report allows an assessment of the capacity of the people, institutions, corporations and governments to respond to the project. Communities experience socio-economic effects in accordance with two primary interactions:

- Physical, social or economic interaction between project component activities or personnel, and community residents and their economic, social or cultural resources and pursuits.
- Supplying workers or business services to the project, which generates income for firms and individuals. The spending or investment of this income will have both positive and negative effects.

1.6 Information Needed to Support the Effects Assessment

1.6.1 Background

The initial approach to collecting baseline information resulted in more than 440 tables of social and economic data with possible relevance to project effects.

To create a comprehensive yet readable document, the process of synthesizing and analyzing this tabular data to describe the baseline conditions succinctly, and eventually predict and monitor project effects included:

- presenting selected tables, some of which contain several indicators which are considered necessary to understand a particularly sensitive issue, such as:
 - alcohol abuse, which is captured by data on hospitalizations for alcohol-related illnesses, alcohol-offence data from the police and self reports of frequency of heavy drinking
 - traditional resource harvesting, which requires several indicators to understand its possibly changing significance
- providing some data-based conclusions without supporting tables

In this document, tabular information for Norman Wells is bolded to make it stand out from the other, usually regional-based, presentations.

1.6.2 Specific Sources

1.6.2.1 People and the Economy

Information in Section 2, People and the Economy includes:

- labour force activity:
 - participation
 - employment and unemployment rates
 - jobs currently held
- labour force education and training achievements

Also relevant is information on the sizes of various sectors of the economy, as they are possible sources for the goods and services that might be needed.

1.6.2.2 Infrastructure and Community Services

Section 3, Infrastructure and Community Services contains detailed, community-specific information on infrastructure facilities, including descriptions of:

- water supply
- disposal of liquid and solid waste
- power supply and fuels used
- air, land, rail and water transport arrangements and frequencies
- communication facilities and services
- housing conditions and recreation facilities

This section also includes a discussion of governance.

1.6.2.3 Individual, Family and Community Wellness

Section 4, Individual, Family and Community Wellness describes individual, family and community wellness. Much of the information relates to wellness aspects and influence, including:

- physical, mental and emotional health
- family relationships
- community behaviours

Most of the data on wellness is negative, e.g., rates of illness, family violence and crimes, rather than positive, i.e., healthfulness, family solidarity or good citizenship, because official data is not often collected or reported publicly on positive indicators.

This section describes the following influences that affect wellness:

- individual, e.g., substance abuse, and the problems it causes
- institutional, e.g., levels of problem conditions reported by protective and helping agencies, health and social service professionals, and police

Section 4 also provides information on agencies and programs, and relevant statistics related to those influences.

1.6.2.4 Traditional Culture

Section 5, Traditional Culture provides information on traditional culture, which includes the knowledge, skills, disciplines, beliefs and values of the Aboriginal people. Traditional culture is important to them because it is:

- their principal source of pride, worth, distinctiveness and identity

- the basis for harvesting the benefits and meeting the challenges of survival on the land they respect and love
- their primary defence against the prejudice and discrimination sometimes experienced from Euro-Canadians

Indicator data for beliefs and values is currently unavailable for Norman Wells. Some data is now being collected through ongoing traditional knowledge studies.

Three cultural indicators, based on people's activities, are currently available for the SSA and Norman Wells:

- involvement in traditional harvesting
- the amount of country food consumed
- the ability to speak a traditional language

Traditional harvesting has an important physical and psychological influence on wellness in Aboriginal communities. Wild fish, game, plants and berries are nutritionally superior to processed food and are sources of natural medicine (Usher 1976). Furthermore, country foods are shared within a community, thereby enhancing community solidarity. Preserving traditional language has an important psychological influence on wellness by helping to establish feelings of identity and purpose.

1.6.2.5 Nontraditional Land and Resource Use

Section 6, Nontraditional Land and Resource Use describes existing land and resource uses for nontraditional users, including residents and nonresidents within the SSA. The focus is on the land or resource uses that the project could affect, including:

- granular resources
- timber resources
- mineral resources
- oil and gas activities
- nontraditional resource harvesting, including hunting and fishing
- tourism and recreation
- other commercial activities
- environmentally protected areas
- visual and aesthetic resources

In addition to discussions of these valued components, a description of land ownership in the SSA is also provided.

1.6.2.6 Heritage Resources

The objective of Section 7, Heritage Resources is to provide a synopsis of the prehistoric and historic culture of the SSA, to:

- determine the relative heritage resource potential of project component areas
- interpret and evaluate the heritage resources encountered during the 2002 and 2003 field work program
- formulate recommendations to manage project effects on heritage resources

1.6.3 Information Collection and Verification

Collecting data for this volume involved:

- collecting quantitative and qualitative data
- verifying the data during community consultations

Quantitative data was obtained from:

- 1996 and 2001 censuses of Canada
- special surveys conducted by the Government of Canada and Government of the Northwest Territories (GNWT)
- GNWT Health and Social Services (HSS)
- Royal Canadian Mounted Police (RCMP) administrative records

Relevant information was also obtained from literature reviews. In addition, government agencies were helpful in providing several special tabulations.

Government agencies and nongovernmental organizations (NGOs) provided details on staffing, resources, policies, training and other programs.

Qualitative data was obtained during interviews with community and territorial officials and other knowledgeable people during visits to all the study area communities that may be affected by the project. Many of these visits were to:

- collect baseline information
- review it with local knowledgeable people
- seek corrections, qualifications and valuable additional information

In the broader context of public participation in the EIS, two rounds of community meetings and regional workshops were held to:

- share project information
- gather community feedback on the project description
- identify and verify key issues and concerns
- identify potential effects and suitable mitigation measures

The meetings provided valuable qualitative information, based on local experience and insights.

To protect the identity of individuals, information obtained during interviews has usually been attributed to an organization, rather than citing an individual's name. In other cases, names and dates have been cited in the text and the information about the personal communication provided in the list of references.

For further information on the public participation process, see Volume 1, Section 4, Public Participation of the EIS.

1.7 Data Limitations

To the extent possible, information contained in the EIS has been supplemented by data and information available at the community level. For Volume 4B, in order that regional and community presentations are internally consistent and comparable, only limited new data is presented. However, the report may include data previously collected, but not presented in Volume 4 of the EIS. Many of the communities in the Northwest Territories have relatively small populations, which means that data collected by Statistics Canada and other agencies, at the community level, is either suppressed or has limitations for reasons of maintaining confidentiality. This means that in several instances information and analysis is constrained to a regional level discussion.

1.7.1 Context for Understanding the Data

In creating descriptions of baseline conditions, the analysts assessed and synthesized the qualitative and quantitative information collected. These descriptions are based on verified published data and reflect documented opinions of regional and local public service delivery personnel. However, the evaluation of socio-economic conditions is subjective. Both groups and individuals, whether trained social scientists or not, have valid but varied opinions on the importance of individual issues and what these might mean with regard to community wellness.

The socio-economic baseline conditions set the stage for predicting the specific aspects of a community that may change because of project influences, either those that may benefit from project effects, e.g., employment and income, or those that may be adversely affected, e.g., health and wellness conditions.

1.7.2 Data and Indicators

Accurate descriptions of existing baseline conditions, and the eventual monitoring of possible project effects, depend on quantitative and qualitative indicators, which are vulnerable to several types of distortion:

- quantitative, statistical data include administrative statistics, e.g., health care treatments, police, child welfare and suicide, and data from the census and special surveys. Administrative data may vary because of:
 - changes in policies, e.g., health care, police, child welfare policies
 - how individual practitioners interpret or implement policy
 - the care with which data is recorded
- census and other survey data are flawed by underenumeration. Particular difficulties occur in census taking in the Northwest Territories because many people leave communities to hunt, fish or visit. Attempts to reach them by telephone and repeated visits to small, outlying communities can fail. The GNWT Bureau of Statistics conducts a special survey in every census year to estimate census under-enumeration.
- qualitative data refers essentially to generalizations about past and current conditions, and expected trends obtained from knowledgeable community residents. These include service delivery personnel, i.e., health, police, education and social services, personnel, and residents of local communities. Each group may not have previously shared their information with the other groups.

1.7.3 Limitations of Low-Frequency Data

Statistics Canada randomly rounds frequency data to zero or five. When such rounded and imprecise frequencies are converted to percentages, the totals of these percentages sometimes do not sum to 100%. When the rounded low-frequency data for very small populations is converted to percentages, the total is commonly higher or lower than 100%, depending on the distortions caused by the rounding.

For most of the small communities, creating community-specific socio-economic indicators based on statistical tabulations might not produce reliable results. In these situations, the qualitative data collected in interviews with knowledgeable individuals is often critical in clarifying the significance of available data and making valid interpretations. This situation does not apply to Norman Wells where the population is large enough to provide a reasonable statistical base.

Any problems associated with interpreting data for small community populations can be avoided by aggregating the data for such communities when they share

similar characteristics. For example, Colville Lake has a very small population and is policed from the community of Fort Good Hope. As a result, some protection service information is not available. In communities with less than 100 people some GNWT administrative and Statistics Canada data is suppressed for confidentiality reasons as publication of low frequencies could result in identification of those individuals to whom the data refers.

Many of the SSA Aboriginal communities share certain similar characteristics and are influenced by their dependence on Norman Wells for certain resources.

2 PEOPLE AND THE ECONOMY

2.1 Introduction

This section describes the people who live in Norman Wells, together with similar information for the other SSA communities to provide context. The information presented describes the populations of the SSA and their economies, including:

- population composition and dynamics
- economic activity
- labour force
- income sources and amounts
- cost of living

Generally, in comparison with the rest of Canada, the population of Norman Wells is relatively young, although both the birth and the death rates have been declining for the past 20 years.

Migration rates are also high in the Northwest Territories, primarily because about half the territorial population is non-Aboriginal, and in Norman Wells about 70% of the population is non-Aboriginal. Most of these people spend some years in the territories, and then return home to the southern provinces.

Compared to other areas of Canada, the territorial population is small and geographically scattered. The economy has both traditional and monetary components, with the monetary component increasingly dependent on extraction mineral and hydrocarbon-related resources. See Section 5, Traditional Culture for information on participation in the dual economy.

2.2 Population Composition and Dynamics

Table 2-1 shows that the 2003 estimated population of Norman Wells was 797. The population figures for 1991, 1996, 2001 and 2003 show sizable fluctuations in population size, which parallel the fluctuations of the SSA population.

Table 2-1: Census Counts and Population Estimates for the Sahtu Communities

Location	Census Population Numbers				Growth 1991–2001 (%)	2003 Estimated Population (No.)
	1986	1991	1996	2001		
NWT	33,830	36,405	35,370	37,360	3	41,872
SSA total	2,105	2,224	2,598	2,330	5	2,504
Norman Wells	627	627	798	666	6	797
Fort Good Hope	562	602	644	549	-9	540
Déline	532	551	616	536	-2	551
Tulita	332	375	450	473	26	489
Colville Lake	52	69	90	102	48	127

NOTE:

Estimates are calculated by the GNWT Bureau of Statistics by allocating the demographic components of growth, down to a community level, using information from a variety of sources

SOURCE: GNWT Bureau of Statistics (2003d, 2004)

The census data for 2001 in Table 2-2 shows that 71% of the population of Norman Wells was non-Aboriginal, whereas 90% or more of the populations of the other SSA communities were Aboriginal, primarily Dene.

Table 2-2: Ethnicity in the Sahtu Communities (2001 Census Count)

Location	Total Population (No.)	Non- Aboriginal (%)	Aboriginal (%)	Aboriginal Components (Total = 100%)				
				Inuit (%)	Dene (%)	Métis (%)	Multiple (%)	Other Aboriginal (%)
NWT	37,360	50	50	21	57	19	1	2
Norman Wells	665	71	29	18	42	40	–	–
Fort Good Hope	550	7	92	0	91	9	2	–
Déline	540	8	92	0	96	3	–	2
Tulita	475	7	93	2	81	16	–	–
Colville Lake	100	10	90	0	100	–	–	–

NOTES:

– = values held confidential because of small size and random rounding

Percentages computed from randomly rounded data (see Section 1.7.3, Limitations of Low-Frequency Data)

SOURCE: GNWT Bureau of Statistics (2003e)

Statistics on five-year mobility status for 2001 show that 48% of Norman Wells residents were intraprovincial, interprovincial or international migrants, whereas only 15% of the Sahtu Aboriginal residents were migrants. About 71% of Norman Wells' residents had changed residence during the preceding five years (GNWT Bureau of Statistics 2003a).

2.3 Economic Activity

Table 2-3 shows the standard occupational groupings for the SSA workforce for 1991 and 2001. While Statistics Canada did make some changes in the occupational categories between 1991 and 2001, these changes made little, if any, difference given the level of aggregation in the table.

In 2001 in Norman Wells, trades and transport, management and business, and sales and service occupations were well represented. Each of these occupational groups showed growth between 1991 and 2001 while clerical occupations experienced a sharp decline.

Between 1991 and 2001, there were changes in the occupational distributions of men in Norman Wells. Their percentages increased in the natural and applied sciences, and government service occupations. Among women, there were increases in management and business, natural and applied sciences, and government service, accompanied by declines in clerical, and trades and transport occupations.

Table 2-3: Labour Force by Standard Occupational Categories in the Sahtu Communities

Occupation	Gender	Northwest Territories		SSA Total		SSA Aboriginal Communities		Norman Wells		Fort Good Hope		Déline		Tulita		Colville Lake	
		1991	2001	1991	2001	1991	2001	1991	2001	1991	2001	1991	2001	1991	2001	1991	2001
Labour force, 15+ years	Total (No.)	20,070	20,785	975	1,125	585	695	390	430	215	260	190	210	155	180	25	45
	Male (No.)	11,225	11,115	560	635	335	395	225	240	125	145	105	120	85	105	20	25
	Female (No.)	8,850	9,670	410	480	245	290	165	190	90	110	80	90	65	75	10	15
All occupations	Total (No.)	19,675	20,425	970	1,110	575	685	395	425	215	260	180	200	155	180	25	45
	Male (No.)	11,030	10,935	565	615	335	385	230	230	125	145	105	115	90	100	15	25
	Female (No.)	8,645	9,490	405	490	240	295	165	195	90	110	75	85	65	80	10	20
Management, business, finance and administration occupations	Total (%)	18	21	13	19	9	17	20	22	7	17	14	15	6	17	0	22
	Male (%)	19	19	15	18	9	14	24	24	12	17	14	17	0	10	0	0
	Female (%)	16	24	11	30	8	29	15	31	0	27	13	18	15	25	0	100
Clerical occupations	Total (%)	17	9	12	6	10	5	15	7	9	4	11	8	13	6	0	0
	Male (%)	6	3	2	2	0	0	4	4	0	0	0	0	0	0	0	0
	Female (%)	32	16	27	9	25	7	30	13	22	0	27	12	31	13	0	0
Natural and applied sciences, and related occupations	Total (%)	4	7	3	6	2	3	5	12	0	4	6	0	0	6	0	0
	Male (%)	6	11	5	9	3	3	9	20	0	0	10	0	0	10	0	0
	Female (%)	1	3	0	4	0	3	0	5	0	9	0	0	0	0	0	0
Health occupations	Total (%)	3	4	2	3	2	3	3	2	0	4	0	0	6	6	0	0
	Male (%)	1	1	0	2	0	3	0	0	0	0	0	0	0	0	0	40
	Female (%)	6	7	5	2	4	0	6	5	0	0	0	0	15	0	0	0
Social services, education, government service and religious occupations	Total (%)	9	12	10	13	15	15	3	8	14	15	19	15	6	14	40	22
	Male (%)	6	7	2	8	3	9	0	7	8	10	0	9	0	10	0	0
	Female (%)	14	17	21	20	31	27	6	10	22	27	47	29	15	19	100	50

Table 2-3: Labour Force by Standard Occupational Categories in the Sahtu Communities (cont'd)

Occupation	Gender	Northwest Territories		SSA Total		SSA Aboriginal Communities		Norman Wells		Fort Good Hope		Déline		Tulita		Colville Lake	
		1991	2001	1991	2001	1991	2001	1991	2001	1991	2001	1991	2001	1991	2001	1991	2001
Art, culture, recreation and sport occupations	Total (%)	2	2	2	3	3	3	0	2	5	4	6	0	0	6	0	0
	Male (%)	2	2	2	3	3	5	0	0	0	7	10	9	0	0	0	0
	Female (%)	2	3	2	2	4	3	0	0	11	0	0	0	0	13	0	0
Sales and service occupations	Total (%)	18	22	18	21	17	22	18	20	23	23	14	23	16	19	0	22
	Male (%)	15	18	9	11	9	13	9	9	8	17	10	13	11	10	0	0
	Female (%)	23	27	30	33	29	32	30	33	44	36	20	35	23	31	0	0
Trades, transport and equipment operators, and related occupations	Total (%)	16	17	25	23	24	25	25	20	19	21	25	28	35	28	0	22
	Male (%)	27	30	37	41	39	44	35	35	32	38	43	48	50	50	0	40
	Female (%)	2	2	7	2	4	0	12	5	0	0	0	0	15	0	0	0
Occupations unique to the primary industry	Total (%)	5	4	5	7	5	9	5	4	9	10	0	5	6	8	0	22
	Male (%)	8	8	9	11	9	14	9	7	16	17	0	9	11	10	0	40
	Female (%)	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Occupations unique to the processing, manufacturing and utilities industries	Total (%)	4	1	2	3	2	3	3	4	5	0	0	10	0	0	0	0
	Male (%)	7	2	4	2	3	0	4	4	8	0	0	0	0	0	0	0
	Female (%)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Occupations not classified elsewhere	Total (%)	3	0	4	0	3	0	4	0	5	0	0	0	6	0	0	0
	Male (%)	4	0	6	0	6	0	7	0	8	0	0	0	11	0	0	0
	Female (%)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTES:

Number and percentage of population, aged 15 years and older

Because census data is independently randomly rounded (all numbers end in a 5 or 0), totals may not add to 100, especially in small communities (see Section 1.7.3, Limitations of Low-Frequency Data)

SOURCE: Statistics Canada (1991, 2001), prepared by GNWT Bureau of Statistics

2.4 Labour Force

Table 2-4 presents the relative participation, employment and unemployment rates of males and females in Norman Wells and the SSA Aboriginal communities, together with the changes in these rates between 1991 and 2001.

Table 2-4: Participation, Employment and Unemployment by Gender in the Sahtu Communities

Location	Gender	1991				2001				Difference (2001 minus 1991)		
		Pop. (No.)	Part. (%)	Empl. (%)	Unempl. (%)	Pop. (No.)	Part. (%)	Empl. (%)	Unempl. (%)	Part. (%)	Empl. (%)	Unempl. (%)
NWT	Male	13,540	83	73	12	13,810	80	72	10	-3	-1	-2
	Female	12,145	73	65	10	13,130	74	67	8	1	2	-2
NWT Aboriginal communities ¹	Male	2,425	73	54	27	2,470	66	52	23	-7	-2	-4
	Female	2,010	59	46	22	2,225	58	48	17	-1	2	-5
SSA total	Male	625	72	60	19	830	76	66	14	4	6	-5
	Female	535	59	48	16	705	66	58	11	7	10	-5
SSA Aboriginal communities total	Male	385	62	46	28	575	69	57	18	7	11	-10
	Female	325	50	38	20	520	58	48	15	8	10	-5
Norman Wells	Male	240	94	92	4	255	92	84	8	-2	-8	4
	Female	210	79	71	9	230	85	80	5	6	9	-4
Fort Good Hope	Male	195	64	51	24	205	71	63	14	7	12	-10
	Female	180	50	33	28	180	64	53	13	14	20	-15
Déline	Male	195	54	41	24	180	67	44	29	13	3	5
	Female	170	47	41	12	175	51	43	11	4	2	-1
Tulita	Male	125	68	48	35	155	64	58	15	-4	10	-20
	Female	120	54	46	23	135	56	48	13	2	2	-10
Colville Lake	Male	25	80	40	50	35	86	86	0	45	46	-50
	Female	20	50	0	0	30	67	50	50	17	50	50

NOTES:

1 All study area communities in the Northwest Territories except Inuvik, Norman Wells, Fort Simpson, Yellowknife, Hay River and Enterprise

Pop. = population aged 15 years and older

Part. = participation rate, which is the percentage of population, aged 15 years and older in the labour force

Empl. = employment rate, which is the percentage of population, aged 15 years and older employed during the week before the survey

Unempl. = unemployment rate, which is the percentage of the labour force that was unemployed during the week before the survey

Statistics for very small communities are uncertain and should be considered with caution

Because census data is independently randomly rounded (all numbers end in a 5 or 0), totals may not add to 100, especially in small communities (see Section 1.7.3, Limitations of Low-Frequency Data)

SOURCE: Statistics Canada (1991, 2001)

Since the predominantly non-Aboriginal people in Norman Wells come to that community because they have a job there, this table shows that labour force participation rates are substantially higher there than in the SSA Aboriginal communities. Therefore, the participation and employment rates of men in Norman Wells were 23% and 27% higher than these rates for men in the Aboriginal communities in 2001, and the unemployment rate was 10% lower in Norman Wells. Among women, this differential was somewhat greater, with participation rates 27% higher, employment rates 32% higher and unemployment rates 10% lower in Norman Wells than in the SSA Aboriginal communities. However, between 1991 and 2001, the participation and employment rates of SSA Aboriginal community men increased and their unemployment rate fell, while the opposite was true of Norman Wells' men. The women in both Norman Wells and the Aboriginal communities experienced increases in participation and employment rates, and declines in unemployment rates between 1991 and 2001.

Table 2-5 shows data for 1999, indicating that the potential labour supply in Norman Wells was only 10% of the working-age population. In the SSA Aboriginal communities, however, the potential labour supply was one third (32%) of the working-age population. The profile of those in this potential labour supply indicates that 71% said they need training. The potential labour supply is composed of people of working age who are unemployed and those not participating in the labour force who do want a job, less those who, because of disability, age, illiteracy, or lack of education, skills or training could be considered unemployable, according to the GNWT Bureau of Statistics definition.

Table 2-5: Profile of the Working-Age Population in the Sahtu Communities (1999)

Profile Category	NWT Aboriginal Communities ¹	SSA Total	Norman Wells	SSA Aboriginal Communities Total	Fort Good Hope	Déline	Tulita	Colville Lake
Population 15+ (No.)	5,821	1,917	651	1,266	471	422	307	66
Potential labour supply (No.)	1,797	476	67	409	151	161	78	17
Potential labour supply ² (%)	31	25	10	32	32	38	25	26
Need training ³ (%)	53	68	46	71	72	76	74	–
Would do rotational work ³ (%)	73	74	46	78	84	81	80	–
Male ³ (%)	60	56	43	58	53	63	68	–
Aboriginal ³ (%)	94	88	61	93	97	94	100	–
Less than high school education ³ (%)	68	67	54	68	72	74	65	–

NOTES:

– = numbers too small or cannot be released

1 All study area communities in the Northwest Territories, except Inuvik, Norman Wells, Fort Simpson, Yellowknife, Hay River and Enterprise

2 Percentage of population, aged 15 years and older

3 Percentage of potential labour force

SOURCE: Calculated from GNWT Bureau of Statistics (1999)

2.5 Income Sources and Amounts

There were 15 tax-paying companies in the SSA in 2000. Total corporate income tax paid was about \$48,000 (see Table 2-6).

Table 2-6: Corporate Tax Status in the Northwest Territories

Region	Year	Corporate Income Tax Paid (\$)	Tax-Paying Companies	Non Tax- Paying Companies	Total Companies
Northwest Territories	1995	32,650,756	895	1,158	2,053
	1996	31,369,701	887	1,193	2,080
	1997	27,024,079	932	1,356	2,288
	1998	23,965,218	953	1,335	2,288
	1999	89,778,543	957	1,342	2,299
	2000	382,558,653	920	1,126	2,046
	2001	80,931,551	–	–	–
Yellowknife region ¹	1995	31,996,748	721	817	1,538
	1996	30,715,198	710	830	1,540
	1997	26,312,437	757	974	1,731
	1998	23,128,104	774	955	1,729
	1999	88,148,015	811	1,021	1,832
	2000	380,858,591	771	817	1,588
BDR ²	1995	141,614	43	116	159
	1996	286,548	56	115	171
	1997	153,810	55	123	178
	1998	314,806	60	116	176
	1999	691,900	54	96	150
	2000	1,284,076	56	98	154
SSA	1995	64,634	21	44	65
	1996	51,939	18	52	70
	1997	82,048	19	57	76
	1998	61,303	15	60	75
	1999	32,035	9	37	46
	2000	47,898	15	29	44
DCR	1995	40,256	18	38	56
	1996	40,786	20	38	58
	1997	40,839	17	39	56
	1998	41,665	12	39	63
	1999	238,010	13	38	51
	2000	41,665	12	39	51

NOTES:

BDR = Beaufort Delta Region

DCR = Deh Cho Region

– = data not available

1 Yellowknife region includes Yellowknife, and the N'dilo and Dettah suburbs

2 Only data aggregated for Inuvialuit and Gwich'in communities is available

Income tax amounts are not adjusted for inflation

SOURCE: GNWT Finance (2002)

The data in Table 2-7 shows strong contrasts in 2001 between Norman Wells and the SSA Aboriginal communities, with average employment incomes per tax filer more than twice as high in Norman Wells as in the Aboriginal communities, and the rate per 1,000 of income support beneficiaries was six times as high in the Aboriginal communities as in Norman Wells in 2003. There were sizeable increases in all SSA community incomes between 1996 and 2001. The rates of income support beneficiaries fell more sharply in the total SSA communities than in Norman Wells during these years. These declines reflect changes in government policy that introduced more stringent income support criteria (GNWT Education, Culture and Employment (ECE) regional superintendent 2002, personal communication).

Table 2-7: Employment Income and Income Support Beneficiaries in the Sahtu Communities

Location	Average Employment Income			No. of Income Support Beneficiaries ¹			
	1996 (\$)	1999 (\$)	2001 (\$)	1996	1999	2001	2003
Northwest Territories	33,748	35,450	38,497	102	86	59	51
NWT Aboriginal communities ²	22,228	23,551	26,135	–	–	–	90
SSA total	30,990	30,980	33,885	135	105	53	46
Norman Wells	44,121	47,428	51,338	17	18	11	10
SSA Aboriginal communities total	23,204	21,386	23,817	–	–	–	62
Fort Good Hope	19,419	20,469	24,197	177	136	61	61
Déline	20,756	21,388	24,819	236	135	103	96
Tulita	19,659	22,716	22,086	119	159	69	29
Colville Lake	–	–	–	219	114	57	–

NOTES:
 – = data not available, or held confidential because of low frequencies
 1 Average monthly number of recipients and dependents per 1,000 population, calculated based on population estimates for 1996 to 2002, prepared by GNWT Bureau of Statistics
 2 All study area communities in the Northwest Territories, except Inuvik, Norman Wells, Fort Simpson, Yellowknife, Hay River and Enterprise
 Dollar amounts not adjusted for inflation

SOURCE: GNWT Bureau of Statistics (2002a, 2003g)

2.6 Cost of Living

The data reported for cost of living comes from:

- a 2000 cost-of-living index that uses Edmonton as a base
- a 2001 food price index that uses Yellowknife as a base

Norman Wells had the lowest cost of living indices in the Sahtu in 2000, about 50 to 55% higher than the baseline Edmonton prices. The Sahtu communities generally had the highest cost of living index in the Mackenzie Valley (see Table 2-8). Food prices in 2001 were 60% higher in Norman Wells than in Yellowknife, and this differential was higher still in the other SSA communities.

Table 2-8: Cost of Living Differentials for the Sahtu Communities

Region	Community	Cost of Living Differential¹ (2000)	Estimated Food Price Index² (2001)
SSA	Norman Wells	150–155	160
	Fort Good Hope	160–165	166
	Déline	160–165	173
	Tulita	155–160	172
	Colville Lake	210–215 ^a	213 ^b
<p>NOTES: 1 Cost of living differentials are used to calculate the Government of Canada federal isolated post allowances and use Edmonton as a base, e.g., Edmonton = 100 2 Food price indexes are calculated using Yellowknife as a base, e.g., Yellowknife = 100 a 1997 data b 2000 data</p>			
SOURCE: GNWT Bureau of Statistics (2003g)			

3 INFRASTRUCTURE AND COMMUNITY SERVICES

3.1 Introduction

This section describes the physical infrastructure and services that affect the quality of life of people, families and the communities in which they live. Included are:

- transportation infrastructure
- utilities, i.e., water and waste disposal
- energy and communications
- housing
- local recreation facilities

A discussion on governance is also included in this section.

3.2 Transportation Infrastructure

Table 3-1 shows the transportation infrastructure in the SSA. Norman Wells is the transportation hub for the SSA, with daily scheduled air service to Inuvik and population centres to the south. From this centre, scheduled air services fan out to all the smaller Sahtu communities, including Colville Lake.

Norman Wells has river-based marine resupply, but the only highway connections to the north or south are via the winter road. Thus, truck-based resupply is possible only during the winter. All of the small Sahtu communities have winter road connections with Norman Wells and thus with southern centres as well, permitting winter resupply (GNWT Transportation 1995, 2000, 2001).

3.3 Utilities, Energy and Communications

Table 3-2 shows that in Norman Wells, water is distributed by utilidor and by truck, following filtration and treatment, and liquid waste is discharged by utilidor or pump-out to a sewage lagoon. Solid waste is transported to a modified landfill site, usable for six more years.

Two diesel-fuelled generators provide power. The central areas of Norman Wells use locally supplied natural gas as the heating fuel. The rest of this community uses P-50 as the heating fuel.

Table 3-1: Transportation Infrastructure in the Sahtu Communities (2001)

Transportation Mode	Norman Wells	Fort Good Hope	Déline	Tulita	Colville Lake
Road					
Road access	Winter road	Winter road	Winter road	Winter road	Winter road
Highway	Winter road	Winter road	Déline Winter Road (off Highway No. 1)	Winter road	Colville Lake Winter Road (off Highway No. 1)
Average opening and closing dates (1997–2000), winter roads	January 11 to March 16	January 6 to March 16	January 28 to March 16	Late January to March 16	–
Rail					
Rail access	None	None	None	None	None
Water					
Marine resupply deliveries per week	8	4	0	4	0
Ownership of facility	2 by GNWT 1 by Imperial Oil	T	N/A	T	N/A
Resupply facility classification	1 private (Imperial Oil facility) 2 Class A	B	N/A	C	N/A
Small boating facilities	Community use facility, beach landing	Beach landing only	Wharf, beach landing, private docks	Public landing, beach landings	Beach landing, community and private docks
Air					
Runway length	1,829 m	914 m	762 m	914 m	823 m
Runway surface	Asphalt	Gravel	Gravel	Gravel	Gravel and sand
Owner	GNWT	GNWT	GNWT	GNWT	GNWT
Critical aircraft (largest aircraft able to use runway)	B737	Twin Otter	Twin Otter	Twin Otter	Twin Otter

Table 3-1: Transportation Infrastructure in the Sahtu Communities (2001) (cont'd)

Transportation Mode	Norman Wells	Fort Good Hope	Déline	Tulita	Colville Lake
Weather and communication aids	FSS	CARS	CARS	CARS	AWOS
Navigational aids	DME, NDB	DME, NDB	NDB	NDB	None
<p>NOTES:</p> <p>– = data not available N/A = not applicable</p> <p>Water Transportation: T = facility owned by federal government P = privately owned</p> <p>Water Facility Resupply Classification: A = >10,000 t cargo and fuel in and out per year, protected access at all water levels, secure moorage for loading and unloading, access for heavy equipment, secure marshalling and storage site B = 2,000–10,000 t cargo and fuel in and out per year, secure moorage at all water levels, access 4 hours/day, access for heavy equipment, secure marshalling and storage site C = <2,000 t cargo and fuel in and out per year, access for loading and unloading 4 hours/day, access available for heavy equipment, secure marshalling and storage site</p> <p>Air Transportation: AWOS = automated weather observation station CARS = community airport radio station DME = distance measuring equipment FSS = flight service station NDB = nondirectional beacon</p>					
<p>SOURCE: GNWT Transportation (1995, 2000, 2001)</p>					

Table 3-2: Utilities Infrastructure in the Sahtu Communities (2001)

Infrastructure	Norman Wells	Fort Good Hope	Déline	Tulita	Colville Lake
Water					
Delivery system	50% piped, 50% trucked	Trucked	Trucked	Trucked	Buckets and blocks of ice
Water source	Mackenzie River	Pumped from the Mackenzie River into a reservoir	Great Bear Lake	Bear River The water intake system in 2002 is now problematic	Colville Lake
Water treatment	Class 2 treatment, plant filtration and chlorination	Wallace and Tierman Model 745 hypochlorinator	Two Wallace and Tierman Model 745 hypochlorinators	Chlorinated while delivery truck is being filled Some boiling of water in the spring	Water not treated
Water quality	Acceptable chemical quality for domestic use	Good chemical quality	Excellent quality	Satisfactory, except at times in the spring	Good chemical quality
Liquid Waste					
Type of system	50% piped, 50% holding tank and pumpout	Pumpout	Bagged and pumpout	Pumpout	Bagged
Sewage disposal	Sewage is 50% trucked, 50% pumped via a force main to a sewage lagoon Sewage is retained in the sewage lagoon and discharged every two years into a nearby lake Discharge flows eastward in a natural stream for 4.5 km	240 m x 300 m waste management area located on a flat gravel (12 m thick) esker	Sewage lagoon located 1.5 km northwest of community Original lagoon constructed in 1977, secondary cell added in 1987	Sewage is discharged into 5 ha lake-lagoon, 3 km northeast of community Lake has outlet to Mackenzie River upstream from community	–

Table 3-2: Utilities Infrastructure in the Sattu Communities (2001) (cont'd)

Infrastructure	Norman Wells	Fort Good Hope	Déline	Tulita	Colville Lake
Solid Waste					
Type of disposal	Modified landfill site Six-year life on current facility Expansion plan to 2020	Cell disposal method – cells are excavated in soil, and waste is compacted and covered until cell is full	In 1995, a fenced, 40 m by 40 m site was constructed, along with a waste wood area, bulky waste site and honeybag pit	Modified landfill site	No landfill site
Electrical Power					
Installed capacity	3 large Imperial Oil Resources Limited generators 1,600 kW backup	1,230 kW	1,280 kW	1,080 kW	190 kW
Source	Imperial Oil Resources Limited diesel-fuelled generators 2 – 800 kW backup units¹	3 generators	3 generators	3 generators	3 small generators
Peak load requirement	1,564 kW	593 kW	513 kW	440 to 450 kW	85 kW
Spare power capacity ²	–	600 kW	700 kW	600 kW	100 kW
Heating Fuel					
Types of heating fuel	Natural gas, P-50	P-50	P-50	P-50	P-50
NOTES: – = data not available 1 Norman Wells' main power supply is purchased from Imperial Oil Resources Limited 2 No allowance made for reserve power requirements					
SOURCES: GNWT Municipal and Community Affairs (MACA) (2001), GNWT MACA personnel (2002, personal communication), Northwest Territories Power Commission (2002)					

Table 3-3 describes the existing communications infrastructure in the SSA communities. Norman Wells lacks cellular phone service but has all of the other expected communications facilities.

Table 3-3: Selected Communications Infrastructure in the Sahtu Communities (2001)

Communication Type	Norman Wells	Fort Good Hope	Déline	Tulita	Colville Lake
Cellular phone	No	No	No	No	No
Internet	Sympatico, no public	No private, 2 public	No private, 7 public	No private, 3 public	No
Radio	CBC, Vancouver station, CGMI	CBC, community radio station	CBC	CBC AM and FM service, and one community FM	CBC
Television	CBC, cable	CBC, cable, satellite	CBC, cable	Private satellite	None
Newspaper coverage	News/North, Hub, Edmonton Journal, Edmonton Sun	News/North	News/North	News/North	News/North
Frequency of mail delivery per week	5 times	3 times	3 times	3 times	Courtesy bag from Fort Good Hope
SOURCES: GNWT RWED (1999), Northwestel personnel (2001, personal communication), GNWT MACA (2002)					

3.4 Housing and Recreation

In 2004, Norman Wells, had a serious housing shortage. The senior administrative officer for Norman Wells reported in April 2004 that the housing situation was quite strained and there were no vacancies in town that he was aware of. The last lot for mobile homes, which are easily imported, had recently been sold (CBC 2004b).

The housing situation in Norman Wells is so tight that teachers and nurses are being forced to move on a monthly basis, and to pay ever increasing rental fees. The Sahtu Regional Health and Social Services Authority (SRHSSA) chief executive officer fears that the housing situation will get worse as the build-up to a pipeline proceeds, and that GNWT HSS vacancies will not be filled because the high housing prices and rental fees will discourage people from accepting positions in Norman Wells (SRHSSA chief executive officer 2004, personal communication).

As Table 3-4 shows, the quality of housing in Norman Wells was the best in the SSA, yet 24% of this housing was in need of minor repairs and 11% required major repairs in 2001.

Table 3-4: Housing and Repairs Needed in the Sahtu Communities (2001)

Location	Total Houses (No.)	Needs Regular Maintenance ¹ (%)	Needs Minor Repairs ² (%)	Needs Major Repairs ³ (%)
Northwest Territories	12,565	52	32	16
SSA total	735	50	30	20
Norman Wells	270	63	24	11
Fort Good Hope	155	29	35	35
Déline	150	50	33	23
Tulita	130	46	31	23
Colville Lake	30	50	33	0
NOTES: 1 Regular maintenance refers to such conditions as requiring painting or furnace cleaning 2 Minor repairs refers to such conditions as missing or loose floor tiles, brick or shingles, or to defective steps, railing or siding 3 Major repairs refers to such conditions as defective plumbing or electrical wiring, or requiring structural repairs to walls, floors or ceilings				
SOURCE: Statistics Canada (2003a)				

Norman Wells has a large recreation complex, and is generally well equipped with recreational facilities (GNWT RWED 2002e).

3.5 Governance

Included in governance are the planning and decision-making organizations, such as band councils, community corporations, and town and city councils. The resources made available to these organizations by the GNWT and, in some cases, the Government of Canada, are also included.

All of the existing governance relationships between the federal and territorial governments, and the Aboriginal people, their organizations and communities in the Northwest Territories are in the process of change through ongoing negotiations. These ongoing processes involve negotiations to achieve devolution of authority, and to confer self-government responsibilities on Aboriginal peoples.

The legislation defining and establishing the *Sahtu Dene and Métis Land Claim Settlement Act* came into effect June 23, 1994 (Sahtu Secretariat Inc. 2004). There is no Sahtu Dene band in Norman Wells but there is the Ernie McDonald Land Corporation. Functionally responsible boards administer the SSA, including the:

- Sahtu Renewable Resource Board (SRRB)
- Sahtu Land Use Planning Board (SLUPB)
- Sahtu Land and Water Board
- Sahtu Secretariat
- Sahtu Dene Métis Council

Within the Sahtu Dene Métis Council are organizations representing the Métis of Norman Wells, Fort Good Hope and Tulita.

4 INDIVIDUAL, FAMILY AND COMMUNITY WELLNESS

4.1 Introduction

This section describes community wellness in the study area, which refers to the physical, emotional and social well-being of all components of a community, including individuals and families.

Aboriginal people have long recognized the interaction and interdependence of physical, emotional, mental and social well-being. Viewing the spiritual as the centrally important component, some Aboriginal communities have formed healing circles to deal with family issues, sentencing and rehabilitation of offenders, and the debilitating problems of those who experienced various forms of abuse while attending residential schools.

In western healing and helping professions, recognizing a holistic approach to wellness has been much more recent. GNWT HSS personnel have sought to deal with intertwined physical, social and emotional health concerns using a community wellness approach for almost a decade (GNWT HSS 1995).

The present emphasis on a community wellness approach by the GNWT HSS originated from an assessment in 2000 of the challenges and problems in wellness services (GNWT HSS 2001a). The most recent evidence of the GNWT's commitment to health and well-being is found in *Health Promotion Strategy* (GNWT Bureau of Statistics 2003h), which provides a framework for increased investment in promotion and prevention activities at the territorial, regional, local and individual levels.

The influence of these interrelated concerns is seen in this section on individual, family and community wellness, which deals with wellness-conserving facilities and services, and the conditions and activities of people to which these services must respond. Information is provided on:

- health conditions
- health care facilities and services
- family concerns and community conditions
- social service facilities and services
- education and training

The most significant achievement of GNWT HSS has been the sharp reduction in new cases of tuberculosis, once a very serious health problem for northern people. With implementation of the *Action Plan to Strengthen Tuberculosis Management and Control in the Northwest Territories*, the numbers of new cases per year have been steadily reduced, from 24 in 1996 to four in 2002. Of the four in 2002, two were immigrants (Case 2003).

Currently, the most serious addiction in the Northwest Territories is alcohol, which is the most frequent source of wellness problems. According to a recent coroner's report, 40% of health costs relate to addictions or mental health problems (Penney 2003).

The effects of alcohol abuse include:

- foetal alcohol syndrome (FAS) or foetal alcohol effects (FAE)
- sexual abuse of family members
- sexually transmitted infections (STIs)

Additional effects of alcohol abuse are also discussed in the following sections.

The most costly effect is the birth of FAS/FAE babies to mothers abusing alcohol. Studies have shown that hospital use is many times higher by FAS/FAE children than by other children (Chatel 2003). These children are typically unable to learn from experience and thus have severe behavioural problems that may be life long. As a result, the lifetime health and social costs are estimated to be more than \$2 million per FAS/FAE person (Carey 2003). No further discussion of FAS/FAE children is provided here because statistical data is unavailable. This is because most births in the Northwest Territories are attended by nurse-midwives rather than by physicians, and only physicians can make a FAS/FAE diagnosis. However, from the accounts of nurses and teachers who work with FAS/FAE children in school, many such children exist in the Northwest Territories.

Incidents of sexual abuse are notably under-reported, thus the available data is unreliable (National Crime Prevention Centre 2001). Alcohol abuse and mental disorders are intimately related, as childhood abuse may lead to both, and increases in one may lead to parallel increases in the other. The RCMP reported over 400 cases of sexual assault for 2000 and 2001 in the Northwest Territories. Northwest Territories health centres report seeing 300 to 350 people annually for assessment and counselling related to sexual abuse or assault. Sexual abuse of children is the least acknowledged of offences, in part because the abuser is often well-known to the victim and his or her family. While between 2000 and 2003, child protection workers investigated 350 cases of suspected sexual abuse of children, this number should not be seen as a complete count, since many such incidents go unreported. Sexual abuse of children may infect them with STIs, and 15 children under 12 years of age were found to have STIs between 1998 and 2003 in the Northwest Territories. The STI incidence among children aged 12 to 15 years in the Northwest Territories more than doubled during this period, from 44 to 90 cases per year (White 2003).

The rates for STIs are very high in the Northwest Territories, and the contexts in which these infections are transmitted are often associated with alcohol consumption. In recent years, chlamydia rates in the Northwest Territories were six times as high as Canadian rates, and gonorrhoea infection rates were over 20 times the Canadian rate. Among those aged 16 to 18 years, a 63% increase occurred between 1996 and 2001 (Harrison 2002). Community-specific STI data is provided in the following sections.

Suicide is a health concern in the Northwest Territories, both because the incidence of suicide is so high relative to the rest of Canada, and because so many are teenage suicides. Because of the unreliability of suicide frequencies, given the small populations, this discussion is based on rates for the Northwest Territories as a whole.

The three-year average age-adjusted suicide rates, which compensate for differences in age distributions, were twice as high in the Northwest Territories as in Canada for 1999 to 2001 (Little 2002). The 1998 to 2002 suicide rate of youths aged 10 to 19 years in the Northwest Territories was four times the all-Canada rate, and the rate for those aged 20 to 29 years in the Northwest Territories was almost three times the all-Canada rate. Data on hospitalizations of females for self-inflicted injuries is relevant because of women's relatively frequent rates of attempted unsuccessful suicide. The rate of such hospitalizations in 1995 to 1999 for Northwest Territories females aged 10 to 19 years was over three times as high as the rate for all-Canada females of this age (Little 2003).

Suicide deeply affects small Aboriginal communities because community members are so interrelated, with many residents being relatives of the victim. Mental health workers provide counsel, but community recovery from a suicide is a slow process.

4.2 Health Conditions

Tobacco use data for the Sahtu communities shows that in 1999, 42% of Norman Wells' adults, 18 or more years of age, smoked. This was substantially less than the 60% rate for all of the Aboriginal communities (GNWT Bureau of Statistics 1999, 2003d).

As Table 4-1 shows, in Norman Wells the 2000–2002 three-year average rate for physician treatment of respiratory illnesses was 170 per 1,000 population. This was higher than the rate in some other SSA communities. Note, however, that the SSA three-year average rates were consistently less than half the territorial rates for 1994–1996 through 2000–2002. These rates declined consistently in the Sahtu area, and declined inconsistently in Norman Wells as well throughout this period.

Table 4-1: Cases of Respiratory Diseases Treated by Physicians in the Sahtu Communities

Location	1994–1996 (No./1,000)	1995–1997 (No./1,000)	1996–1998 (No./1,000)	1997–1999 (No./1,000)	1998–2000 (No./1,000)	1999–2001 (No./1,000)	2000–2002 (No./1,000)
NWT	638	612	587	559	543	504	481
SSA total	250	243	231	218	210	205	189
Norman Wells	237	218	227	205	207	182	170
SSA Aboriginal communities total	255	255	233	224	211	215	197
Fort Good Hope	204	193	167	186	190	181	143
Déline	302	303	287	261	262	263	257
Tulita	248	281	278	241	171	169	165
Colville Lake	351	250	136	180	230	370	366
NOTES: Numbers are claim counts by International Classification of Diseases, Version 9 (ICD-9) code for the particular group of conditions Three-year average rates per 1,000 population							
SOURCE: GNWT HSS (2003b)							

Table 4-2 shows that the three-year average rates for infectious and parasitic diseases in Norman Wells were twice as high as the SSA Aboriginal communities throughout the 1994–1996 to 2000–2002 periods. However, the Sahtu rates were exceptionally low, consistently less than half the rates for the Northwest Territories throughout this time.

Table 4-2: Cases of Infectious and Parasitic Diseases Treated by Physicians in the Sahtu Communities

Location	1994–1996 (No./1,000)	1995–1997 (No./1,000)	1996–1998 (No./1,000)	1997–1999 (No./1,000)	1998–2000 (No./1,000)	1999–2001 (No./1,000)	2000–2002 (No./1,000)
NWT	253	245	250	235	232	222	218
SSA total	96	92	107	101	96	86	77
Norman Wells	176	169	208	202	182	156	117
SSA Aboriginal communities total	61	58	62	57	58	56	59
Fort Good Hope	60	56	59	71	64	54	50
Déline	78	72	73	53	58	72	84
Tulita	43	42	48	37	48	39	41
Colville Lake	46	59	82	76	64	46	54
NOTES: Numbers are claim counts by ICD-9 code for the particular group of conditions Claim frequencies for each community were divided by the population of the community, giving a figure, usually a decimal, for the number of cases per person. This was then multiplied by 1,000. Three-year average rates per 1,000 population							
SOURCE: GNWT HSS (2003b)							

In Norman Wells, the three-year average rates per 1,000 of sexually transmitted infections (STIs) have been about one third as high as the SSA Aboriginal community rates throughout the 1994–1996 to 2000–2002 period, as Table 4-3 shows.

Table 4-3: Cases of Sexually Transmitted Infections in the Sahtu Communities

Location	1994–1996 (No./1,000)	1995–1997 (No./1,000)	1996–1998 (No./1,000)	1997–1999 (No./1,000)	1998–2000 (No./1,000)	1999–2001 (No./1,000)	2000–2002 (No./1,000)
NWT	11	11	12	12	14	15	16
SSA total	9	8	8	14	20	28	28
Norman Wells	4	4	4	6	8	9	13
SSA Aboriginal communities total	11	10	10	18	26	37	35
Fort Good Hope	11	9	6	13	26	42	41
Déline	15	12	14	23	29	38	33
Tulita	9	9	12	21	28	32	31
Colville Lake	0	0	0	0	0	10	13
NOTES: STIs include chlamydia, gonorrhoea and hepatitis B2 Numbers are claim counts by ICD-9 code for the particular group of conditions Calculated based upon population estimates prepared by GNWT Bureau of Statistics Three-year average rates per 1,000 population, both sexes and all ages							
SOURCE: GNWT HSS (2003b)							

Although Norman Wells is a regional centre with a substantial industrial base, the data in Table 4-4 shows that the three-year averaged rate for physician treatments of accidents and injuries was 207 per 1,000 in 2000–2002, somewhat lower than the Sahtu Aboriginal community rate (223), and much lower than the Northwest Territories rate (353). The rates in Norman Wells have fluctuated but tended to decrease during 1996–1998 to 2000–2002, while the Sahtu Aboriginal community rates have remained relatively flat during this period.

Table 4-4: Cases of Accidents, Injuries and Poisonings Treated by Physicians in the Sahtu Communities

Location	1994–1996 (No./1,000)	1995–1997 (No./1,000)	1996–1998 (No./1,000)	1997–1999 (No./1,000)	1998–2000 (No./1,000)	1999–2001 (No./1,000)	2000–2002 (No./1,000)
NWT	442	424	408	399	394	371	353
SSA total	236	238	240	247	240	233	218
Norman Wells	265	269	285	284	271	219	207
SSA Aboriginal communities total	230	229	222	232	227	238	223
Fort Good Hope	246	253	251	289	303	300	258
Déline	194	171	188	196	197	223	211

Table 4-4: Cases of Accidents, Injuries and Poisonings Treated by Physicians in the Sahtu Communities (cont'd)

Location	1994–1996 (No./1,000)	1995–1997 (No./1,000)	1996–1998 (No./1,000)	1997–1999 (No./1,000)	1998–2000 (No./1,000)	1999–2001 (No./1,000)	2000–2002 (No./1,000)
Tulita	229	228	194	184	173	156	159
Colville Lake	248	372	333	256	115	288	328
NOTES: Numbers are claim counts by ICD-9 code for the particular group of conditions Three-year average rates per 1,000 population							
SOURCE: GNWT HSS (2003b)							

Table 4-5 shows that during the five-year period, 1994 to 1998, there were no deaths from injuries in Norman Wells. During this period, the SSA had the lowest rate of accidental deaths as a percentage of total deaths among the study area regions.

Table 4-5: Deaths from Injuries in the Sahtu Communities (1994 to 1998 average)

Location	Deaths from Injuries			Average Number of Deaths
	Average Number	Per 1,000 Population	Percentage of Total Deaths	
NWT	28.0	0.68	20	143.0
SSA total	1.0	0.36	11	9.2
Norman Wells	–	0.00	–	1.0
SSA Aboriginal communities total	1.0	0.52	9	9.0
Fort Good Hope	0.4	0.57	13	3.0
Déline	–	0.00	–	3.0
Tulita	–	0.43	–	2.0
Colville Lake	0.4	4.40	40	1.0
NOTES: – = data not available or too small to be expressed Five-year average numbers, rates and percentages				
SOURCE: GNWT Bureau of Statistics (2003a)				

The Sahtu, through the Assembly of First Nations, participated in the Mental Health Working Group that produced the *Mental Wellness Framework* (see the EIS, Volume 4, Section 4.3.1, Health Conditions [GSA]). The publication stated that *current responses to mental wellness among Aboriginal people are not working* and that Aboriginal solutions to Aboriginal wellness are needed (Mental Health Working Group et al. 2002: F5).

Table 4-6 shows that the three-year average rates per 1,000 population of mental disorders treated by physicians in Norman Wells fell quite consistently between 1994–1996 and 2000–2002. In the SSA Aboriginal communities, the rates generally increased until 1998–2000, then decreased through to 2000–2002.

Table 4-6: Cases of Mental Disorder Treated by Physicians in the Sahtu Communities

Location	1994–1996 (No./1,000)	1995–1997 (No./1,000)	1996–1998 (No./1,000)	1997–1999 (No./1,000)	1998–2000 (No./1,000)	1999–2001 (No./1,000)	2000–2002 (No./1,000)
NWT	335	338	355	367	369	349	337
SSA total	190	181	188	213	208	176	151
Norman Wells	249	211	208	211	186	153	103
SSA Aboriginal communities total	164	168	180	214	217	187	173
Fort Good Hope	208	215	184	260	285	252	204
Déline	142	132	198	214	201	146	153
Tulita	144	169	168	168	116	116	163
Colville Lake	76	55	82	83	71	69	118
NOTES: Numbers are claim counts by ICD-9 code for the particular group of conditions Three-year average rates per 1,000 population							
SOURCE: GNWT HSS (2003b)							

4.3 Health Care Facilities and Services

The SRHSSA in Norman Wells was to have assumed responsibility from the Inuvialuit Region Health and Social Services Authority for delivering health and social services in the SSA early in 2004. This has now been postponed until May 2005. The chief executive officer of the new authority is developing an integrated service delivery approach to deal with the health and social services issues in the SSA.

In 2004, the SRHSSA chief executive officer reported that adequate GNWT HSS resources existed in the region, but they are not being used efficiently. As a result, the front-line workers are stretched to their limits, with the situation becoming worse in the last year (SRHSSA chief executive officer 2004, personal communication). A particular concern of the chief executive officer is the shortage of housing for health staff in several Sahtu communities. The chief executive officer fears that as pipeline-induced demands increase, SRHSSA vacancies will not be filled because high housing prices and rental fees will discourage people from accepting positions in Norman Wells. The chief executive officer believes that communities need to ensure that housing is available to professional staff to ensure their services will be available (SRHSSA chief executive officer 2004, personal communication 2004).

Table 4-7 lists the facilities and services in the SSA that are currently provided by the IRHSSA. Four of the Sahtu communities, including Norman Wells, have health centres and social services offices. Colville Lake has a health station and social services are provided out of Norman Wells.

Table 4-7: Health Care Facilities in the Sahtu Settlement Area (2004)

Location	Facility Name	Description
Colville Lake	<ul style="list-style-type: none"> Colville Lake health station Colville Lake social services 	<ul style="list-style-type: none"> Health station Served by Norman Wells
Déline	<ul style="list-style-type: none"> Déline Health Centre, Residence and Garage Déline Social Services 	<ul style="list-style-type: none"> Health centre Social services office
Fort Good Hope	<ul style="list-style-type: none"> Fort Good Hope health centre Fort Good Hope social services 	<ul style="list-style-type: none"> Health centre Social services office
Norman Wells	<ul style="list-style-type: none"> Norman Wells health centre Norman Wells social services 	<ul style="list-style-type: none"> Health centre Social services office
Tulita	<ul style="list-style-type: none"> Tulita health centre Tulita social services 	<ul style="list-style-type: none"> Health centre Social services office
NOTES: A health centre is staffed by one or more registered nurses A health station is staffed by a community health worker, trained in basic first aid and cardiopulmonary resuscitation		
SOURCE: GNWT HSS (2004)		

Hospital care is provided to the SSA by the hospital in Inuvik, with access provided by a readily accessible med-evac airplane.

4.4 Family and Community Conditions

Indicators of alcohol abuse are of particular interest because of the frequency with which such abuse is associated with wellness and policing problems. Table 4-8 shows that the three-year average rates of hospitalizations for alcohol-related illnesses tended to decline in Norman Wells between 1994–1996 and 1999–2001. However, the rates for the SSA have increased in recent years.

Table 4-8: Hospitalizations for Alcohol-Related Illnesses in the Sahtu Communities

Location	1994–1996 (No./100,000)	1995–1997 (No./100,000)	1996–1998 (No./100,000)	1997–1999 (No./100,000)	1998–2000 (No./100,000)	1999–2001 (No./100,000)
NWT	367	391	430	464	460	443
SSA total	182	158	169	249	277	220
Norman Wells	118	118	80	77	83	76
Fort Good Hope	191	191	279	317	402	268
Déline	154	0	155	425	538	362
Tulita	356	427	211	277	67	198

Table 4-8: Hospitalizations for Alcohol-Related Illnesses in the Sahtu Communities (cont'd)

Location	1994–1996 (No./100,000)	1995–1997 (No./100,000)	1996–1998 (No./100,000)	1997–1999 (No./100,000)	1998–2000 (No./100,000)	1999–2001 (No./100,000)
Colville Lake	–	–	–	–	344	347
NOTES: 0 = no hospitalization cases Three-year average rates per 100,000 population						
SOURCE: GNWT HSS (2003c)						

The 2002 rates of alcohol offences per 1,000 population for Norman Wells were only about half the rates for the SSA Aboriginal communities. However, the Norman Wells rates increased erratically between 1997 and 2002. The data for the SSA Aboriginal communities showed a similar pattern of increases.

No births to teenagers as a percentage of total births in Norman Wells were recorded between 1994 and 1998 (GNWT Bureau of Statistics 2002b).

Table 4-9 shows very low and declining spousal assault rates per 1,000 population in Norman Wells between 1997 and 2001. The total SSA rates were higher, and increased to a peak of 91 per 1,000 in 1999, before declining substantially in 2000 and 2001.

Table 4-9: Spousal Assaults in the Sahtu Communities

Location	1997 (No./1,000)	1998 (No./1,000)	1999 (No./1,000)	2000 (No./1,000)	2001 (No./1,000)
NWT study area ¹	10	25	24	19	17
SSA total	18	63	91	34	25
Norman Wells	7	6	1	2	0
Fort Good Hope ²	40	152	256	101	69
Déline	16	43	45	20	11
Tulita	6	48	22	2	18
NOTES: 1 includes all of the communities in the Inuvialuit Settlement Region (ISR), Gwich'in Settlement Area (GSA), SSA and DCR 2 Colville Lake is policed by the Fort Good Hope RCMP detachment Rates per 1,000 population					
SOURCE: RCMP local detachments (2002)					

Nurses in Norman Wells reported that in there had been an increase in domestic violence that is not reflected in the statistics because people are reluctant to call the police or to report it. They stated that when people do seek help, it is usually for family counselling, which is not recorded as domestic violence (Norman Wells' nurses 2002, personal communication).

There is no family violence shelter in Norman Wells. The shelters in Inuvik and Hay River accommodate those able to reach either one from the Sahtu communities.

Table 4-10 shows that 19 children per 1,000 population were taken into care in Norman Wells during 1998–1999 but at no other time between 1995–1996 and 2002–2003. The two-year average rates in the SSA Aboriginal communities can be described as moderately high during these years, since they were generally comparable with the rates in the Northwest Territories Aboriginal communities.

Table 4-10: Children Taken into Care in the Sahtu Communities

Location	1995–1996 (No./1,000)	1997–1998 (No./1,000)	1998–1999 (No./1,000)	2000–2001 ¹ (No./1,000)	2001–2002 ¹ (No./1,000)	2002–2003 ¹ (No./1,000)
NWT	14	13	15	14	16	17
NWT Aboriginal communities ²	18	25	25	19	19	22
SSA total	15	11	18	13	13	14
SSA Aboriginal communities total	22	15	17	19	19	20
Norman Wells	–	–	19	–	–	–
Fort Good Hope	36	20	23	20	14	15
Déline	25	24	27	16	26	28
Tulita	–	–	–	24	22	22
Colville Lake	–	–	–	–	–	–
<p>NOTES: – = data not available or too small to be expressed 1 Numbers of children taken into care during some part of the fiscal year, including plan of care, supervision, apprehension, temporary custody and permanent custody children 2 All study area communities in the Northwest Territories, except Inuvik, Norman Wells, Fort Simpson, Yellowknife, Hay River and Enterprise Average rates per 1,000 total population for fiscal years, calculated based upon population estimates prepared by GNWT Bureau of Statistics</p>						
SOURCE: GNWT HSS (2003b)						

Table 4-11 shows that the rates of *Young Offenders Act* offences fluctuated considerably in both Norman Wells and the SSA Aboriginal communities between 1997 and 2002, with the 1999 rates four times as high as the 1997 rates. Overall, the rates have tended to increase, but substantially more in the Aboriginal communities than in Norman Wells.

Table 4-11: Young Offenders Act Offences in the Sahtu Communities

Location	1997 (No./1,000)	1998 (No./1,000)	1999 (No./1,000)	2000 (No./1,000)	2001 (No./1,000)	2002 (No./1,000)
NWT study area ¹	67	131	145	104	126	135
SSA total	53	150	278	104	221	166
SSA Aboriginal communities total	65	209	356	138	269	226
Norman Wells	31	43	124	44	140	61
Fort Good Hope ²	107	219	718	235	471	339
Déline	7	348	165	68	75	53
Tulita	78	54	112	100	241	279
NOTES: = data unavailable to too small to be expressed 1 Includes all of the communities in the ISR, GSA, SSA and DCR 2 Colville Lake is policed by the Fort Good Hope RCMP detachment Rates per 1,000 population, aged 10 to 19						
SOURCES: RCMP G Division (2002), RCMP local detachments (2002, 2004)						

Table 4-12 shows that the rates of violent crimes in Norman Wells were generally lower than the rates of the other Sahtu communities, and were much lower than the Northwest Territories rate. The SSA rates were higher than those for the Northwest Territories, except in 2000. The Norman Wells rates fell consistently between 1997 and 2000, but only fluctuating patterns are seen in the other communities.

Table 4-12: Violent Crimes and Property Crimes in the Sahtu Communities

Location	Violent Crimes ¹				Property Crimes ²			
	1997 (No./1,000)	1998 (No./1,000)	1999 (No./1,000)	2000 (No./1,000)	1997 (No./1,000)	1998 (No./1,000)	1999 (No./1,000)	2000 (No./1,000)
NWT	54	50	50	47	66	70	58	57
SSA total	74	67	70	47	88	91	97	76
Norman Wells	35	31	26	17	50	33	86	49
Fort Good Hope	153	108	125	58	153	137	196	132
Déline	84	80	92	68	107	156	40	59
Tulita	21	66	44	67	44	58	56	75
Colville Lake	–	–	–	–	–	–	–	–
NOTES: – = data not available or too small to be expressed 1 Violent crimes includes homicide, attempted murder, sexual assault, nonsexual assault, other sexual offences, abduction and robbery 2 Property crimes include breaking and entering, theft of motor vehicles, theft over \$5,000, theft of \$5,000 and under, possession of stolen goods and fraud Rates per 1,000 population								
SOURCE: GNWT Bureau of Statistics (2003c)								

The rates of property crimes in Norman Wells were also generally lower than the rates of the other Sahtu communities, as Table 4-12 shows, and also lower than the Northwest Territories rates. The SSA rates were consistently higher than those for the Northwest Territories. Neither the Norman Wells rates nor the SSA regional rates showed evidence of declining between 1997 and 2001.

4.5 Social and Protection Facilities and Services

Table 4-13 shows that Norman Wells, like the other SSA communities except Colville Lake, has a RCMP local detachment.

Table 4-13: Protection Service Features in the Sahtu Communities (2001)

Location	RCMP – Officers and Facilities			Number of Firefighters	Current Emergency Plan
	Number of Officers	Number of Cells	Maximum Capacity of Cells		
Norman Wells	3	3	6	19 V	Yes
Fort Good Hope	4	3	9	6 V	Yes
Déline	3	2	8	9 V	Yes
Tulita	2	2	10	2 V	Yes
Colville Lake	Policed from Fort Good Hope	0	0	0 V	No
NOTE: V = volunteer					
SOURCES: GNWT MACA (2002), RCMP G Division (2002)					

All of the SSA communities have firefighting capability and a current emergency plan, except Colville Lake, which has neither.

4.6 Education and Training

4.6.1 Levels of Education and Training

As Table 4-14 shows, the predominantly non-Aboriginal population of Norman Wells had substantially higher education attainment in 2001 than the Aboriginal majority in the SSA as a whole. The data shows that in that year, 84% of the Norman Wells population aged 15 years and over had graduated from high school education and 72% had some post-secondary education. In the other SSA (Aboriginal) communities, the percentage of high school graduates and those with some post-secondary education noticeably lower than Norman Wells. Between 1994 and 2001, there were insignificant increases in the percentages with high school graduation in Norman Wells and the SSA Aboriginal communities, but in both there were significant increases in the percentages with some post-secondary education.

Table 4-14: Education Attainment Levels in the Sahtu Communities

Location	High School Graduation			Some Post-Secondary Education		
	1994 (%)	1999 (%)	2001 (%)	1994 (%)	1999 (%)	2001 (%)
NWT	65	68	65	44	46	56
SSA total	54	58	55	38	40	49
Norman Wells	83	83	84	55	54	72
Fort Good Hope	60	48	49	40	41	45
Déline	23	38	39	19	26	37
Tulita	37	51	36	29	33	34
Colville Lake	33	32	46	31	32	31
NOTE: Percentage of population, aged 15 years and older						
SOURCE: Calculated from GNWT Bureau of Statistics (2003f), Statistics Canada (2003a)						

Table 4-15 shows gender differences in the levels of education attained Norman Wells and other Sahtu communities in 2001. Just over 80% of male and female students in Norman Wells graduated from high school. More males than females had some post-secondary trades training, but more females had some college or university education.

Table 4-15: Education Attainment by Gender in the Sahtu Communities (2001)

Location	Gender	High School Graduate (%)	Some Post-Secondary Trades Training (%)	Some College or University Education (%)	Some Trades Training, College or University (%)
NWT	Males	64	30	26	56
	Females	66	22	34	56
SSA total	Males	55	31	16	46
	Females	54	20	28	48
SSA Aboriginal communities total	Males	43	24	11	36
	Females	41	17	20	38
Norman Wells	Males	84	45	25	71
	Females	82	27	44	71
Fort Good Hope	Males	48	30	13	43
	Females	50	31	17	47
Déline	Males	41	24	11	35
	Females	34	14	14	29

Table 4-15: Education Attainment by Gender in the Sahtu Communities (2001) (cont'd)

Location	Gender	High School Graduate (%)	Some Post-Secondary Trades Training (%)	Some College or University Education (%)	Some Trades Training, College or University (%)
Tulita	Males	35	23	13	35
	Females	37	0	30	30
Colville Lake	Males	57	0	0	0
	Females	50	33	33	67

NOTES:
 1 All communities in the Northwest Territories study area except Inuvik, Norman Wells, Fort Simpson, Yellowknife, Hay River and Enterprise
 Percentages frequently do not sum to 100 for two cumulating reasons: Statistics Canada random rounding of frequencies, and small community populations (see Section 1.7.3, Limitations of Low-Frequency Data)
 Rates per 1,000 population, aged 15 years and older

SOURCE: GNWT Bureau of Statistics (2001b)

4.6.2 Education and Training Facilities

Table 4-16 shows that in 2004, Norman Wells, together with the other Sahtu communities, offered kindergarten to Grade 12 schooling. The utilization rate in the Mackenzie Mountain School in Norman Wells was 65% in 2004.

Table 4-16: School Profile Data for the Sahtu Communities

Location	School	Budgeted Full-Time Equivalents ¹				Grades Offered ²	School Capacity ²	School Enrollment ²	Utilization ² (%)
		Teachers (No.)	Support Staff (No.)	Admin. Staff (No.)	Other Staff (No.)				
Norman Wells	Mackenzie Mountain	10	5	4.5	2	K to 12	209	137	65
Fort Good Hope ²	Chief T'selehye	14	3	2	3	K to 12	264	159	60
Déline	Tehtseo Ayha	10	3	0	2	K to 12	275	147	53
Tulita ²	Chief Albert Wright	15	6	0	1.5	K to 12	165	162	92
Colville Lake	Territorial	1	1	0	0.2	K to 12	44	30	67

NOTES:
 K = kindergarten
 1 2002 data
 2 April 2004 data
 Enrollment data is full-time equivalents, e.g., two children attending kindergarten are counted as one full-time student
 GNWT ECE typically starts planning for new space when a school reaches a capacity of about 85%

SOURCE: GNWT ECE (2002, 2004)

Within the SSA, Aurora College has community learning centres in Fort Good Hope and Déline. The college offers adult basic education, a General Equivalency Diploma, employable skills training programs and apprenticeship training. Unfortunately, apprenticeship training is currently lagging because trainees who have finished the required apprenticeship classroom preparation often cannot find a journey person under whom to complete their training (Aurora College administrative officer 2002, personal communication).

A variety of courses is offered by Aurora College in response to adequate local demands, including courses that provide the work force with the skills required to respond to local employment opportunities. For example, the College has offered safety, camp cook–kitchen helper, trades foundations and heavy-duty equipment driving courses. On occasion, Aurora College has teamed up with GNWT RWED and various oil and gas exploration and drilling courses to provide training for jobs in the oil industry.

Section 4.2.5.2, Education Facilities in Volume 4 of the EIS provides further information on available post-secondary courses for SSA residents.

5 TRADITIONAL CULTURE

5.1 Introduction

In common with all cultures, the Inuvialuit and Dene cultures include knowledge, skills, disciplines, beliefs and values. Of these, beliefs and values are the most important, because they inform what life is about and how it is to be lived. Knowledge, skills and disciplines make it possible for individuals to act on their beliefs and values, to be themselves and live a culturally determined good life.

Traditional culture is of prime importance to many Aboriginal people because it is their:

- principal source of pride, worth, distinctiveness and identity
- basis for harvesting the benefits of and meeting the challenges of surviving on the land they respect and love
- a way of dealing with prejudice and discrimination sometimes shown by those from other cultures

Indicator data showing adherence to traditional beliefs and values is currently not available for the Sahtu communities.

Indicators of culture can be seen in people's behaviour. Culture is reflected in activities that are shaped by beliefs and values, activities that make use of traditional knowledge, skills and disciplines. What people do and are able to do thus serve as indicators of their involvement in traditional culture. The following activity-based indicators are used in this section:

- involvement in traditional harvesting
- the amount of country food consumed
- the ability to speak a traditional language

In Volume 4 of the EIS, the section on historical background and political organization provides an overview of:

- the Inuvialuit and Dene cultures
- contact with Euro-Canadians
- the changes induced by these many contacts over time on the Inuvialuit and Dene livelihood and culture

A result of these contacts is that some monetary income is now a necessity for Aboriginal people. Those who harvest wildlife are now active in a dual monetary and traditional in-kind economy.

Hunting and fishing, and consuming country food are discussed in the context of the dual economy, an important feature throughout most of the study area. Trapping is discussed because, by Euro-Canadian standards, it is lonely, hard and dangerous work. The trapper must have most of the same lore, skills and disciplines that were essential to the survival of forebearers in the pre-contact millennia. Language retention is taken as an indicator of cultural retention because appreciation of traditional, deeper, spiritual relationships can best be comprehended in traditional language terms.

The data presented in this section is from published statistical compilations. Additional information will be documented in ongoing traditional knowledge studies.

5.2 Participation in Traditional Harvesting

The SRRB has not provided data on numbers of active harvesters for recent years. However, Table 5-1 shows the available findings from the GNWT surveys in 1993, 1998 and 2002 on numbers of active harvesters in the SSA. The data presented for each community or region can vary from study to study, given the different scopes and methods utilized.

These surveys show that 38% of the adult Norman Wells population reported having hunted or fished in 2002, up from the 8% reported in 1993. The percentages for all adult residents in the Sahtu Aboriginal communities increased from 37% in 1993 to 53% in 2002.

Table 5-1: Adults Who Hunted or Fished in the Sahtu Communities

Location	1993 (%)	1998 (%)	2002 (%)
NWT	18	42	41
NWT Aboriginal communities ¹	42	48	51
SSA total	28	45	48
Norman Wells	8	44	38
SSA Aboriginal communities total	37	46	53
Fort Good Hope	33	39	–
Déline	41	53	–
Tulita	32	45	–
Colville Lake	71	56	–
NOTES: – = data not available 1 All study area communities in the Northwest Territories, except Inuvik, Norman Wells, Fort Simpson, Yellowknife, Hay River and Enterprise Percentage of population, aged 15 years and older			
SOURCE: GNWT Bureau of Statistics (1994, 1999, 2002a)			

The SRRB and the GNWT each conducted a survey pertaining to wildlife harvests in the SSA. Table 5-2 shows the SRRB's survey results for harvests of active hunters for 1998 and 2001. These harvest studies provided details on the species and numbers taken for food. As the study began in April 1998 and there is no data for the first quarter of that year, no trends can be established by comparing the 1998 and 2001 harvests.

Table 5-2: Harvest Data for the Sahtu Communities

Species	1998				2001				
	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
Mammals	317	215	468	1,000	1,676	412	248	507	2,843
Caribou – woodland, barren ground	284	81	444	809	1,626	380	135	476	2,617
Moose	26	130	24	180	50	27	109	30	216
Muskox, Dahl's sheep	2	3	0	5	0	0	4	1	5
Bears – grizzly, black	5	1	0	6	0	5	0	0	5
Mammals, Furbearers	471	277	1,719	2,467	544	530	546	1,196	2,816
Fox, wolf	0	0	13	13	13	5	0	38	56
Lynx	0	0	0	0	1	0	0	3	4
Mink, marten, wolverine	0	0	776	776	437	4	0	646	1,087
Beaver	247	2	12	261	4	235	49	2	290
Muskrat	199	0	0	199	0	44	0	2	46
Hare and rabbit	25	275	918	1,218	89	242	497	505	1,333
Birds	2,653	1,611	1,528	5,792	68	5,896	587	178	6,729
Grouse, ptarmigan	177	704	1,389	2,270	48	51	72	114	285
Goose, swan	810	59	3	872	0	2,845	84	0	2,929
Duck	1,666	848	136	2,650	20	3,000	431	64	3,515
Fish	3,082	11,143	6,522	20,747	1,065	3,444	7,126	3,664	15,299
Char, whitefish, grayling, trout, cisco, salmon	2,259	10,616	6,009	18,884	1,013	3,316	6,857	3,301	14,487
Other fish – burbot, cod, pike, walleye, flounder, sucker	823	527	513	1,863	52	128	269	363	612
NOTE: The harvest survey began in April 1998. Therefore, no harvest data is available for the first quarter of 1998.									
SOURCE: SRRB (2002, 2003)									

The 2001 data, which includes the harvest data for the whole year, clearly shows the great contribution harvesting has made to the 1,800 Aboriginal residents of the SSA. For each resident, an average of 1.5 caribou, 1.7 geese, 2 ducks, almost 9 fish, and 0.13 moose were harvested in that year. Furs were obtained from almost 1,500 furbearers, excluding rabbit and hare. Some of these animals, e.g., beaver, were eaten.

The quarterly data shows that in 2001:

- over 60% of caribou kills were during the first three months of the year, and were quite evenly spread across these months
- harvesting of the most valuable furbearers also occurred during the first quarter
- duck and geese were taken primarily during the spring
- fish were taken all year, but the summer months were the most productive, with the equal-size spring and fall harvests combining to produce about the same number as that of the summer harvest

Traditional harvesting is an all-year activity among the Sahtu, with:

- caribou hunting and trapping of high-value furs primarily in the winter
- duck and geese hunting, and beaver trapping in the spring
- moose hunting and fish catching in the summer
- caribou hunting, rabbit and hare snaring, and high-value fur trapping in the late fall

Table 5-3 shows the total edible weights and weights per capita of mammals, birds and fish harvested for 1999 and 2001.

Table 5-3: Total and per Capita Edible Weights of Wildlife in the Sahtu Settlement Area

Species	1999		2001	
	Total (kg)	Total per Capita (kg)	Total (kg)	Total per Capita (kg)
Mammals	171,165	95	134,462	75
Birds	8,286	5	6,577	4
Fish	42,613	24	20,813	12
Total	222,064	124	161,852	90
SOURCE: Calculated by AMEC from SRRB (2002, 2003)				

A monetary value for the SSA wildlife harvest was calculated based on appropriate weighting of the cost of replacing the edible mammal, bird and fish with store-bought beef, chicken and fish. Inuvik prices were used (see the EIS, Volume 4, Section 5.2.1, Participation in Traditional Harvesting [ISR]). This was necessary because the Sahtu harvest study reports did not provide information on numbers of people harvesting in each SSA community. Therefore, it was not possible to calculate a regional price index by weighting the price index for each community by the number of hunters in that community.

The procedure was to calculate a price index for the region by weighting the individual community price indexes by their population sizes. This was then compared to the ISR price index, and the SSA price index was 32% higher than that for the ISR. The Inuvik dollar monetary costs for beef, chicken and fish were accordingly increased by 32% to obtain monetary cost figures for the SSA. Table 5-4 shows the harvest values obtained by multiplying the monetary values of \$3,208,775 for 1999 and \$2,318,050 for 2001. The monetary value per capita in 2001 was \$1,290.

Table 5-4: Replacement Values of Wildlife Harvests by Sahtu Harvesters

Species	1999		2001	
	Total Harvest (kg)	Harvest Value (\$)	Total Harvest (kg)	Harvest Value (\$)
Mammals	171,165	2,375,936	134,462	1,866,471
Birds	8,286	146,753	6,577	116,482
Fish	42,613	686,086	20,813	335,097
Total	222,064	3,208,775	161,852	2,318,050
NOTE: See the text for details about deriving monetary costs per kilogram for mammals, birds and fish				
SOURCE: Calculated by AMEC from SRRB (2002, 2003)				

5.3 Consumption of Country Foods

The 2002 Sahtu harvest data substantiates the survey finding: 87% of Sahtu Aboriginal community residents reported that in 2002, half or more of the food they consumed was country food. In Norman Wells, this number was only 31%. Table 5-5 shows this percentage has increased steadily since 1993 in both Norman Wells and the Sahtu Aboriginal communities.

Table 5-5: Country Food Consumption in the Sahtu Communities

Location	Households Where Country Food is Consumed ¹		
	1993 (%)	1998 (%)	2002 (%)
NWT	29	30	33
NWT Aboriginal communities ²	73	68	70
SSA total	40	58	65
Norman Wells	14	25	31
SSA Aboriginal communities total	51	76	87
Fort Good Hope	47	72	–
Déline	34	83	–
Tulita	66	77	–
Colville Lake	94	97	–
NOTES: – = data not available 1 Half or more of food consumed is country food 2 All study area communities in the Northwest Territories, except Inuvik, Norman Wells, Fort Simpson, Yellowknife, Hay River and Enterprise			
SOURCES: GNWT Bureau of Statistics (1994, 1999, 2002a), SRRB (2002, 2003)			

5.4 Trapping

The data in Table 5-6 indicates a sharp decline in the percentage of men engaged in trapping in the Sahtu Aboriginal communities, from 82% in 1987 to 26% in 1993. A more modest but similar pattern in is seen in Norman Wells. Between 1993 and 2002, no more than 33% of the men in the SSA Aboriginal communities were trapping.

Table 5-6: Active Trappers and Average Income in the Sahtu Communities

Location	Trappers ¹				Average Annual Income ²			
	1987 (%)	1993 (%)	1999 (%)	2002 (%)	1987 (\$)	1993 (\$)	1999 (\$)	2002 (\$)
NWT Aboriginal communities ³	47	18	18	14	2,514	672	919	991
SSA total	53	16	17	21	4,052	915	1,540	1,633
Norman Wells	4	1	2	1	1,449	846	1,040	1,747
SSA Aboriginal communities total	82	26	26	33	4,120	917	1,540	1,630
Fort Good Hope	88	21	25	31	3,851	1,566	1,538	1,916
Déline	75	20	23	33	3,825	307	1,116	1,390
Tulita	79	27	20	24	3,184	803	1,124	845
Colville Lake	100	77	95	93	7,858	1,059	2,742	2,254

Table 5-6: Active Trappers and Average Income in the Sahtu Communities (cont'd)

Location	Trappers ¹				Average Annual Income ²			
	1987 (%)	1993 (%)	1999 (%)	2002 (%)	1987 (\$)	1993 (\$)	1999 (\$)	2002 (\$)
NOTES:								
1 Males, aged 25 to 59 years								
2 Income not adjusted for inflation								
3 All study area communities in the Northwest Territories, except Inuvik, Norman Wells, Fort Simpson, Yellowknife, Hay River and Enterprise								
SOURCE: GNWT RWED (1987, 1993, 1999, 2002)								

The average income per active trapper in Norman Wells in 2002 was \$1,747, slightly higher than the average of \$1,630 in the SSA Aboriginal communities.

5.5 Aboriginal Language

Table 5-7 shows that between 1989 and 1999, the proportion of Sahtu adults in Norman Wells who reported they could speak an Aboriginal language declined from 52% to 29%. In the SSA Aboriginal communities, almost two thirds, 68%, were still proficient in their mother tongue in 1999, a decline of 20% during the preceding decade.

Table 5-7: Aboriginal Language Speakers in the Sahtu Communities

Location	1989 (%)	1994 (%)	1999 (%)
NWT	56	50	45
SSA total	86	68	64
Norman Wells	52	36	29
SSA Aboriginal communities total	88	73	68
Fort Good Hope	81	54	48
Déline	98	96	93
Tulita	82	61	63
Colville Lake	95	96	76
NOTE: Percentage of Aboriginal people, aged 15 years and older			
SOURCE: GNWT Bureau of Statistics (2002b)			

6 NONTRADITIONAL LAND AND RESOURCE USE

6.1 Introduction

6.1.1 Setting

This section describes existing land and resource uses for nontraditional users within the study area. Nontraditional land and resource users in the Mackenzie Valley include:

- non-Aboriginal residents
- nonresident hunters and anglers
- tourists
- government and industry representatives who travel north for business

In this section, information on resource harvesting is limited to nontraditional harvesting only. See Section 5, Traditional Culture for more information on traditional land and resource use, and traditional knowledge.

6.1.2 Objectives

The objectives of the nontraditional land and resource use baseline study are to:

- collect the most recent available information for all valued components in the study area
- document the existing conditions for all valued components for each settlement region within the study area
- identify and describe all nontraditional land and resource use that could be affected by the project

6.2 Methods

6.2.1 Baseline Information

Baseline information for each valued component was collected from available literature, maps and web sites, and through discussions with resource managers and other knowledgeable individuals living and working in the Mackenzie Valley. Discussions were conducted via phone, e-mail and sometimes in person. Additional information was provided by a fixed-wing flight over the study area in September 2001 and fieldwork conducted by other disciplines, e.g., vegetation, wildlife and aquatics.

6.2.2 Study Area

Study area boundaries ensure that the land and resource uses potentially affected by the project are identified and assessed. The study area for the land and resource use baseline is defined by a 15-km-wide buffer around the three anchor fields, on each side of the gathering pipelines in the gathering system, and on each side of the gas pipeline right-of-way. This approach resulted in a study corridor about 30 km wide. Although many resource-related activities occur on lands within the study corridor, these lands are more frequently used to access activities outside the corridor.

6.2.3 Baseline Components

For nontraditional land and resource use, baseline components are defined as the valued components upon which the EIS is based. The valued components are land or resource uses, or in some cases, the available resources that the project could affect, include:

- land ownership
- granular resources
- timber resources
- mineral resources
- oil and gas activities
- nontraditional resource harvesting (hunting and fishing)
- tourism and recreation
- other commercial activities
- marine operations (ISR only)
- environmentally protected areas
- visual and aesthetic resources

In addition to these valued components, a description of the land ownership in each region is also provided. A brief general description of each of the land and resource use valued components in the study area follows.

6.2.3.1 Land Ownership

The lands traversed by the project typically fall into five categories of ownership:

- federal Crown lands – federal lands administered by INAC (also referred to as territorial lands in the *Territorial Lands Act*)
- Commissioner's lands – federal lands administered by the territorial government
- private lands – administered by the land administration within the settlement region

- municipal lands – administered by the territorial government or the municipality
- provincial Crown lands – administered by the Alberta Public Lands Administration

Land ownership was chosen as a valued component because the project will traverse both public and private lands, and permission to use the lands will be required. These lands might be zoned for uses contrary to the project, particularly municipal lands, and this potential for zoning conflict is another reason why land ownership was chosen as a valued component.

6.2.3.2 Granular Resources

Granular resources refer to sand, gravel, clay, quarry materials and silt. Some of these resources will be required for project construction. Granular resources were chosen as a valued component because industrial developments and local communities need these resources for construction and maintenance. These materials are sometimes difficult to obtain in the North.

6.2.3.3 Timber Resources

Although the anchor fields do not contain timber, other segments of the project go through forested lands where timber is important for firewood, construction materials and other uses. The vegetation changes from tundra in the ISR to transitional forest near the ISR–GSA boundary. Farther south, from Travaillant River to northwestern Alberta, the study area is predominantly forested with a mixture of black and white spruce, birch, pine, aspen and tamarack. Land clearing during construction, and an increase in access to forested areas, has the potential to affect available timber resources.

6.2.3.4 Mineral Resources

Mineral resources were chosen as a valued component to assess potential impacts on future potential mineral development, i.e., areas where mineral potential has been found or where mineral leases are held.

6.2.3.5 Oil and Gas Activities

Oil and gas activities include exploration and development for oil and natural gas production outside the scope of the project. Oil and gas activities were chosen as a valued component because of the strong potential for future oil and gas development in the Northwest Territories in general, and specifically in the study area.

6.2.3.6 Nontraditional Resource Harvesting

Nontraditional resource harvesting includes hunting, fishing and trapping pursued by non-Aboriginal residents and nonresidents. These activities may be for domestic, sport or commercial purposes. Nontraditional resource harvesting was chosen as a valued component because of the high level of concern for potential impacts on these activities.

6.2.3.7 Tourism and Recreation

Tourism and recreation activities include ecotourism, guided outfitting, river tours, cultural tours or recreational activities, such as hiking or cross-country skiing. Construction and operation of the project, and what exists after decommissioning, have the potential to affect the nature and levels of these activities.

6.2.3.8 Other Commercial Activities

Other commercial activities include reindeer herding in the ISR, commercial transportation and agriculture. These might occur near the study area. Directly or indirectly, project activities might affect these commercial activities.

6.2.3.9 Marine Operations

The Beaufort Sea is used by a variety of vessels for several different purposes. As the currently preferred development approach at Niglintgak includes transport of a barge-based facility through the Beaufort Sea, marine operations may be affected.

6.2.3.10 Environmentally Protected Areas

The project occurs near or within areas with special designations that, through legislation or other means, are protected in some form, or are given special status. These areas include:

- the Kendall Island Bird Sanctuary, a migratory bird sanctuary
- Inuvialuit Community Conservation Plan category areas
- a potential heritage river, i.e., the Mackenzie River
- Gwich'in and Sahtu conservation zones and special management areas
- territorial parks
- proposed and existing protected areas
- International Biological Program sites
- national historic sites
- caribou protection areas
- recreation areas

6.2.3.11 Visual and Aesthetic Resources

Currently, there is little physical presence on the landscape that has an effect on the visual or aesthetic value within the study area. Installation of the project components, particularly the facilities, has the potential to affect visual and aesthetic values.

6.3 Baseline Conditions

6.3.1 Land Ownership

Most of the lands traversed by the project in the SSA are either federal Crown lands administered by INAC, or Sahtu private lands administered by either the K'ahsho Got'ine District Land Corporation or the Tulita Land Corporation. Lands proposed for project components within the towns of Fort Good Hope, Norman Wells and Tulita are municipal lands, which could include Commissioner's lands, administered either by the town or by GNWT, MACA. Figure 6-1 shows land ownership in the SSA.

In Fort Good Hope, there are several infrastructure components, including a barge landing site, camp, storage site, two borrow sites and several roads, and also a segment of the pipeline. All of the new project components within the Fort Good Hope town boundary are located on lands designated as hinterland, and there are no restrictions on land uses within this zone. However, restrictions exist on placing new developments within 450 m of the town's solid waste and sewage disposal site, or within 60 m of the water reservoir.

In Norman Wells, several existing infrastructure sites and roads will be improved and used. New project components within the town boundary will include a camp, a storage site, fuel storage, two borrow sites, the Norman Wells facility and a pipeline segment. All of the proposed new components will be located on lands zoned as hinterland (UMA Engineering Ltd. 1993). Although these land uses are not automatically permitted in the Hinterland Zone, pipelines and facilities are permitted at the discretion of the council.

6.3.2 Granular Resources

Several borrow sites and related operations are located within the SSA part of the study area, especially near Norman Wells. These are primarily local operations that provide granular resources to communities for maintaining roads and other infrastructure. Some of the existing sites also provide support to petroleum operations in the Norman Wells area. A large quarry is located about 3 km east of Norman Wells, above the town landfill site. According to the forest management officer for the Sahtu region, there is also an existing borrow site located between Norman Wells and Tulita at the Little Bear River (Rivard 2002, personal communication).

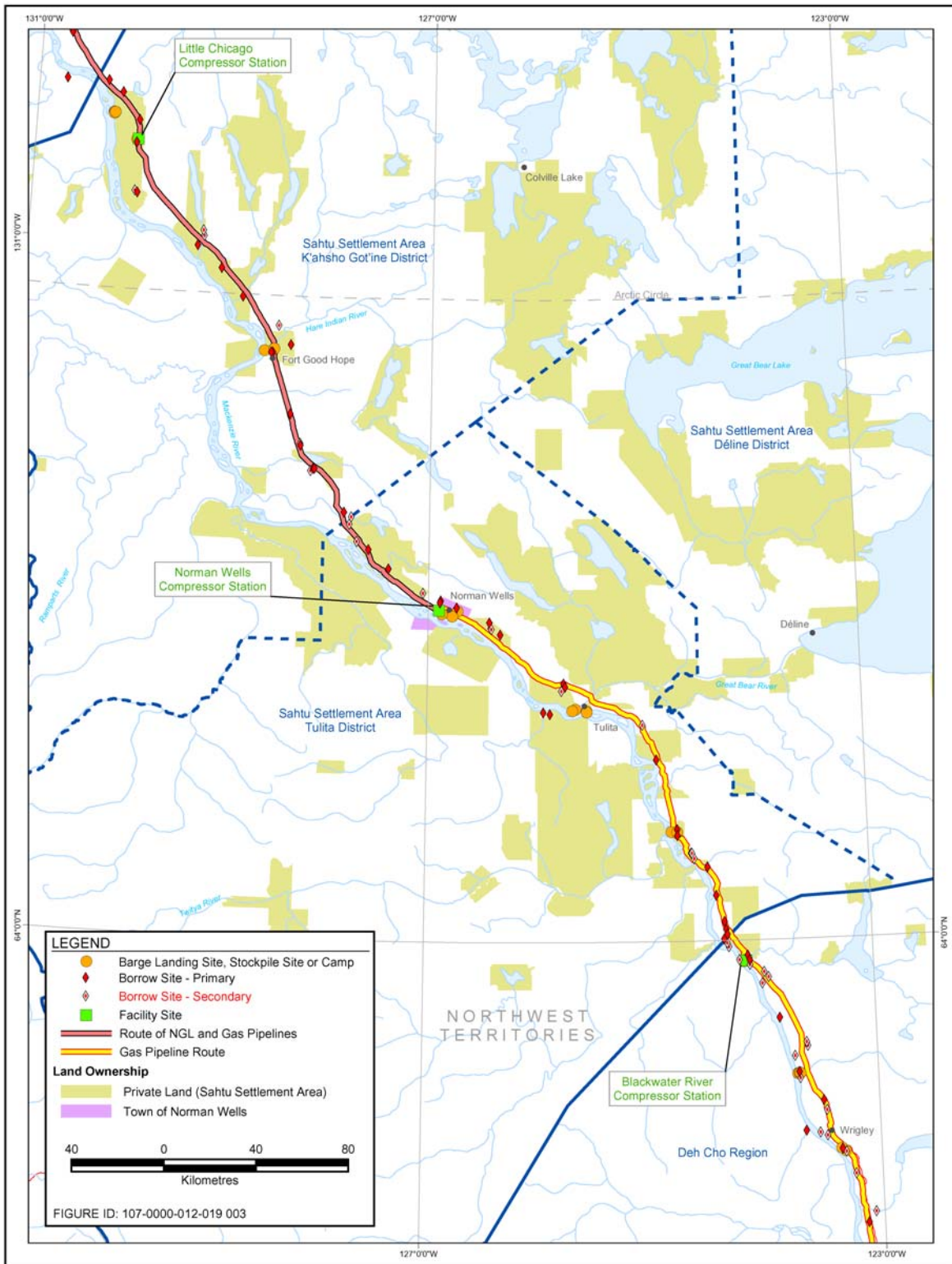


Figure 6-1: Land Ownership – Sahtu Settlement Area

The Sahtu own granular resources found on Sahtu lands with subsurface rights. On all other Sahtu lands, i.e., surface rights only, and Crown lands, the granular resources are owned by INAC.

6.3.3 Timber Resources

Within the SSA, upland forests cover much of the southern part of the region and there are extensive forests in level, poorly drained areas. Tree species found in these forests include white spruce, black spruce, pine, birch and aspen.

There are no major timber harvesting operations in the SSA part of the study area. Former timber harvesting facilities were located at Little Chicago and Grandview, i.e., one sawmill located north of Fort Good Hope on the Mackenzie River. Neither operation has been active for several years (Clarkson 2002, personal communication; Rivard 2002, personal communication). Each community in the SSA has a small lumber mill, typically consisting of a gas-powered band saw, to process timber for local use (Rivard 2002, personal communication). Residents harvest fuel wood along the winter road throughout the SSA (Rivard 2002, personal communication).

6.3.4 Mineral Resources

No deposits of interest have been identified in the SSA part of the study area (CS Lord et al. 2002). Several mineral claims, held by Patrician Consolidated Gold Mines Ltd., are located within the study corridor at the southern boundary of the SSA (INAC 2003b). In addition, several prospecting permits were recently issued to Diamondex Resources Ltd. (Diamondex) along the northern boundary of the SSA border with the GSA and ISR (INAC 2003b). This area has been identified as the Lena West prospecting area, which covers about 25,000 km² of the Anderson River watershed (Diamondex 2003). Diamondex has plans to conduct extensive diamond exploration in this area.

South of the Diamondex prospecting permit area, several prospecting permits were issued to DeBeers Exploration Inc. and an individual, Mathew Mason (INAC 2003b). The pipeline corridor lands have been rated as having low mineral potential (SLUPB 2001a).

6.3.5 Oil and Gas Activities

The most prominent petroleum industry activity within the SSA part of the study area is the Norman Wells oil field, which is under the Norman Wells Production Area Agreement. Imperial Oil Resources Limited operates this site. The Norman Wells crude oil production is transported to Alberta in an Enbridge pipeline. In addition, several oil and gas exploratory licences are located near Norman Wells, Tulita and Colville Lake (Inukshuk Geomatics 2000, SLUPB 2001b, INAC 2002a). Some exploratory licences are also held in the Colville Lake area.

Figure 6-2 depicts current oil and gas dispositions in the SSA.

Table 6-1 lists the company names for the exploratory and significant discovery licences located within the 30-km-wide study corridor. The pipeline corridor in the SSA crosses eight exploratory licences and the Norman Wells Production Area Agreement.

Table 6-1: Oil and Gas Dispositions within the Study Area in the Sahtu Settlement Area

Company	Licence No.
Canadian Abraxas	EL 389
Northrock Resources Ltd.	EL 391
EnCana Corporation	EL 392
EnCana Corporation	EL 398
EOG Resources Canada	EL 401
Devon ARL Corporation	EL 402
Canadian Forest Oil Limited	EL 412
Devlan Exploration Inc.	EL 413
Imperial Oil Resources Limited	PAA
NOTES: EL = exploratory licence PAA = production area agreement Includes all licences within the 30-km-wide study corridor	
SOURCES: SLUPB (2001b), INAC (2002a)	

In winter 2001–2002, the only exploration activity in the SSA was the drilling of an unsuccessful well by EOG Resources Canada at Devo Creek, about 60 km northwest of Norman Wells (GNWT RWED 2002a). Activities conducted in winter 2002–2003 included Paramount Resources Ltd. and Canadian Natural Resources Limited drilling several exploration wells in the Colville Lake area (GNWT RWED 2002b, 2003b).

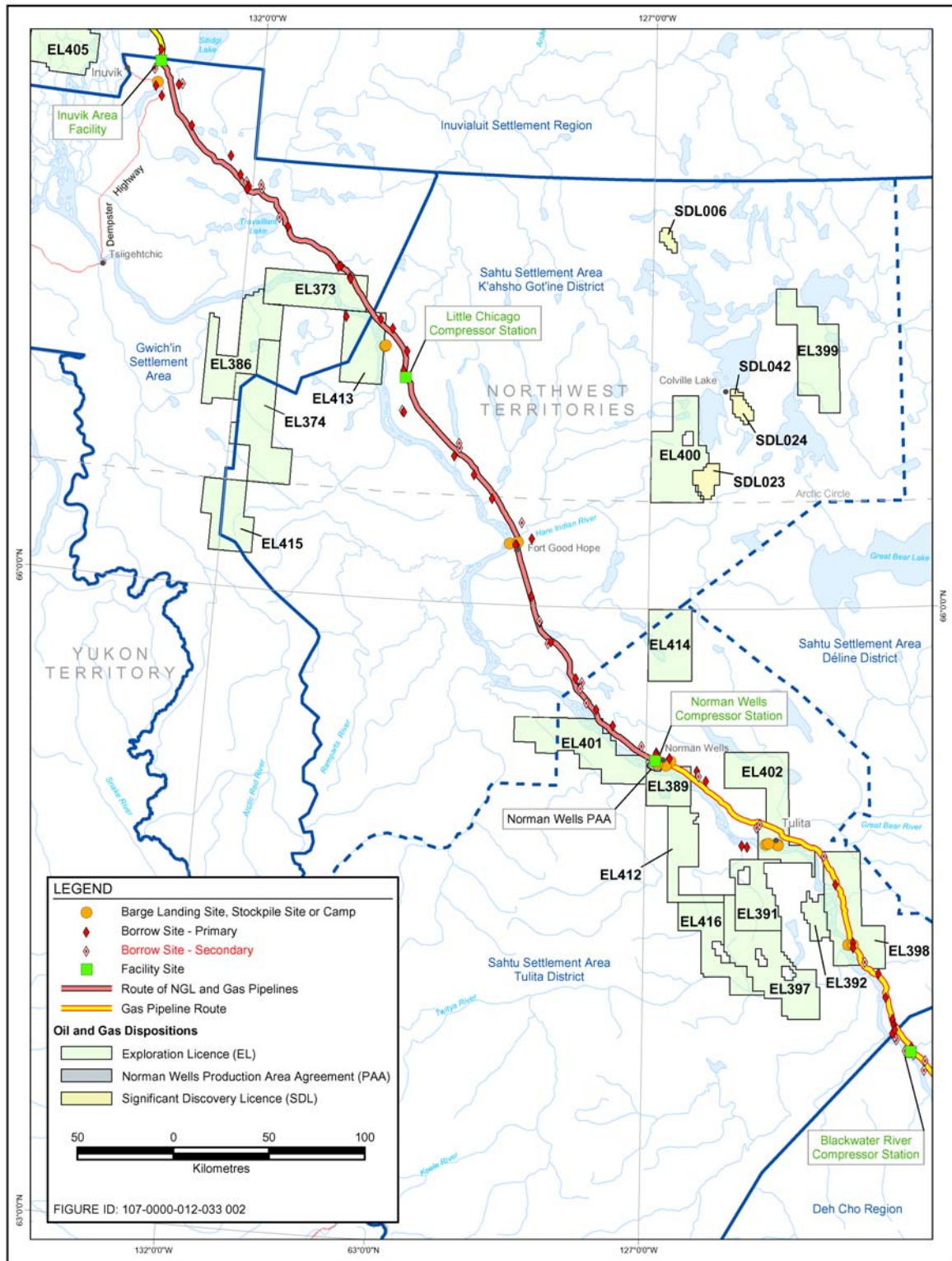


Figure 6-2: Oil and Gas Dispositions – Gwich'in Settlement Area and Sahtu Settlement Area

6.3.6 Nontraditional Resource Harvesting

Within the SSA, game hunting is permitted for:

- black bear
- moose
- caribou
- muskox
- wolf
- wolverine
- small nonfurbearing mammals, e.g., hare, marmot, woodchuck, groundhog

Game-bird hunting is permitted for ptarmigan and grouse. According to a wildlife technician for the SSA, GNWT RWED recently established a limited-entry draw for muskox in the SSA, and lands for this hunt could potentially be accessed via the pipeline corridor (Popko 2002, personal communication). Canadian Wildlife Service regulates hunting for migratory birds, and a Migratory Game Bird Hunting Permit and a Habitat Conservation Stamp are required.

No designated guide/outfitter areas exist within the study area part of the SSA. However, one outfitter – Jackson’s Arctic Circle Tours – operates out of Fort Good Hope at Manual Lake. There are eight big-game outfitting areas in the Mackenzie Mountains, seven of which are located either partially or entirely in the SSA. Most of these outfitters do some of their staging out of Norman Wells (Popko 2002, personal communication).

In the early to late 1990s, parts of the Bluenose-West caribou herd overwintered in the Fort Good Hope area. Residents used the winter road to access the herd and some harvesting occurred within the study area. The herd has not been in this area for several winters, although the potential exists for them to return. Woodland caribou have been harvested along the winter road in the past. However, the Woodland caribou has recently been declared a threatened species (Committee on the Status of Endangered Wildlife in Canada [COSEWIC] 2002).

Only one commercial fishing licence has been issued near the study area – on Lennie Lake, located on the east side of the Norman Range (Popko 2002, personal communication). About 12 domestic fishing licences have been issued to residents of Norman Wells. Some of this fishing occurs in the Mackenzie River within the study area (Popko 2002, personal communication).

Sport fishing occurs in many lakes and streams in the SSA, and is licensed by the GNWT RWED (GNWT RWED 2002h). Sport fishing is subject to the terms and conditions set out in the Sahtu Comprehensive Land Claim. Sport anglers may fish only in waters on Crown lands, unless permission to fish on Sahtu private lands is given by a Sahtu Renewable Resource Council (Department of Indian

Affairs and Northern Development 1993). Permission must also be obtained from the local Renewable Resource Council or land corporation to travel across Sahtu private lands. Sport fishing in the SSA is usually incidental and limited to the summer, except for Trout Lake. Trout Lake, near Bear Rock at Tulita, is accessed by winter road and is commonly fished in winter and spring (Popko 2002, personal communication). Sport fish species present in the SSA include (GNWT RWED 2002h):

- Arctic grayling
- burbot
- bull trout
- inconnu
- lake trout
- northern pike
- walleye
- whitefish

Details regarding catch limits are found in the annual *Northwest Territories Sport Fishing Guide* (GNWT RWED 2002h).

6.3.7 Tourism and Recreation

Residents use a variety of waterways in the SSA for recreation. For example, residents, and to a lesser extent nonresidents, travel the Mackenzie River by boat for recreation. The Great Bear River is a popular canoeing destination in the summer, mostly for residents (Popko 2002, personal communication).

Tourism activities in the SSA include:

- the *SS Norweta* tour boat, which travels up and down the Mackenzie River all summer, stopping at most communities for photo opportunities, shopping and supplies
- jet-boat tours on the Mackenzie River and its tributaries
- tourism opportunities on Kelly Lake during the summer
- a tourist camp on Manual Lake that primarily operates in the summer (Popko 2002, personal communication)

Regional residents use the winter road and, to a lesser extent, the Enbridge right-of-way, for regional recreation during all seasons. In Norman Wells, other outdoor recreational users include members of a local birders' club, cross-country skiers, hikers and mountain bikers (Popko 2002, personal communication). The Canol Road and TransCanada hiking trails are accessible from Norman Wells.

6.3.8 Other Commercial Activities

In winter, the Mackenzie Highway is extended via a winter road from Wrigley to Fort Good Hope. It is a transportation corridor for trucks carrying goods to the valley communities. The winter road is normally open from December until March, depending on weather conditions and commercial requirements for the road.

The Mackenzie River is an important transportation corridor for barges and other boats delivering goods to many of the communities along its banks, on the Beaufort Sea and in other parts of the Arctic. Barging activities along the Mackenzie River occur from mid-June through September.

6.3.9 Environmentally Protected Areas

The Draft Sahtu Land Use Plan, released in January 2003, identifies several special management areas and conservation areas (SLUPB 2003). The proposed pipeline route crosses four special management areas in the SSA:

- Yeltea and Manual lakes
- Colville Lake Trail
- Lac à Jacques, Turton Lake and Sam Macrae Lake
- the Mackenzie River

The right-of-way also traverses two conservation areas in the SSA:

- Fort Anderson Trail
- Great Bear River

Figure 6-3 shows the location of these areas.

The Sahtu Land Use Plan specifies that oil and gas exploration and development are acceptable activities within special management areas, but they are restricted or unacceptable within conservation areas. Applications can be made for amendments or exceptions, as long as amendment procedures and conditions are followed.

McKinnon Territorial Park is located in Norman Wells, on the banks of the Mackenzie River (GNWT RWED 2002f). This park is open from May 15 to September 15, and has eight nonserviced campsites, day-use and picnic facilities, and toilets. Although camping is permitted, Norman Wells' residents use this park as a day-use area.

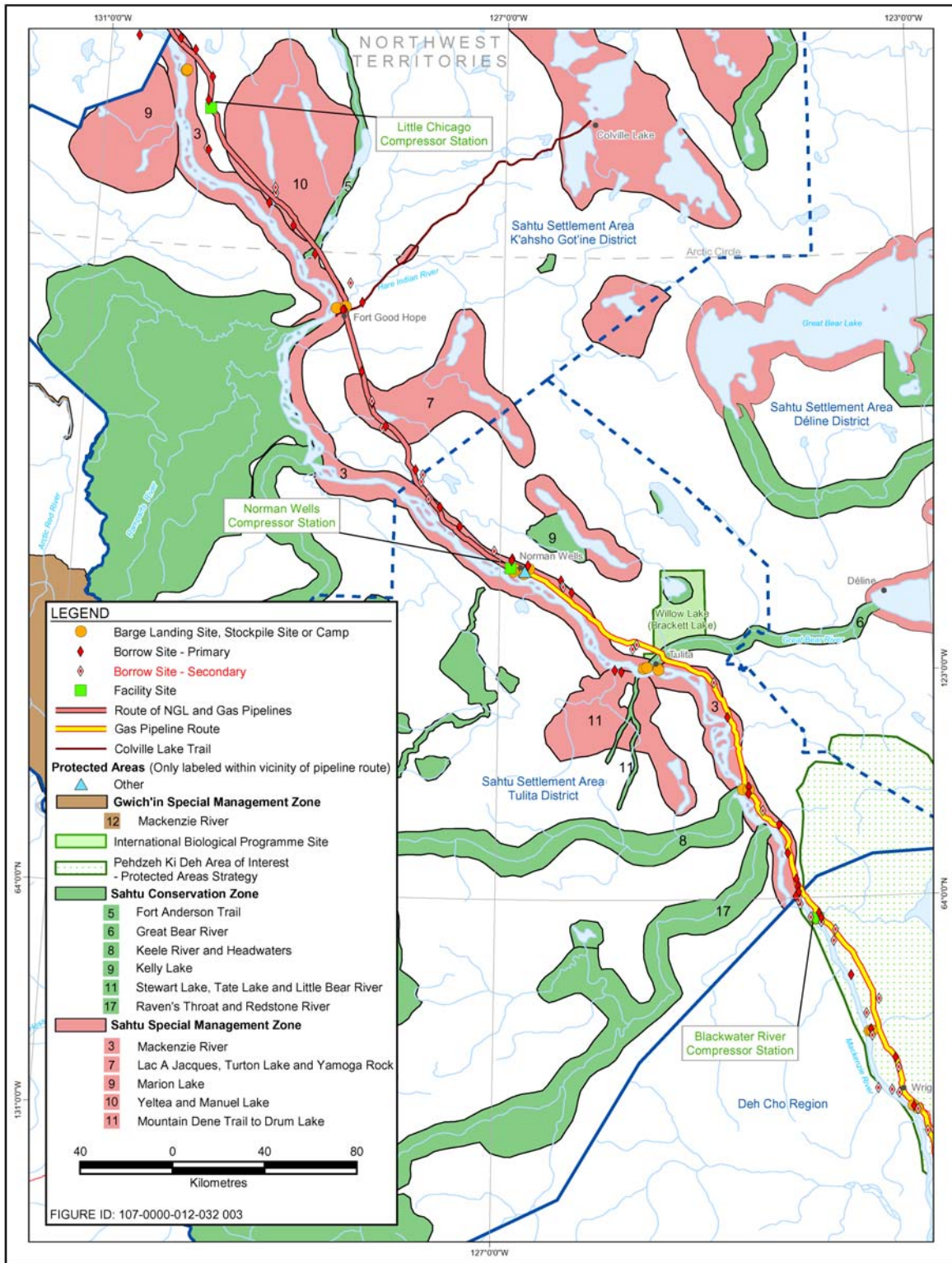


Figure 6-3: Protected Areas – Sahtu Settlement Area

The Willow Lake and River area, also referred to as Bracket Lake, is just north of the Great Bear River, within the pipeline corridor. This area was considered for designation as an International Biological Program site as it contains many good examples of bog and pond successions (Dome et al. 1982, Hardy Associates Ltd. 1980, SLUPB 2001c). The area was enlarged to include the potential highway and pipeline transportation corridor to monitor the natural recovery processes following human disturbance. Willow Lake is a seasonal home to Sahtu beneficiaries from Tulita.

6.3.10 Visual and Aesthetic Resources

The predominant visual feature of the SSA is the forests, which include black and white spruce, and white birch on uplands and rocky ridges. There are also rolling plains with trees, shrubs, bogs and fens. Farther south are upland forests and in more level areas, extensive forests that tend to be poorly drained. Bear Rock, north of Tulita, is a prominent feature.

Historic seismic cutlines are found throughout the SSA, and industrial activity is especially prominent around Norman Wells. From Norman Wells south to Alberta, the pipeline route will generally parallel the Enbridge right-of-way. The project will endeavour to use existing infrastructure sites, including:

- a proposed site at Little Chicago, which includes a historical barge landing site, airstrip and seasonal camp facility. A meteorological station is located at the site. Nearby areas are used for local hunting and fishing camps.
- the Fort Good Hope site, situated at a barge landing site heavily used by Fort Good Hope residents
- the Norman Wells site, within the town of Norman Wells, which already has a large industrial presence
- the site planned near Tulita, currently used as an industry staging site and seasonal camp facility. The Norman Wells to Tulita winter road passes through the site.
- the Little Smith Creek site, which will be located at an existing site along the Enbridge right-of-way. It is currently used for maintenance activities and has an airstrip.

7 HERITAGE RESOURCES

7.1 Introduction

The baseline is discussed under the broad headings of prehistory and history because of the nature of the data. Relatively little specific data is available for the prehistoric context of the community areas of individual settlement regions. Therefore, the information was based, in part, on comparable data previously recorded in areas with similar subsistence strategies. This information applies to broader areas than the more specific historic data.

The cultural backgrounds of the people within the traditional areas are also presented in some detail, as this is a fundamental link for archaeologists as they find and understand the physical remains of cultures.

7.2 Overview of the Norman Wells Area

7.2.1 Prehistory

The prehistory of the Norman Wells area of the SSA is adapted from the EIS, Volume 6, Section 7.3.1.2, Gwich'in, Sahtu and Deh Cho Areas Prehistory.

The Mackenzie Valley, in its present form, did not exist in this area until after 9,900 BP, so occupation was not likely before this time. Although the earliest human habitation of the Mackenzie Valley is unknown, it may have been associated with populations moving south from a Beringian refugium. Although there are no very old sites within the Tulita District in the Norman Wells area that have been scientifically dated, tools that are similar to those from prehistoric occupations that are dated from 9,000 to 6,000 BP have been recorded. Sites dating up to the Protohistoric Period have been found in the area.

The subsistence pattern of the Norman Wells area is commonly referred to in archaeological literature as a boreal strategy.

More systematic archaeological research has been conducted and more archaeological sites have been recorded in the Mackenzie Valley than in the delta and coastal areas to the north. Therefore, from a prehistoric perspective, considerably more is known about the prehistoric occupation of the Mackenzie Valley. However, many questions remain about specific dates, transition in the complexes and phases that represent the major periods and changes in technology.

Canadian boreal forest prehistory is divided into three major components:

- Early Prehistoric Period (about 11,000 to 7,000 BP)
- Middle Prehistoric Period (about 7,000 to 2,500 BP)
- Late Prehistoric Period (about 2,500 to 250 BP)

These correspond to periods of cultural development marked by changes in weapons, and reflect complex cultural evolutionary processes that include major technological advances. The prehistory of the Mackenzie River Basin, especially in the northern portions, is intermixed with coastal cultural expansions and is less well defined than areas farther south.

The earliest incontrovertible evidence of prehistoric occupation of the Mackenzie Basin comes from south of the study area near Fort Liard. The tool kit found there is similar to assemblages recovered elsewhere dating between 9,000 and 6,000 BP (Millar 1981). Near the study area, a site on Chick Lake by the Donnelly River crossing dates to about 7,000 BP (Millar and Fedirchuk 1974). Sites dating up to the Protohistoric/Historic Period have been recorded in the area (250 BP to present).

7.2.2 History and Cultural Context

The history overview and cultural context of the Norman Wells area of the SSA is adapted from the EIS, Volume 6, Section 7.3.2, History Overview; Section 7.4.3, Baseline Conditions – SSA; and Section 7.4.4, Baseline Conditions – DCR.

South of the Gwich'in and Inuvialuit are the traditional lands of the Athapaskan-speaking Dene people that make up the SSA. These lands comprise the Mackenzie Valley lowlands between the Blackwater and Travaillant rivers, from the Mackenzie Mountains and Foothills into the Yukon, to the Anderson Plain west of Great Bear Lake.

The Sahtu are one of the many groups that are part of the Athapaskan-speaking Dene. The Mountain Dene, Slavey and to a lesser extent, the Métis, are the cultural groups that traditionally occupy the Norman Wells area of the Tulita District. Other groups in the Sahtu include Sahtu Dene, K'ahsho Got'ine and Euro-Canadians. Before contact with Europeans, the cultural groups of this region were similar in terms of technology and language, and moved around frequently. However, they were considered distinct enough by their neighbours to be designated as separate people. The ways in which these people view and understand the land is preserved and passed on through oral tradition.

The Norman Wells area sustained a population of about 1,250 during contact (Kroeber 1939). The Chipewyan or Cree likely introduced trade goods in the mid-eighteenth century. Certain trade goods were useful to the Slavey, including metal goods, guns, tea, flour, rice and tobacco (Asch 1981). The fur trade disrupted traditional land use patterns, including travel routes and settlement areas, as the Cree began to move northward in response to trade rivalries (Lamb 1970). After Alexander Mackenzie's initial contact with the Slavey in 1789, trade expansion saw posts being established throughout the region. By the late 1800s, the Slavey traded at seven posts (Asch 1981):

- Fort Norman
- Wrigley

- Fort Simpson
- Fort Providence
- Hay River
- Fort Nelson
- Fort Liard

Interactions between non-Aboriginal fur trade employees and Aboriginal populations resulted in the birth of Métis culture in the region, now recognized as the Sahtu Métis.

This is important to understand within the broader synopsis of the historic past of the SSA baseline setting, as archaeologists are also responsible for recording Historic Period remains. Perhaps as early as the mid-eighteenth century, the Slavey of the Mackenzie Valley were introduced, by Cree or Chipewyan middlemen, to a few European trade items, such as knives and hatchets. Inuvialuit traded to the west and south with the Alaskan Inuit for Russian goods. Initial contact with Europeans occurred with Alexander Mackenzie's expedition in 1789. Although Mackenzie's expedition reached Inuvialuit territory, the first contact with the Inuvialuit occurred with the Franklin Expedition in 1826.

The first long-term Euro-Canadian contact arose when fur trade posts were established along the Mackenzie River. The first of these was in Slavey territory was Livingston's Fort, established by the North West Company about 1796, on the Mackenzie River downstream of Great Slave Lake (Asch 1981). With the North West Company fur trade posts on the Mackenzie River, the Dene were afforded direct access to Euro-Canadian goods (Innis 1962). Between 1800 and 1810, five short-lived posts were established along the Mackenzie and Liard rivers. By 1879, when Wrigley was established, the posts operating along the lower Mackenzie included Fort Norman (now Tulita), Wrigley, Fort Simpson and Fort Good Hope. The Inuvialuit traded with the Dene at Fort Good Hope. Fort McPherson on the Peel River was also in operation.

By the end of the nineteenth century, Christian missionaries had been in contact with the people in the Mackenzie Valley. Euro-Canadian activities within the Mackenzie Valley encouraged regional concentration of the dispersed populations to centre on trading posts and missions (Savishinsky and Hara 1981). These centres drew in people from several ethnic or dialectic groups, making communities more sedentary and redefining their identities in association with specific posts, thus creating bands with which treaties could be signed.

The Canadian government did little to assert its presence in the Fort Good Hope area until its first treaty negotiations at Fort Resolution and Fort Vermilion brought segments of the Slavey into Treaty 8 in 1900. The Fort Nelson Slavey were added to Treaty 8 in 1911. Under the advisement of Bishop Breynat, the Gwich'in signed Treaty 11 in July 1921 (Heine et al. 2001). A treaty with the

Gwich'in, the rest of the Slavey and the Hare was not signed until 1921 (1922 in Fort Liard) (Asch 1981). The terms of this treaty are still in dispute.

Competition between companies, followed by mergers, resulted in fur trade posts being closed and new ones being opened. However, by the 1930s, exploitation of mineral resources replaced the fur trade as the principal industry of the Northwest Territories. The World War II period was pivotal in this, with development of the oil reserves at Norman Wells and construction of the Canol pipeline. With these industrial developments, the Dene found temporary and permanent wage employment, further concentrating populations in established communities.

Through the first half of the twentieth century, the Dene life changed only gradually because of the influx of Euro-Canadian goods and influences. Subsistence still depended on traditional pursuits, self-reliance and mobility (Asch 1981). During the early and middle portion of the century, the high price of furs persuaded many Slavey to become seriously involved in trapping and in the market economy of the dominant culture. Coupled with an increasing reliance on government services, this has resulted in a more sedentary existence. With the recent collapse in the fur market, the supplementary income formerly provided by trapping has had to be replaced with wage work, where available (see Section 2, People and the Economy).

The Métis are the descendants of non-Aboriginal and Aboriginal parents, usually with Dene maternal and Euro-Canadian paternal ancestries. Since about 1850, the Métis in the SSA have participated in traditional subsistence activities, working as interpreters, trappers and provisioners, and at trading posts. The Métis were most recognized for their role in transporting goods via canoe, Yorkboat and steamboat (Slobodin 1981b). Today, the Métis live throughout the Mackenzie region, although they have a collective identity based on a shared heritage.

During the 1977 Berger inquiry into the Mackenzie Valley pipeline (Berger 1977), the Dene and Métis insisted that outstanding land claim issues be resolved before planning further development in the Mackenzie Valley. Negotiations to settle these claims began in October 1991, with the final agreement signed in 1994 (Simpson 2002).

The Slavey people also extend into northern Alberta, where they are known as the Acha'ottine, or woodland people. These Athapaskan-speaking people refer to themselves as the Dene Tha'. Although culturally and linguistically similar to the Slavey of the Northwest Territories, they are geographically located in the northwest corner of Alberta. The traditional lands of the Dene Tha' extend from northwestern Alberta into northeastern British Columbia and into the southern regions of the Northwest Territories (Ross 2001). Although the Dene Tha' adhered to Treaty 8 in 1900, their reserves were not surveyed until 1946.

Before contact with Europeans, the Aboriginal people of this region were similar in terms of technology and language. They shared the same area, but they considered themselves to be separate groups when the first fur traders and explorers arrived in the region (Savishinsky and Hara 1981). Although these regional groups had many cultural similarities, they did recognize separate homeland use areas for each local band, including:

- Sahtu Dene group of the Great Bear Lake area
- K'ahsho Got'ine of the Fort Good Hope and Colville Lake area
- Shuta Got'ine of the area west of the Mackenzie River and south of Norman Wells
- K'aalo Got'ine between the Mackenzie River and Great Bear Lake (Sahtu Heritage Place and Sites Joint Working Group 2000)

However, groups had access to and used the entire traditional lands of the Sahtu. Today the SSA is divided into three administrative districts:

- K'ahsho Got'ine
- Déline
- Tulita

The ways in which these people view and understand the land is preserved and passed on through oral tradition. This includes knowledge of the environment and animal behaviour, cultural values, making tools and equipment, and how to interact with family members and neighbours. The land is a place to pass on this knowledge, and special places become aids for recalling stories and related knowledge (Sahtu Heritage Place and Sites Joint Working Group 2000). Special places might include:

- burial sites, which are considered sacred
- landmarks that identify travel routes
- landscape features that figure prominently in stories of the Sahtu Dene

Currently, five regional cultural groups make up the SSA (JWG 2000):

- the Hare, who live primarily in Fort Good Hope and Colville Lake
- the Slavey in Tulita
- the Sahtu Dene (Bear Lake) in Déline
- the Mountain Dene, in Tulita
- the Métis, who live throughout the Mackenzie Valley

The following is a brief overview of each of the principle cultural groups that occupy the Norman Wells area of the Tulita District, in the SSA.

7.2.2.1 Slavey

The traditional lands of the Slavey reach from the Mackenzie Valley to the Great Bear River, from the Liard River to the Hay River. The Slavey now occupies the southern reaches of the SSA, and lives primarily in the Tulita District. As the Slavey represent the major cultural group of the DCR, their cultural and historical background are discussed in the EIS, Volume 4, Section 7.4.4, Baseline Conditions (DCR).

7.2.2.2 Mountain Dene

The Mountain Dene, or Shuta Got'ine, historically used the area west of the Mackenzie River and east of the Mackenzie Mountains. Although several bands, known by anthropologists as *Mountain Indians*, have been associated with this region, the Shuta Got'ine was likely part of a larger group associated with the Nahanni or Kaska Dene (Gillespie 1981). Relatively little is known of the Mountain Dene's lifestyle in the Mackenzie Mountains before 1957, when the first documentation by non-Aboriginal people occurred. What is known was gathered from annual cycles of trade visits and periods of residence at Fort Norman. Trading patterns, starvation, disease and intermarriage with the Hare and Slavey influenced the shifts of these people within their traditional lands (Gillespie 1981). The Shuta Got'ine represents those bands that traded in Fort Norman since the early 1800s.

The rugged terrain inhabited by the Mountain Dene included alpine tundra, fast-moving rivers, and valleys with an intermittent cover of spruce with some birch and aspen. Game animals included moose, woodland caribou and Dall's sheep, and fish, hare and squirrel were frequently harvested (Gillespie 1981). Meat was often cached for winter when it was more difficult to hunt. In the fall, families travelled to Tulita, where they fished, trapped and traded dry meat in the region until January, and then returned to the mountains to hunt caribou.

Toboggans and dogs were not used for winter travel until the mid-1800s. Although canoes were made from spruce bark, moose skin boats remain the most distinctive trait in Mountain Dene culture and were the favoured method of travelling from the mountains to the Tulita area. Other material culture of the Mountain Dene did not differ greatly from other Athapaskan groups in the region. Lodges were constructed in a simple lean-to style or with caribou hide, and sheltered two to four families (Gillespie 1968). Caribou, sheep and moose hides, and squirrel skins were used for clothing.

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GLOSSARY

Aboriginal	Any Indian, Inuit or Métis person who was born in the Northwest Territories or who is descended from an Aboriginal person born in the Northwest Territories.
abandonment	The act of permanently stopping operations, discontinuing service, removing facilities and restoring land to a productive state.
Aboriginal community	A community in which the majority of residents are Aboriginal.
AM	The abbreviation for amplitude modulation.
AMEC	The abbreviation for AMEC Earth & Environmental, A division of AMEC Americas Limited.
anchor field	The three natural-gas fields, Taglu, Parsons Lake and Niglintgak, whose production will provide the initial volume of gas shipped in the Mackenzie Valley Pipeline.
archaeological site	A site where an archaeological artifact is found.
artifact	Any tangible evidence of human activity that is more than 50 years old, in respect of which an unbroken chain of possession cannot be demonstrated.
AWOS	The abbreviation for automated weather observation station.
baseline conditions	Existing conditions in the communities and ethnic regions of the area before any project effects are experienced.
baseline information	The current state of the environment or environmental setting for a particular element. This information will help to determine potential environmental effects of a project by providing an environmental reference point for the element, with which to compare future environmental conditions and potential project effects.
BDR	The abbreviation for Beaufort Delta Region.

biophysical environment	The components of the earth including: <ul style="list-style-type: none">• land, water and air, including all layers of the atmosphere• all organic and inorganic matter and living organisms• the interacting natural systems that include components referred to in the previous bullets
borrow site	An area that could be excavated to provide material, such as gravel or sand, to be used as fill elsewhere.
BP	The abbreviation for before present.
CARS	The abbreviation for community airport radio station.
CBC	The abbreviation for the Canadian Broadcasting Corporation.
commercial harvest	Occupied with or engaged with harvest intended for commerce, i.e., buying and selling a product, including transportation from place to place.
Commissioner's lands	Federal lands administered by the territorial government.
compressor station	A facility containing equipment that is used to increase pressure to compress natural gas for transportation.
COSEWIC	The abbreviation for Committee on the Status of Endangered Wildlife in Canada.
country food	Food traditionally harvested and eaten by local Aboriginal residents.
critical habitat	The habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the recovery strategy or in an action plan for the species, according to the <i>Species at Risk Act</i> .
DCR	The abbreviation for Deh Cho Region.
decommissioning	The act of taking a processing plant or facility out of service and isolating equipment, to prepare for routine maintenance work, suspending or abandoning.

devolution	Ongoing negotiations between the Government of Canada, the GNWT and the Aboriginal Summit that will transfer the current INAC control over land, water and resources to Aboriginal settlement area governments.
DME	The abbreviation for distance measuring equipment.
ECE	The abbreviation for Education, Culture and Employment (GNWT Department).
EIS	The abbreviation for environmental impact statement.
EL	The abbreviation for exploratory licence.
employment rate	Percentage of population, aged 15 years and older employed during the week before the survey.
environmental effect	<p>For a project, any change that the project might cause in the environment, including any change it might cause to a listed wildlife species, its critical habitat or the residences of individuals of that species, as defined in the <i>Species at Risk Act</i>. Also, any effect of any project-induced change on:</p> <ul style="list-style-type: none">• health and socio-economic conditions• physical and cultural heritage• the current use of lands and resources for traditional purposes by aboriginal people• any structure, site or thing that is of historical, archaeological, palaeontological or architectural significance <p>Also, any change to the project that might be caused by the environment.</p>
environmentally protected areas	Areas with special designations that, through legislation or other means, are protected in some form or are given special status.
environmentally sensitive area	An area designated in regional or local land use plans, or by a local, regional, provincial or federal government body as being sensitive to disturbance, or identified by an applicant as being sensitive for some reason.

facilities	Structures of the gathering and gas pipeline systems, including compressor and pump stations, block valves, pigging facilities, heater stations and meter stations.
FAS/FAE	The abbreviation for foetal alcohol syndrome/effects.
federal Crown lands	Federal lands administered by INAC (also referred to as territorial lands in the <i>Territorial Lands Act</i>)
five-year mobility status (migration)	The relationship between a person's usual place of residence on May 14, 1996 compared to the previous five years.
FJMC	The abbreviation for Fisheries Joint Management Committee.
FM	The abbreviation for frequency modulation.
FSS	The abbreviation for flight service station.
gas pipeline	The pipeline that transports compressed natural gas from the Inuvik area facility to the southern terminus near the Northwest Territories–Alberta boundary.
gathering pipelines	Four pipelines, also known as laterals, that transport natural gas and NGLs from the anchor fields to the Inuvik area facility. These include the Niglintgak lateral, Taglu lateral, Parsons Lake lateral and Storm Hills lateral.
gathering system	A system of pipelines, compressor stations and other related facilities that gather natural gas and associated NGLs from the anchor fields and transport it to the gas pipeline system located at the Inuvik area facility.
GNWT	The abbreviation for Government of the Northwest Territories.
granular resources	Sand, gravel, clay, quarry materials and silt.
GSA	The abbreviation for Gwich'in Settlement Area.
heavy drinking	Consuming five or more drinks at one sitting.

heritage resources	Locations where events took place in the past, or all of the objects that they contain, including any contextual information that may be associated with them that will aid in their interpretation, including natural specimens and documents or verbal accounts.
heritage resources	Cultural, historic, archaeological and palaeontological resources are collectively known as heritage resources and can include pre-contact and post-contact features.
historic archaeological resources	Sites, artifacts, structures and documents that relate to the influx of Euro-Canadians in the region, and date to the last 250 years.
honey bag	A plastic liner used in non-flush toilets which is removed when full.
HSS	The abbreviation for Health and Social Services (GNWT Department).
human health	A state of complete physical, mental and social well-being, and the ability to adapt to the stresses of daily life. It is not merely the absence of disease or infirmity.
human health assessment	Considers the effect of hazardous substances, environmental factors and exposure conditions on local and regional populations. It might consist of qualitative and quantitative assessments.
ICD-9 code	The abbreviation for International Classification of Diseases, Version 9.
INAC	The abbreviation for Indian and Northern Affairs Canada (Government of Canada).
infrastructure	Basic facilities, such as transportation, communications, power supplies and buildings, which enable an organization, project or community to function.
Inuvik area facility	The gas and NGL processing facility for the Mackenzie Gas Project to be located near Inuvik.
IRHSSA	The abbreviation for Inuvialuit Regional Health and Social Service Authority.
ISR	The abbreviation for Inuvialuit Settlement Region.

JRP	The abbreviation for Joint Review Panel.
lateral	A pipe that branches away from the central and primary part of the system.
limiting factor	Anything that has a measurable controlling effect on a species' growth or expansion, or on a biophysical element's continued capability to support its ecosystem.
local study area	A 1-km-wide buffer or corridor around each of the three lease areas, gathering system right-of-way, facility infrastructure sites, pipeline right-of-way and borrow sites.
LSA	The abbreviation for local study area.
MACA	The abbreviation for Municipal and Community Affairs.
major repairs (housing)	Refers to such conditions as defective plumbing or electrical wiring, or structural repairs to walls, floors or ceilings.
Métis	A person with a mixture of Aboriginal and non-Aboriginal ancestry.
migrants	Individuals moving to a different community.
migratory bird	Any migratory bird as referred to in the <i>Migratory Birds Convention Act</i> , including the sperm, eggs, embryos, tissue cultures and parts of the bird.
minor repairs (housing)	Refers to such conditions as missing or loose floor tiles, brick or shingles, or to defective steps, railing or siding.
mitigation	The elimination, reduction, or control of a project's adverse environmental effects, including restitution for any damage to the environment caused by such effects through replacement, restoration, compensation or other means.
monitoring	Resolving specific outstanding environmental issues, observing the potential environmental effects of a project, assessing the effectiveness of mitigation measures undertaken, identifying unexpected environmental issues and determining the action required based on the result of these activities.

municipal lands	Lands administered by the territorial government or the municipality.
N/A	The abbreviation for not applicable.
NDB	The abbreviation for nondirectional beacon.
NGL	The abbreviation for natural gas liquid.
NGL pipeline	The pipeline connecting the Inuvik area facility with the Enbridge Pipeline facilities at Norman Wells.
NGO	The abbreviation for nongovernmental organization.
NGTL	The abbreviation for NOVA Gas Transmission Limited.
NGTL interconnect facility	The southernmost point of the gas pipeline where it connects either directly with the natural gas pipeline system in northwestern Alberta or to a third-party extension that subsequently connects to the existing system.
Niglintgak	The anchor field to be developed by Shell. The field includes three well pads, one gas conditioning facility, flow lines and supporting infrastructure. The gas conditioning facility might be barge or land based.
Niglintgak lateral	The gathering pipeline connecting the Niglintgak gas conditioning facility to a connection point on the Taglu lateral at the outlet of the Taglu gas conditioning facility.
nonrenewable resources	Resources, such as fossil fuels (oil, gas, coal) and minerals that occur naturally but cannot be replaced once exploited.
nonresident	An individual who resides outside the Northwest Territories.
nontraditional land use	Existing land and resource uses for nontraditional users, including residents and nonresidents within the study area.
nontraditional resource harvesting	Includes hunting, fishing and trapping pursued by non-Aboriginal residents. May be for domestic, sport or commercial purposes.
NWT	The abbreviation for Northwest Territories.

Operations Phase	The phase of a project during which the pipeline and associated facilities are operated.
PAA	The abbreviation for production area agreement.
palaeontological sites	Sites bearing evidence of multi-cellular invertebrate, vertebrate faunal remains and plant materials that have been fossilized or otherwise preserved.
Parsons Lake	The anchor field to be developed by ConocoPhillips and ExxonMobil. Initially, the field will consist of a north pad for the well sites and gas conditioning facility. A second well pad will be developed five to 10 years after the north pad.
Parsons Lake lateral	The gathering pipeline connecting the Parsons Lake gas conditioning facility to a connection point at the Storm Hills pigging facility.
participation rate	Percentage of population, aged 15 years and older in the labour force.
physical infrastructure	All of the physical facilities, roads, barge landings, airstrips and other infrastructure that may require maintenance or repair, or which may have a shortened lifespan as a result of project-related activities.
pipeline	A line used for transmitting oil, gas or any other commodity and that connects a province with any other province or provinces or extends beyond the limits of a province or the offshore area as defined in section 123 of the <i>National Energy Board Act</i> .
pipeline corridor	The 1 km-wide area that generally centres on the combined right-of-way for the NGL and gas pipelines, from the Inuvik area facility to the southern terminus.
potential labour supply	People of working age who are unemployed and those not participating in the labour force who do want a job, less those who, because of disability, age, illiteracy, or lack of education, skills or training could be considered unemployable, according to the GNWT Bureau of Statistics definition.

prehistoric archaeological resources	Archaeological sites, objects and affiliated materials that represent occupation by Aboriginal peoples before the arrival of European goods, people and the historic records that characterize their culture (in North America).
private lands	Lands administered by the land administration within the settlement region.
production area	The area that encompasses all project components located north of the Inuvik area facility, including Niglintgak, Taglu and Parsons Lake, the gathering pipelines, facilities, infrastructure, and the 1 km-wide area surrounding each of these project components.
project proponents	The five organizations (Imperial, the APG, ConocoPhillips, Shell and ExxonMobil) that are undertaking the Mackenzie Gas Project.
project, the	The abbreviation for the Mackenzie Gas Project.
project-specific effect	An effect caused by the project. Such effects are sometimes referred to as direct effects as they only include the project's contribution to the effect (as opposed to cumulative effects, in which case other projects would contribute to the effect).
property crime	Breaking and entering, theft of motor vehicles, theft over \$5,000, theft \$5,000 and under, possession of stolen goods, and fraud.
provincial Crown lands	Lands administered by the Alberta Public Lands Administration.
RCMP	The abbreviation for Royal Canadian Mounted Police.
reclamation	The process of re-establishing a disturbed site to a former or other productive use, not necessarily to the same condition that existed before disturbance. The land capability might be at a level different, i.e., lower or higher, than that which existed prior to the disturbance, depending on the goal of the process. Reclamation includes the management of a contaminated site and revegetation where necessary. Reclamation is not considered complete until the goals for reclamation have been achieved.

recovery strategy	A strategy for the recovery of a listed extirpated, endangered or threatened species prepared by the competent minister (as defined under the <i>Species at Risk Act</i>). If the recovery of the listed species is feasible, the recovery strategy must address the threats to the survival of the species identified by the Committee for the Status of Endangered Wildlife in Canada, including any loss of habitat. The recovery strategy and any amendments will be included in the public registry established under the <i>Species at Risk Act</i> .
regional study area	A 15-km-wide buffer around the three anchor fields, on either side of the gathering system right-of-way and on either side of the pipeline right-of-way.
regular maintenance (housing)	Refers to such conditions as requiring painting or furnace cleaning.
resident	A Canadian citizen or landed immigrant who has been living in the Northwest Territories for at least two years.
residual effects	Environmental or socio-economic effects that remain after mitigation. Effects that are present after mitigation is applied.
right-of-way	The strip of land a company has acquired, for which it has obtained the rights to construct and operate a pipeline.
RSA	The abbreviation for regional study area.
RWED	The abbreviation for Resources, Wildlife and Economic Development (GNWT Department).
scrip	A document given by the Government of Canada to Métis who applied, promising either land or money, usually 140 acres or \$140, but increased to 240 acres or \$240 after 1885.
SEIA	The abbreviation for socio-economic impact assessment.
SLUPB	The abbreviation for Sahtu Land Use and Planning Board.
social infrastructure	Health, social wellness and education services that may require enhancement or expansion as a result of project-related activities.

socio-economic effect	For a project, any effect on a social or economic element, including direct effects as well as effects resulting from a change in the environment.
species at risk	An extirpated, endangered or threatened species or a species of special concern, as defined in the <i>Species at Risk Act</i> .
species of special status	Species listed under provincial jurisdiction or of recognized local importance because they are vulnerable, threatened, endangered or extirpated.
SRHSSA	The abbreviation for Sahtu Regional Health and Social Service Authority.
SSA	The abbreviation for Sahtu Settlement Area.
STI	The abbreviation for sexually transmitted infection.
Storm Hills lateral	The gathering pipeline connecting the Storm Hills pigging facility to a connection point at the inlet of the Inuvik area facility.
study area	The area within the spatial boundaries of the scope of the environmental and socio-economic effects assessment.
subsistence harvest	The minimum harvest necessary to provide food to support families living within the communities.
Taglu	The anchor field to be developed by Imperial Oil Resources Limited. It consists of one site, which will include the drill sites, gas conditioning facility, flow lines and supporting infrastructure.
Taglu lateral	The gathering pipeline connecting the Taglu gas conditioning facility to a connection point at the Storm Hills pigging facility.
unemployment rate	Percentage of the labour force that was unemployed during the week before the survey.
valued component	Characteristic or features that represent important environmental or socio-economic conditions identified by assessment specialists, communities or stakeholders.

violent crimes	Homicide, attempted murder, sexual assault, nonsexual assault, other sexual offences, abduction and robbery.
visual resources	Land, water, vegetation, animals and structures that are visible on the land.
waterbody	A body of water up to the high-water mark, including canals, reservoirs, oceans and wetlands, but not including sewage or waste treatment lagoons.
well-being	Everything that affects the experience of life, except physical and mental health, including the circumstances of physical existence, the quality of relationships and the threat of violence and crime.
wellness	Includes physical, emotional and mental health, and relationship well-being.